Appendix C

Traffic Impact Assessment

SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

TRAFFIC IMPACT ASSESSMENT

SYSTRA MVA

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1 INTRODUCTION

1.1 Background

1.1.1 The Application Site is located at various lots (New Lot to be known as Lot 2644) in D.D. 92 abutting Hang Tau Road in Kwu Tung South, which is currently zoned as "Comprehensive Development Area (3)" ("CDA(3)") in the Approved Kwu Tung South Outline Zoning Plan (OZP No. S/NE-KTS/22). The site location is shown in **Drawing No. 1.1**.

1.1.2 According to the S12A planning application (No. Y/NE-KTS/15) partially agreed by the Town Planning Board in October 2022, the Application Site was approved for the residential development of 909 units with a maximum plot ratio of 2.0.

1.1.3 In support of the Section 16 Planning Application for the Proposed Development in the "CDA(3)" zone, a traffic impact assessment (TIA) is prepared to examine the impact of the traffic generated by the proposed residential development on the existing and planned road networks in the near vicinity.

1.2 Study Objectives

1.2.1 The main objectives of the study are as follows:

- To assess the existing traffic conditions in the vicinity of the Proposed Development;
- To present the Master Layout Plan (MLP) and the planning parameters of the Proposed Development;
- To derive the provision requirements of parking and loading/unloading for the Proposed Developments based on Hong Kong Planning Standards and Guidelines (HKPSG);
- To review the proposed access arrangement and road traffic improvements at Hang Tau Road;
- To estimate the traffic generated by the Proposed Development and future traffic forecast on the adjacent road network in the design year 2035; and
- To assess the impacts of traffic generated by the Proposed Development on the adjacent road network and recommend any improvement measures if necessary.

1.3 Structure of the Report

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

- **Chapter 2 – Existing Traffic Conditions**, which describes the existing transport context in the vicinity of the Proposed Development, including current road network, summary of traffic count survey and assessment of existing traffic conditions.

- **Chapter 3 – The Proposed Development**, which briefs the planning parameters of the Proposed Development, including the access arrangements, internal transport provision and public transport facilities.

- **Chapter 4 – Future Traffic Conditions**, which presents the traffic forecasting methodology and estimates the future traffic conditions with the major committed developments in the vicinity.

- **Chapter 5 – Traffic Impact Assessment**, which estimates the traffic generation and assesses the traffic impacts of the Proposed Development in the future design year. Recommendation of improvement measures will be included if necessary.

- **Chapter 6 – Summary and Conclusion**, which summarises the findings of the study and presents the conclusion regarding the traffic issues of the Proposed Development.

2 EXISTING TRAFFIC CONDITIONS

2.1 Existing Road Network

2.1.1 The existing road network in the vicinity of the Application Site is shown in **Drawing No. 2.1**, which comprises the following local distributors:

- Kwu Tung Road;
- Hang Tau Road;
- Kam Hang Road

2.1.2 Kwu Tung Road is a single two-lane local distributor providing local connection between Kwu Tung and San Tin areas to the south of Fanling Highway. It connects with Castle Peak Road – Kwu Tung Section in the east and Castle Peak Road – San Tin Section in the west.

2.1.3 Kam Hang Road is a single two-lane local distributor serving the local villages in Kam Tsin. It intersects with Kwu Tung Road in the west and connects Kam Tsin Road in the east.

2.1.4 Hang Tau Road is a single two-lane local distributor providing vehicular access for the Application Site and local villages further south in Hang Tau Tai Po. It intersects with Kam Hang Road in the north for external connection.

2.2 Critical Junctions and Road Links

2.2.1 The critical junctions as identified for assessment of traffic impact due to the Proposed Development, which are listed in **Table 2.1** below:

Table 2.1 Identified Critical Junctions for Assessment

Index	Junction	Type	Drawing No.
J1	Hang Tau Road / Kam Hang Road	Priority	**Drawing 2.2**
J2	Kam Hang Road / Kwu Tung Road	Priority	**Drawing 2.2**

2.2.2 The locations of the above critical junctions are illustrated in **Drawing 2.1**. The existing junction layout and corresponding traffic arrangements are shown in **Drawing 2.2**.

2.2.3 In order to appraise the existing traffic conditions, a traffic survey in form of manual classified count was conducted at a typical weekday in May 2024 during AM and PM peak periods respectively.

2.2.4 The observed traffic flows are shown in **Annex A**, of which the corresponding peak hours are identified below:

- AM Peak Hour: 07:45 – 08:45
- PM Peak Hour: 17:15 – 18:15

2.2.5 Operational performance of the critical junctions have been assessed in accordance with the existing traffic flows and the results are summarised in **Table 2.2** below. Details of junction assessment are enclosed in the **Annex B**.

Table 2.2 Operational Performance of Critical Junctions in 2024

Index	Junction	Type	RC(1)/ DFC(2)	Observed 2024	
				AM Peak	PM Peak
J1	Hang Tau Road / Kam Hang Road	Priority	DFC	0.34	0.24
J2	Kam Hang Road / Kwu Tung Road	Priority	DFC	0.63	0.41

Note:
(1) RC = Reserve Capacity for signal junctions;
(2) DFC = Design flow / capacity ratio for priority / roundabout junctions

2.2.6 It is indicated that all junctions in the vicinity of the Application Site are currently operating with ample capacities.

2.2.7 The performance of road links in the vicinity of the Application Site have also been reviewed in terms of the Flow to Capacity (V/C) ratio. **Table 2.3** below shows that all of the road links are operating with ample capacity.

Table 2.3 Operational Performance of Critical Road Links in 2024

Index	Road Links	Type(1) and Conf'g (2)	Capacity (pcu/hr)(3)	Observed 2024			
				Flow (pcu/hr)		V/C Ratio	
				AM	PM	AM	PM
L1	Hang Tau Road (South of Kam Hang Road)	LD-S2	900	345	295	0.38	0.33
L2	Kam Hang Road (East of Hang Tau Road)	LD-S2	900	200	165	0.22	0.18
L3	Kwu Tung Road (West of Kam Hang Road)	LD -S2	900	350	325	0.39	0.36
L4	Kwu Tung Road (East of Kam Hang Road)	LD-S2	900	335	345	0.37	0.38

Note:
(1) Road Type: LD = Local Distributor;
(2) Configurations: S2 = Single 2 lanes
(3) Link capacities expressed in PCU/hour with reference to corresponding road type and lane configurations.

2.3 Public Transport Services

2.3.1 The public transport services for the Subject Site are available at Hang Tau Road, as well as along Kam Hang Road, Kwu Tung Road and Castle Peak Road – Kwu Tung respectively. The location of bus stops are shown in **Drawing 2.3**.

2.3.2 GMB Route 50K is serving the village settlement along Hang Tau Road, including the Application Site. GMB Route 50A is also available at Kam Hang Road about 5 minute walk from the Application Site. Both GMB routes provide connection to Sheung Shui MTR Station, which is the most readily accessible railway station from the Application Site.

2.3.3 Besides, there is bus route 76K running between Ching Ho Estate in Sheung Shui and Long Ping Estate in Yuen Long. It serves Kwu Tung Road westbound towards Yuen Long and Castle Peak Road – Kwu Tung Section towards Sheung Shui.

2.3.4 The bus stops are within walking distance for a journey of 7-14 minutes from the Application Site as summarised in **Table 2.4** below. The existing footpaths along Kwu Tung Road are relatively gentle with provision dropped kerbs across Kam Hang Road

Table 2.4 Existing Conditions of Bus Stops in Vicinity of Application Site

Bus Stop Location	(A) Kwu Tung Kwu Tung Road (Yuen Long Bound)	(B) Kwu Tung Castle Peak Road (Sheung Shui Bound)	(C) Hang Tau Kwu Tung Road (Yuen Long Bound)	(D) Ho Tung Bridge Castle Peak Road (Sheung Shui Bound)
Walking Distance	500m (via Kwu Tung Road Footpath)	900m (via footbridge across Fanling Highway)	550m (via Kwu Tung Road Footpath)	650m (via Kwu Tung Road Footpath)
Journey Time	7 minutes	14 minutes (1)	8 minutes	10 minutes (1)
Bus Stop Facilities	Lay-by with shelter	Lay-by only	Lay-by only	Lay-by with shelter

Note:
(1) Bus stop location may be outside the typical service catchment.

2.3.5 Public Light Bus (PLB) route 17, as known as the red-minibus, is available along Castle Peak Road – Kwu Tung Section serving between Sheung Shui and Yuen Long.

2.3.6 The existing public transport services are summarised in **Table 2.5** below.

Table 2.5 Existing Public Transport Services

Route	Service	Destinations	Nearest Stop	Peak Hour Frequency (minutes)	Average Occupancy in AM Peak
50A	GMB	Sheung Shui – Kwu Tung (South)	Kam Hang Road	10-15	100% (Sheung Shui Bound)
50K	GMB	Sheung Shui – Hang Tau	Hang Tau Road	3-5	100% (Sheung Shui Bound)
76K	BUS	Ching Ho Estate – Long Ping Estate	Castle Peak Road	20-30	<50% (Sheung Shui & Yuen Long Bound)
17	PLB	Sheung Shui – Yuen Long	Castle Peak Road	Flexible Schedule(1)	N/A

Note:
(1) Peak hour frequency is observed to be 3-5 minutes.

2.3.7 It is noted that the GMB routes are often full-loaded at their origin (e.g. Hang Tau) during the AM peak hour. There are unlikely spare capacity to cope with additional passenger demand. Meanwhile, the service level of PLB (red mini-bus) along Castle Peak Road is highly unreliable in terms of fare and frequency.

2.3.8 Based on the on-site observation at bus stops near Kam Tsin, Castle Peak Road, the occupancy of bus route 76K between Yuen Long and Sheung Shui are about 30% for both directions during AM and PM peak hours.

3 THE PROPOSED DEVELOPMENT

3.1 Site Location

3.1.1 As shown by the master layout plan in **Drawing 3.1**, the Application Site is located in Kwu Tung South, which is bounded by Kwu Tung Road to the north, Hang Tau Road to the east and an existing footpath to the south connecting to the river bank of River Beas running along the west of the Application Site.

3.1.2 According to the approved planning application (No. Y/NE-KTS/15), the Application Site has been approved for the development of 909 units with a plot ratio of 2.0.

3.2 Proposed Development

3.2.1 The Proposed Development is planned for private residential use, which comprises a total of 1,062 residential units.

3.2.2 The development parameters are summarised in **Table 3.1**. The Proposed Development is scheduled to be completed by 2032.

Table 3.1 Design Parameters for Proposed Development

Parameters	Units
Application Site Area	About 19,591 m^2
Plot Ratio	Not more than 2.012 (1)
GFA	Not more than 39,400 m^2
Total Number of Residential Blocks	3
Total Number of Units	1,062
Average Unit Size	Approximately 37.1 m^2
Anticipated population	About 2,868 (2)

Note:
(1) Proposed minor relaxation of plot ratio restriction (from 2.0 to 2.012) for Proposed Scheme is the result of reduced site area while maintaining the GFA (39,400m2) as per the Approved Scheme.
(2) The anticipated population is assumed to be 2.7 person-per-flat, with reference to Census and Statistics Department's website released in April 2024 (https://www.censtatd.gov.hk/en/web_table.html?id=130-06806) which shows North District average household size in 2023.

3.3 Vehicular and Pedestrian Access

3.3.1 The vehicular access point will be provided in form of run-in/out at Hang Tau Road to the east of the Application Site. All vehicular movements in/out of the Application Site will be permitted at the proposed vehicular access.

3.3.2 Pedestrian access will be provided next to the proposed vehicular access point at Hang Tau Road.

3.4 Provisions of Parking and Servicing Facilities

3.4.1 The provision of parking and servicing facilities for the proposed residential development are generally recommended in accordance with HKPSG, which are tabulated in **Table 3.2** below.

Table 3.2 Parking Requirements by HKPSG for Private Housing Developments (AUG 2021 Edition)

Parking Facilities	HKPSG Requirement					Required Provision	
Car Parking Spaces	Global Parking Standard (GPS)[2] 1 per 4-7 units with adjustment factors (R1) x (R2) x (R3)				Parking Ratio (unit/space) GPS=5	No. of Units	No. of Parking
	Flat Size (m^2)	R1	R2	R3			GPS=5
	<40	0.5	1.0	1.1	9.1	825	91
	40-70	1.2	1.0	1.1	3.8	235	62
	70-100	2.4	1.0	1.1	1.9	2	2
	100-130	4.1	1.0	1.1	1.1	0	0
	130-160	5.5	1.0	1.1	0.8	0	0
	>160	7.0	1.0	1.1	0.6	0	0
	Total					1,062 units	156 spaces
Visitor Parking Spaces	5 spaces per block					3 blocks	15 spaces
	Subtotal						**171 spaces**
Resident Loading Space	1 space per Block					3 blocks	3 spaces
Motorcycle Spaces	1 space per 100-150 units					1,062 units	11 spaces
Bicycle Parking Spaces	1 space per 15 flats with flat size smaller than $70m^2$ for site outside 2km radius of a rail station					1,060 units	71 spaces

Note:
(1) Demand Adjustment Ratio (R1) on flat size according to the latest HKPSG requirements;
Accessibility Adjustment Ratio (R2=1) for outside a 500m - radius of rail station;
Development Intensity Adjustment Ratio (R3=1.1) for Domestic Plot Ratio in between 1.0 and 2.0

3.4.2 With respect to the comments from TD under the approved S12A planning application (No. Y/NE-KTS/15), the GPS value of 1 per 5 units (GPS=5) is adopted for the Application Site with the following considerations:

- The basement footprint is highly constrained by the irregular shape of site area.
- The public transport services will be enhanced with proximity and convenience for access by the proposed road widening and public transport facilities at Hang Tau Road and Kam Hang Road.

3.4.3 The provision of parking and servicing facilities for the proposed development are summarised in **Table 3.3** below.

Table 3.3 Provision of Parking and Servicing Facilities by the Application Site

Parking and Servicing Facilities	Development Parameters	HKPSG (AUG 2021)
Residential Car Parking Spaces	1,062 units	156 (1)
Visitor Car Parking Space	3 blocks	15 spaces
	Total No. of Parking Space	**171 (2)**
Loading / Unloading Spaces	Domestic: 3 blocks	3 spaces
Motorcycle Spaces	1,062 units	11 spaces
Bicycle Parking Space	1,060 units (with flat size smaller than $70m^2$)	71

Note:
(1) Assumed the GPS value of 1 per 5 is adopted;
(2) Given that the number of parking provision is between 151-250, it is required to provide 3 accessible parking spaces for persons with disabilities among the visitor parking spaces according to HKPSG.

3.5 Proposed Road Improvement Works

3.5.1 With reference to the approved S12A Planning Application (No. Y/NE-KTS/15), the proposed road improvement works will include widening of existing Hang Tau Road with 7.3m carriageway and 2.0m footpath abutting the Application Site as shown in **Drawing 3.2**.

3.5.2 A GMB lay-by and a pedestrian crossing are also proposed at Hang Tau Road near the pedestrian access of the Application Site to enhance the public transport and pedestrian accessibility for the Proposed Development.

3.5.3 It is assumed that the above road improvement works will be completed on or before completion of the Proposed Development.

3.5.4 The committed road improvement works by other planned developments are summarised in **Section 4.2**.

4 FUTURE TRAFFIC CONDITIONS

4.1 Design Year

4.1.1 It is anticipated that the proposed residential development will be completed by 2032. Year 2035 is hence adopted to be the design year, which is 3 years upon completion.

4.2 Committed Road Improvement Works

Junctions J1 & J2 – Hang Tau Road / Kam Hang Road & Kam Hang Road / Kwu Tung Road

4.2.1 The junctions of Hang Tau Road / Kam Hang Road (Junction J1) and Kam Hang Road / Kwu Tung Road (Junction J2) are proposed to be improved by other planned developments, such as:

- Private Residential Development at Kam Hang Road near Kam Tsin (No. A/NE-KTS/506) – Proposed Improvement of Junctions J1 and J2
- Private Residential Development near junction of Kam Hang Road / Hang Tau Road (No. Y/NE-KTS/14) – Further Improvement of Junctions J1 and J2

4.2.2 The planned layout of proposed road improvement works are shown in **Drawing Nos. 4.1 and 4.2**. It is assumed that the above road improvement works will be completed before design year 2035.

Planned Roundabout and GMB Layby at Hang Tau Road

4.2.3 With reference to the approved S12A planning application (No. Y/NE-KTS/13), there will be a roundabout for GMB turning around to the south of Hang Tau Road Public Toilet.

4.2.4 The planned layout of roundabout and GMB layby outside the development site are shown in **Drawing 4.3**. It is assumed that the above junction improvement works will be completed before design year 2035.

4.3 Reference Traffic Forecasts

Historical Growth Trend

4.3.1 The Annual Traffic Census (ATC) published by the Transport Department (TD) provides a comprehensive record of traffic flows in the territory. The records from the ATC stations in the vicinity of the Application Site for 2013-2022 were summarized in **Table 4.1**.

Table 4.1 ATC Counting Station Records in the Local Area

ATC Station No.	Road Name	Average Annual Daily Traffic (A.A.D.T)										Growth Rate (p.a.)(1)
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2022/2013
6602	Castle Peak Road (Kwu Tung)	10,670	11,120	10,560	10,690	11,540	10,800	10,660	11,000	11,000	10,480	+4.1%
6606	Kwu Tung Road	2,980	3,290	3,670	4,070	4,450	4,630	4,610	4,050	4,290	4,280	-0.2%
Total		**13,650**	**14,410**	**14,230**	**14,760**	**15,990**	**15,430**	**15,270**	**15,050**	**15,290**	**14,760**	**+0.9%**

Note:

(1) The best-fitted growth is estimated by an exponential trend line (i.e. $y = b * m^x$) by regression analysis.

4.3.2 As indicated in **Table 4.1**, the average growth between 2013 and 2022 is represented by a rate of **+0.9% per annum**.

Population and Employment Data in the Vicinity Area

4.3.3 Reference was also made to the 2019-based Territorial Population and Employment Data Matrix (TPEDM) available in the Public Domain as summarized in **Table 4.2**.

Table 4.2 Population and Employment Base Data in 2019-based TPEDM

Planning Data District	Population			Population Growth Rate (p.a.)	
	2019	2026	2031	19/26	26/31
Fanling/ Sheung Shui	258,300	274,100	352,350	1.2%	5.2%
NENT (Other Area)	105,400	143,050	240,600	6.3%	11.0%
Total	**363,700**	**417,150**	**592,950**	**2.8%**	**7.3%**
Planning Data District	**Employment**			**Employment Growth Rate (p.a.)**	
	2019	**2026**	**2031**	**19/26**	**26/31**
Fanling/ Sheung Shui	64,100	66,650	79,400	0.8%	3.6%
NENT (Other Area)	36,050	38,300	65,550	1.2%	11.3%
Total	**100,150**	**104,950**	**144,950**	**0.9%**	**6.7%**
Planning Data District	**Population + Employment**			**Combined Growth Rate (p.a.)**	
	2019	**2026**	**2031**	**19/26**	**26/31**
Fanling/ Sheung Shui	322,400	340,750	431,750	1.1%	4.8%
NENT (Other Area)	141,450	181,350	306,150	5.1%	11.0%
Total	**463,850**	**522,100**	**737,900**	**2.4%**	**7.2%**

4.3.4 Based on the population and employment planning data as shown in **Table 4.2**, growth rate of 2019/2026 and 2026/2031 are around **+2.4% and +7.2% per annum** respectively.

4.3.5 However, it is important to note that the key population growth between 2026 and 2031 from TPEDM are widely distributed in Fanling / Sheung Shui and NENT (Other Areas), including the anticipated population intakes in Kwu Tung North New Development Area (KTN NDA).

Major Committed Developments in the vicinity of Kwu Tung

4.3.6 The major committed developments in Fanling / Sheung Shui and NENT (Other Area), which would have traffic contributions to the road network in the vicinity of the Application Site in Kwu Tung are summarised in **Table 4.3** Their corresponding locations are shown in **Drawing 4.4**.

Table 4.3 Major Committed Developments in Kwu Tung

Ref.	Location	Planned Use	Design Parameter	Population Intake (2024- 2035)	Reference
Application Site	Hang Tau Road	Private Residential (Medium Density)	909 units	2,450(1)	Planning Application No. Y/NE-KTS/15
Committed Private Developments in Kwu Tung South					
A	Kam Hang Road	Private Residential (Medium Density)	2,589 units	7,000 (1)	Planning Application No. A/NE-KTS/506
B	Kam Hang Road / Hang Tau Road	Private Residential (Medium Density)	971 units	2,600(1)	Planning Application No. Y/NE-KTS/14
C	Kam Hang Road / Hang Tau Road	Private Residential (Medium Density)	360 units	1,000(1)	Planning Application No. Y/NE-KTS/17
D	Kam Hang Road	Residential Care Home for Elderly	150 beds	150	Planning Application No. Y/NE-KTS/16
E	Hang Tau Tai Po	Private Residential (Medium Density)	320 units	900(1)	Planning Application No. Y/NE-KTS/13
F	106 Hang Tau Road	Private Residential (Low Density)	2 houses	200(1)	Planning Application No. A/NE-KTS/528
G	Various Lots in D.D. 94, Hang Tau Tai Po	Private Residential (Low Density)	19 houses		Planning Application No. A/NE-KTS/466
H	Various Lots in D.D. 94, Hang Tau Tai Po	Private Residential (Low Density)	42 houses		Planning Application No. A/NE-KTS/525
Private Residential Developments in Kwu Tung South			Total:	Approx. 14,300	
Planned Developments in Kwu Tung North					
P1	KTN NDA	Mixed Use	49,900 units	131,600	Planning Application No. A/KTN/93
P2	Yin Kong	Private Residential (Medium Density)	527 units	1,400(1)	Planning Application No. Y/ KTN/2

Note:
(1) Average household size assumed to be 2.7

Adopted Growth Rate

4.3.7 Taking account of the extensive coverage by the NENT (Other Area) in TPEDM, it can be seen that most of the increment in population between 2024-2035 have been accounted by the KTN NDA.

4.3.8 Nevertheless, the major access routes and road network for the Planned Developments in Kwu Tung South (including the Application Site) would be substantially different from those in KTN NDA, with the anticipated completion of improvement works to Pak Shek Au Interchange and the new Kwu Tung Interchange in mid-2030 by CEDD. The traffic contributions by KTN NDA to the road network in Kwu Tung South would be very marginal.

4.3.9 Therefore, the holistic growth rate in population and employment of the entire NENT may not accurately represent the traffic growth for the local road network in Kwu Tung South.

4.3.10 Instead, the growth rate from ATC of +1.0% per annum is adopted for traffic projection from 2024 to 2035. On top of the projected 2035 traffic flow, the future traffic generation from the major committed developments in Kwu Tung South as shown in **Table 4.3** would be incorporated for the reference traffic forecast of design year 2035.

4.3.11 With reference to the trip rates from Transport and Planning Design Manual (TPDM) Volume 1 Chapter 3 as shown in **Annex C**, the number of trips generated by the major committed developments in Kwu Tung South are summarised in **Table 4.5** below.

Table 4.4 Traffic Generations of Committed Development in Kwu Tung (Reference 2035)

Ref.	No. of Units	Adopted Trip Rate	Estimated Number of Trips (pcu/hr) (1)			
			AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
Approved Scheme at Application Site (No. Y/NE-KTS/15)						
Application Site	909 units	R(A)-45	60	40	30	35
Committed Private Development in Kwu Tung South						
A	2,589 units +Retail 1,000m^2	R(A)-45 + Retail	170	110	80	100
B	971 units	R(A)-70	85	50	35	45
C	360 units	R(A)-70	30	20	15	15
D	RCHE 150 beds	RCHE	5	5	5	5
E	320 units +Retail 406m^2 +RCHE 100 beds	R(C)-180 + Retail + RCHE	35	20	15	20
F	2 houses	R(C)-240	20	15	15	20
G	19 houses					
H	42 houses					
		Sub-total:	**405**	**260**	**190**	**240**
Additional Public Transport in Kwu Tung South						
Potential New Bus and GMB Routes (Kam Hang Road & Hang Tau Road)			**80**	**80**	**80**	**80**
Planned Developments in Kwu Tung North						
P1	49,900 units	PRH-40	2,160	1,630	1,190	1,510
P2	527 units	R(A)-50 + R(C)-180	45	30	25	25

Note
(1) The estimated no. of trips were rounded up to the nearest 5

4.3.12 The anticipated 2035 reference traffic forecasts (with Approved Scheme) are presented in **Annex A** and can be derived by the equation below:

2035 Reference Flows

= 2024 Observed Flows + Background Traffic Growth from 2024 to 2035 (+1.0% p.a.)
+ Approved Scheme of the Application Site
+ Committed Private Developments (Sites A to H)
+ Potential Additional Public Transport in Kwu Tung South
+ Planned Developments Kwu Tung North (Sites P1 & P2)

4.4 Design Traffic Forecasts

4.4.1 With reference to Transport and Planning Design Manual (TPDM) Volume 1 Chapter 3, the trip rates adopted are extracted in **Table 4.6** below.

Table 4.5 Trip Rates Adopted in Traffic Forecast

Development Parameters	Index	Adopted Trip Rates (pcu/hr/unit or 100m² GFA)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
The Proposed Development					
Average Flat Size 45m² (Mean)	R(A)-45	0.0623	0.0401	0.0277	0.0361

Source: TPDM 2021, Volume 1, Chapter 3, Appendix D, Table 1
Note (1): Trip rates obtained by interpolation

4.4.2 The "Mean" value is commonly adopted for a number of approved planning applications in Kwu Tung South, which reflects the travel characteristics and public transport accessibility in the area. The Subject Site is a private residential development with an average flat size of about 37.1m² whilst the trip rates for comparable flat size (40m² or 50m²) are only available for the subsidised housing in TPDM.

4.4.3 Therefore, the adopted trip rates (45m² for private development) are derived by interpolation among the subsidised housing and private residential developments as elaborated in **Annex C** of the TIA.

4.4.4 Nonetheless, to further elaborate the trip generation rates adopted in **Table 4.6** of TIA, we have arranged additional traffic surveys at the residential developments with the following criteria:

- Average Flat Size <60sqm
- Car Park Ratio = 4 to 8 units per CP
- Beyond 500m walking distance from rail station

4.4.5 As shown in the findings in **Annex C**, the adopted trip rates are more conservative than the sites with comparable flat size, car park ratio and public transport accessibility.

4.4.6 Based on the development parameters given in **Tables 3.1** and **4.6**, the number of trips generated by the major committed and Proposed Developments are summarised in Table **4.7** below.

Table 4.6 Traffic Generations of Proposed Development (Design 2035)

Ref.	No. of Units	Adopted Trip Rate	Estimated Number of Trips (pcu/hr) (1)			
			AM Peak		PM Peak	
			Generation	Attraction	Generation	Attraction
Proposed Developments at Application Site						
Application Site (Subject S16)	**1,062**	**R(A)-45**	**65**	**45**	**30**	**40**
Application Site (Approved S12A)	909	R(A)-45	60	40	30	35
Net Difference			**5**	**5**	**5**	**5**
Committed Private Development						
A	2,589 units +Retail 1,000m^2	R(A)-45 + Retail	170	110	80	100
B	971 units	R(A)-70	85	50	35	45
C	360 units	R(A)-70	30	20	15	15
D	RCHE 150 beds	RCHE	5	5	5	5
E	320 units +Retail 406m^2 +RCHE 100 beds	R(C)-180 + Retail + RCHE	35	20	15	20
F	2 houses	R(C)-240	20	15	15	20
G	19 houses					
H	42 houses					
Sub-total:			**410**	**265**	**195**	**245**
Additional Public Transport in Kwu Tung South						
Potential New Bus and GMB Routes (Kam Hang Road & Hang Tau Road)			**80**	**80**	**80**	**80**
Planned Developments in Kwu Tung North						
P1	49,900 units	PRH-40	2,160	1,630	1,190	1,510
P2	527 units	R(A)-50 + R(C)-180	45	30	25	25

Notes:
(1) The estimated no. of trips were rounded up to the nearest 5.

4.4.7 With the 1,062 nos. of residential units for the Proposed Development, it is estimated that the traffic generation and attraction will be 110 pcu/hr (2-way) and 70 pcu/hr (2-way) in AM and PM peak hours, which are comparable to the approved scheme of 909 units with the same domestic GFA.

4.4.8 By superimposing the net increase in development traffic flows and the 2035 reference traffic forecast (with Approved Scheme), the 2035 design traffic forecasts (with Proposed Development) can be derived as below:

2035 Design Flows = 2035 Reference Flows – Approved Development Traffic
+ Proposed Development Traffic

4.4.9 The 2035 design traffic forecast (with Proposed Development) are presented in **Annex A**.

4.5 Traffic Forecasts for Environmental Assessment (EA)

4.5.1 In support of the Environmental Assessment for the Proposed Development, a set of long-term traffic forecast in year 2047 is prepared, which is 15 years after completion.

4.5.2 Results of the EA traffic forecast and details of methodology and assumptions are presented in the Technical Note enclosed in **Annex D**.

5 TRAFFIC IMPACT ASSESSMENT

5.1 Junction and Road Link Assessment

5.1.1 With the road improvement works by others as summarised in **Drawing No. 5.1**, the junction layouts adopted in design year 2035 for the operational assessments of the critical junctions are summarised in **Table 5.1**.

Table 5.1 Layout and Arrangement of Critical Junctions in 2035

Index	Junction	Type	Existing / Future Layout	Proposed Road Improvements by Others
J1	Hang Tau Road / Kam Hang Road	Priority	**Drawing 2.2**	**Drawing 4.1** (1)
J2	Kam Hang Road / Kwu Tung Road	Priority	**Drawing 2.2**	**Drawing 4.1** (1)

Notes:
(1) Refer to **Section 4.2** for the committed junction improvement works.

5.1.2 To assess the traffic impact due to the Proposed Development, capacity analysis of the identified critical junctions and road links in the study area for both reference and design scenarios in year 2035 have been carried out. The results were summarised and presented in **Tables 5.2** and **5.3**.

Table 5.2 Operational Performance of Critical Junctions in 2035

Index	Junction	Type	RC(1)/ DFC(2)	Reference 2035		Design 2035	
				AM Peak	PM Peak	AM Peak	PM Peak
J1	Hang Tau Road / Kam Hang Road *(With improvement)*	Priority	DFC	0.78	0.46	0.79	0.46
J2	Kam Hang Road / Kwu Tung Road *(With improvement)*	Priority	DFC	0.82	0.47	0.83	0.47

Note:
(1) RC = Reserve Capacity for signal junctions;
(2) DFC = Design flow / capacity ratio for priority / roundabout junctions

5.1.3 It can be revealed from **Table 5.2** that the key junctions in Kwu Tung South will operate with ample capacity with the committed road improvement works by others. The local road links will also operate with ample capacity in 2035 as shown in **Table 5.3**.

Table 5.3 Operational Performance of Critical Road Links in 2035

Index	Road Links	Type[1] and Conf'g[2]	Capacity (pcu/hr)[3]	Reference 2035				Design 2035			
				Flow (pcu/hr)		V/C Ratio		Flow (pcu/hr)		V/C Ratio	
				AM	PM	AM	PM	AM	PM	AM	PM
L1	Hang Tau Road (South of Kam Hang Road)	LD-S2	900	690	540	0.77	0.60	700	550	0.78	0.61
L2	Kam Hang Road (East of Hang Tau Road)	LD-S2	900	705	505	0.78	0.56	705	505	0.78	0.56
L3	Kwu Tung Road (West of Kam Hang Road)	LD-S2	900	755	630	0.84	0.70	755	635	0.84	0.71
L4	Kwu Tung Road (East of Kam Hang Road)	LD-S2	900	710	605	0.79	0.67	720	610	0.80	0.68

Note:
(1) Road Type: LD = Local Distributor;
(2) Configurations: S2 = Single 2 lanes
(3) Link capacities expressed in PCU/hour with reference to corresponding road type and lane configurations.

5.2 Public Transport Assessment

5.2.1 With reference to the Travel Characteristics Survey 2011 (TCS 2011) by the TD, the average daily mechanised trips per person (excluding non-home-based and employers' business trips) is 1.61.

5.2.2 The overall peak hours for mechanised trips were identified with a large proportion of "Home-based Work" commuting trips, whilst the AM and PM peak hours accounted for about 12% of the daily trip in total.

5.2.3 Assuming that 90% of the trips are generated (outbound) and attracted (inbound) during AM and PM peak hour respectively, the travel demand during AM and PM peak hours is 0.1739 trip per person per hour respectively.

5.2.4 Furthermore, the distribution modal split for public transport is assumed to be 70%, taking into account the existing service level of public transport and the mode share among rail, franchised bus and public light bus in TCS 2011.

5.2.5 According to the demographic data from the 2021 Population Census, the population for residential developments in Hang Tau Tai Po is approximately 4,647, whilst the estimated population intake by the Proposed Development is 2,868.

5.2.6 Based on the above assumptions, the public transport demand for the existing and Proposed Developments are derived from first principle by the estimated population as shown in **Table 5.4** below.

Table 5.4 Derivation of Public Transport Demand in Year 2035

Parameters	Formula	Existing Hang Tau Tai Po	Application Site	Other Planned Developments
Estimated population	(a)	4,647[(1)]	2,868 [(2)]	11,500[(3)(4)(5)(6)]
Average daily mechanised trips per person	(b)	1.61	1.61	1.61
Peak hour factors (AM / PM) to daily total	(c)	12%	12%	12%
Estimated mechanised trips per hour (AM / PM peak) per person	(d) = (b) x (c) x 0.9	0.1739	0.1739	0.1739
Estimated mechanised trips per hour (AM / PM peak)	(e) = (a) x (d)	808	499	2,000
Mode share of public transport (excluding private cars and taxis)	(f)	70%	70%	70%
Estimated public transport demand per hour (AM / PM peak) per person	(g) = (d) x (f)	0.1217	0.1217	0.1217
Estimated public transport demand per hour (AM / PM peak)	(h) = (e) x (f)	565	350	1,400
	Additional Total Demand:		**1,750**	

Notes:
(1) 2021 Population Census – Small Street Block Group 547/04
(2) Proposed Development: 1,062 units and PPOF 2.7
(3) No. A/NE-KTS/506: 2,589 units and PPOF 2.7 = 7,000 population
(4) No. Y/NE-KTS/13: 320 units and PPOF 2.7 = 900 population
(5) No. Y/NE-KTS/14: 971 units and PPOF 2.7 = 2,600 population
(6) No. Y/NE-KTS/17: 360 units and PPOF 2.7= 1,000 population

5.2.7 With reference to the on-site observation of boarding and alighting passengers at the bus stops near Kam Tsin, Castle Peak Road, the directional split to/from Yuen Long and Sheung Shui is derived to be 20% and 80% respectively.

5.2.8 The additional public transport demand for the proposed and other planned private residential developments is estimated to be 1,750 passengers per hour during the AM peak hour, for the future intake of 14,000 residents.

Proposed Enhancement to Public Transport Services

5.2.9 For minimizing disturbance to the traffic on Hang Tau Road due to the kerbside passengers' boarding and alighting of GMBs while providing proper waiting spaces for the GMB users, an on-street GMB layby is proposed at Hang Tau Road for an additional new GMB route, assuming with a 10-minute headway during peak hours.

5.2.10 A pedestrian crossing is also proposed between the GMB lay-by and the Application Site Access at Hang Tau Road to cope with the potential crossing demand as shown in **Drawing No. 3.2.**

5.2.11 In addition to the new GMB facilities at Hang Tau Road, the Application Site is within the 400m walking distance from Kam Hang Road, which would be viable for double decker buses with the proposed road widening as shown in **Drawing Nos. 4.1 and 4.2**.

5.2.12 With the public transport facilities proposed at Kam Hang Road, new franchised bus route between Kwu Tung South and the future Kwu Tung Station can be considered with rail connections to East Rail Line in 2027 and the Northern Link (NOL) in 2034 respectively.

5.2.13 Not only the accessibility of Kwu Tung south area can be improved, but also relief the burden of Public Transport Interchange at existing Sheung Shui Station.

5.2.14 The additional travel demand of the planned developments in Kwu Tung South (including the Application Site) can be sufficiently served by 13 nos. of 12.8m double decker buses per hour (i.e. peak frequency of 4-5 minutes) during the peak hour. It will also benefit the existing residents at Kwu Tung South with an increase of PT choice in the area.

5.2.15 The potential GMB and Franchised Bus routes are indicated on **Drawing No. 5.2**. The proposed enhancement to public transport services during peak hours for the private residential development are summarised in **Table 5.5** below.

Table 5.5 Proposed Enhancement to Public Transport Services in Year 2035

Developments	**Passenger Demand (pax/hr)**
Application Site at Hang Tau Road	350
Other Planned Developments in Kwu Tung South	1,400
Total	**1,750**
Public Transport Service	**Public Transport Capacity (pax/hr)**
Additional GMB route(1) (Hang Tau Road – Sheung Shui)	100 (6 nos. of 19-seater GMB)
New Franchised Bus Route(2) (Kam Hang Road – Kwu Tung Station)	1,950 (13 nos. of 12.8m DD bus)(3)
Total	**2,050**

Notes:
(1) The additional GMB at Hang Tau Road is assumed for a service level of 10 minute headway in peak hours
(2) The new franchised bus route at Kam Hang Road is assumed for a service level of 4-5 minute headway in peak hours.
(3) The capacity of 12.8m double-decker (DD) bus is assumed to be 150 passengers.

6 SUMMARY AND CONCLUSION

6.1 Summary

6.1.1 The Application Site is located at various lots (New Lot to be known as Lot 2644) in D.D. 92 abutting Hang Tau Road in Kwu Tung South, which is currently zoned as "CDA(3)" in the Draft Kwu Tung South Outline Zoning Plan (OZP No. S/NE-KTS/22).

6.1.2 According to the approved S12A planning application (No. Y/NE-KTS/15) in October 2022, the Application Site was approved for the residential development of 909 units with a maximum plot ratio of 2.0.

6.1.3 The Proposed Development is planned for private residential use, which comprises a total of 1,062 residential units. Proposed minor relaxation of plot ratio for Proposed Scheme is the result of reduced site area while maintaining the GFA (39,400m^2) under Approved Scheme. To achieve this GFA, plot ratio 2.012 is therefore proposed.

6.1.4 The vehicular access point will be provided in form of run-in/out at Hang Tau Road to the east of the Application Site. All vehicular movements in/out of the Application Site will be permitted at the proposed vehicular access. Pedestrian access will be provided next to the proposed vehicular access point at Hang Tau Road.

6.1.5 With respect to the comments from TD under the approved S12A planning application (No. Y/NE-KTS/15), the GPS value of 1 per 5 units (GPS=5) is adopted for the Application Site with the following considerations:

- The basement footprint is highly constrained by the irregular shape of site area.
- The public transport services will be enhanced with proximity and convenience for access by the proposed road widening and public transport facilities at Hang Tau Road and Kam Hang Road.

6.1.6 To facilitate the Proposed Development, it is proposed to widen the existing Hang Tau Road into 7.3m carriageway and 2.0m footpath abutting the Application Site. A GMB lay-by and a pedestrian crossing are also proposed at Hang Tau Road to enhance the public transport and pedestrian accessibility for the Proposed Development.

6.1.7 Year 2035 is adopted to be the design year, which is 3 years upon the anticipated completion in 2032.

6.1.8 The 2035 reference traffic forecasts have been projected from the observed year 2024 with a growth factor of +1.0% per annum to year 2035. The traffic generations and attractions from the major committed developments in Kwu Tung South are also included on top of the projected forecast.

6.1.9 Based on the trip rates derived from TPDM, it is estimated that the traffic generations by the proposed 1,062 nos. of residential units will be some 110 pcu/hr (2-way) and 70 pcu/hr (2-way) in AM and PM peak hours which are comparable to the approved scheme.

6.1.10 In terms of public transport, the demand for the existing and proposed developments are derived from first principle by the estimated population, based on the assumptions from TCS 2011 by the TD.

6.1.11 An additional GMB route between Hang Tau Road and Sheung Shui is proposed at the new GMB lay-by at Hang Tau Road, assuming with a 10-minute headway during peak hours.

6.1.12 The Application Site is also within the 400m walking distance from Kam Hang Road, which would be viable for 12.8m double decker buses with the planned road improvement works by other committed developments.

6.1.13 Therefore, the public transport demand from the Application Site in Kwu Tung South can be supplemented by the additional GMB route at Hang Tau Road and the potential franchised bus service at Kam Hang Road, connecting the future Kwu Tung Station for East Rail Line by 2027 and the Northern Link (NOL) by 2034 respectively.

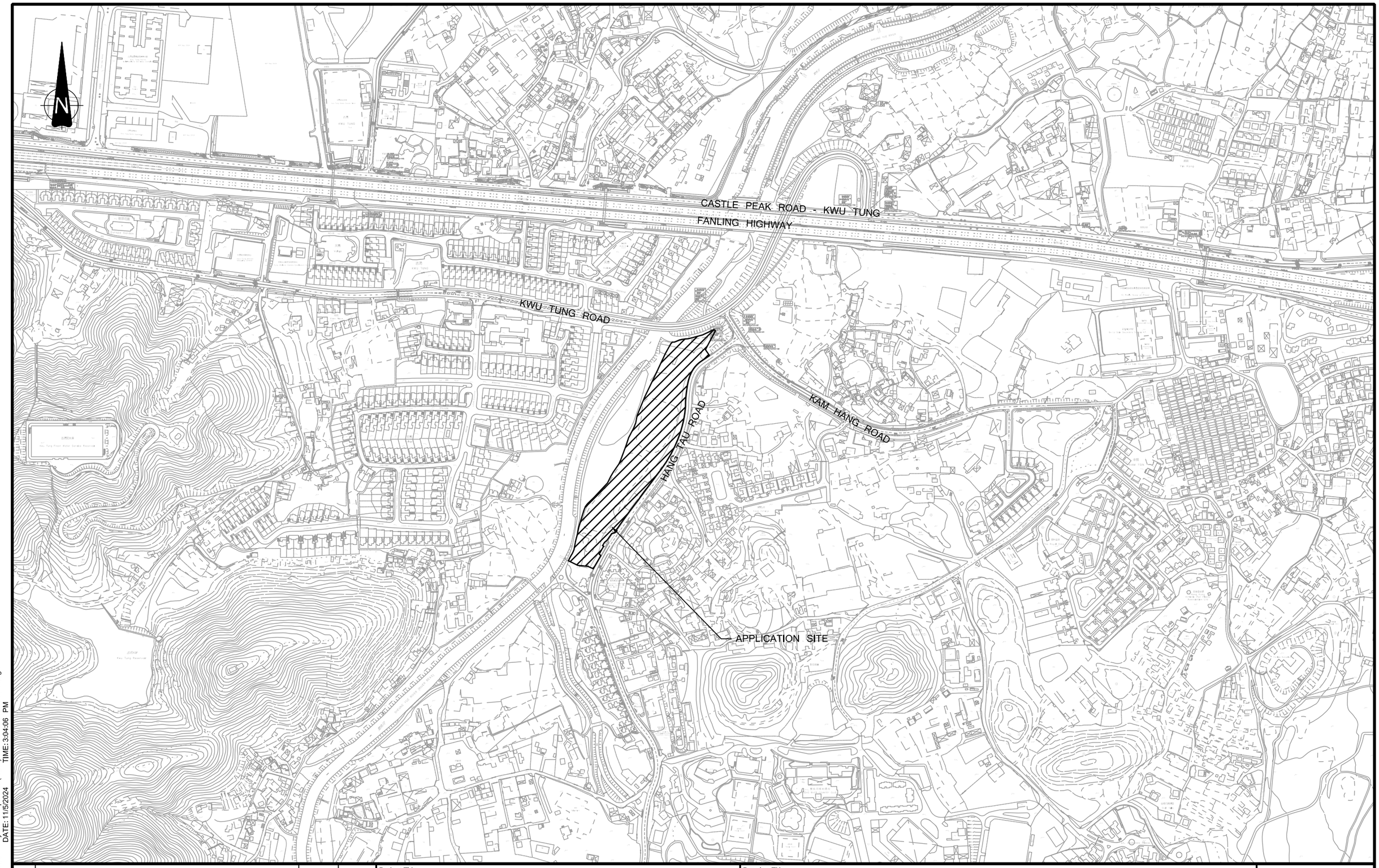
6.2 Conclusion

6.2.1 The TIA has demonstrated that the traffic generation by the Proposed Development, as well as the cumulative traffic impact by other potential residential development in Kwu Tung South area, can all be absorbed by the external road network with the proposed and committed junction improvement schemes.

6.2.2 The arrangements of vehicular access, as well as provision of internal transport facilities and public transport facilities are also justified for the Proposed Development.

6.2.3 Therefore, it can be concluded that the Proposed Development is acceptable in traffic engineering terms.

DRAWINGS



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Project Title

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Drawing Title

SITE LOCATION

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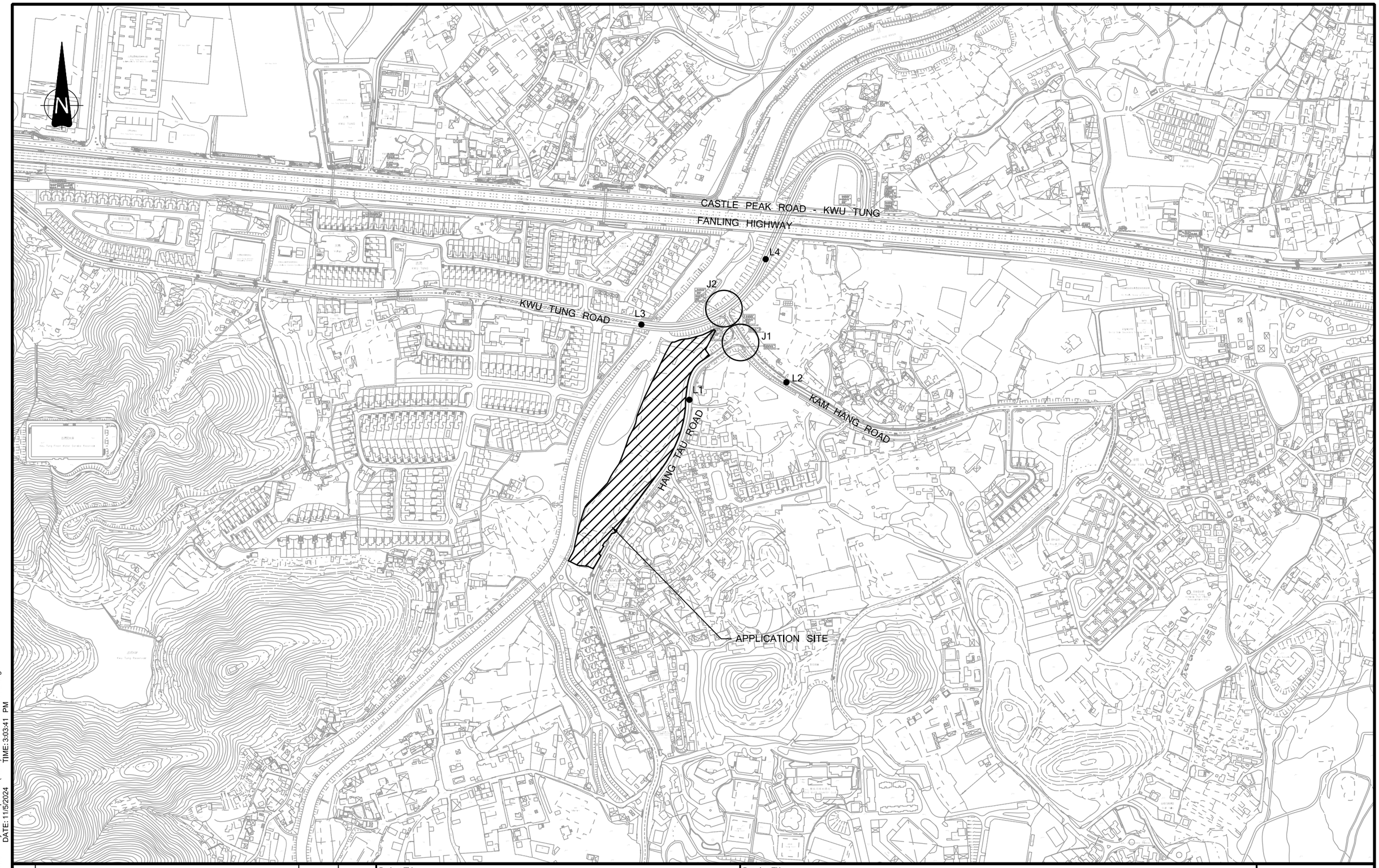

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Project Title

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Drawing Title

EXISTING ROAD NETWORK

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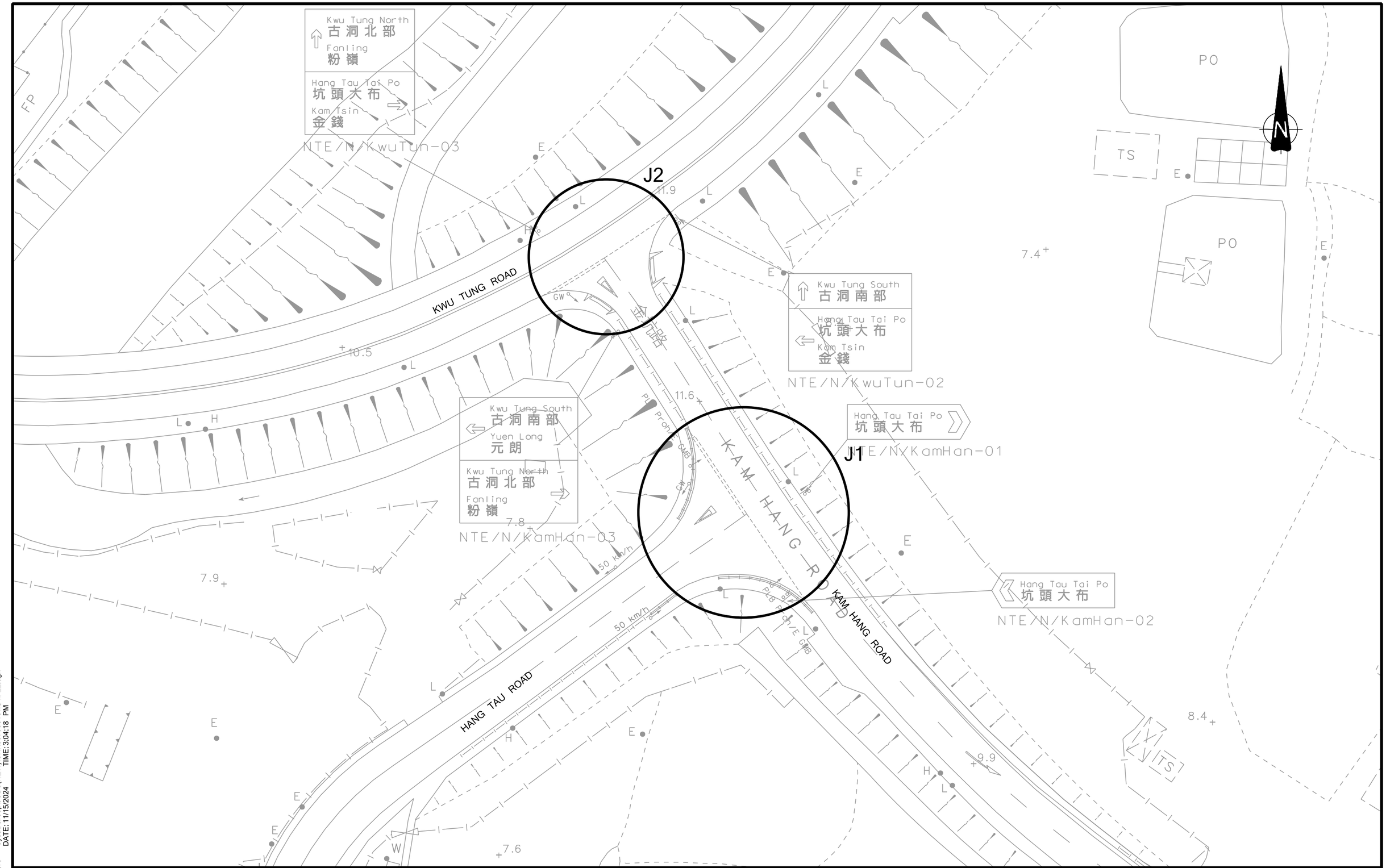

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Project Title

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Drawing Title

EXISTING JUNCTION LAYOUT OF HANG TAU ROAD / KAM HANG ROAD (J1) AND KAM HANG ROAD / KWU TUNG ROAD (J2)

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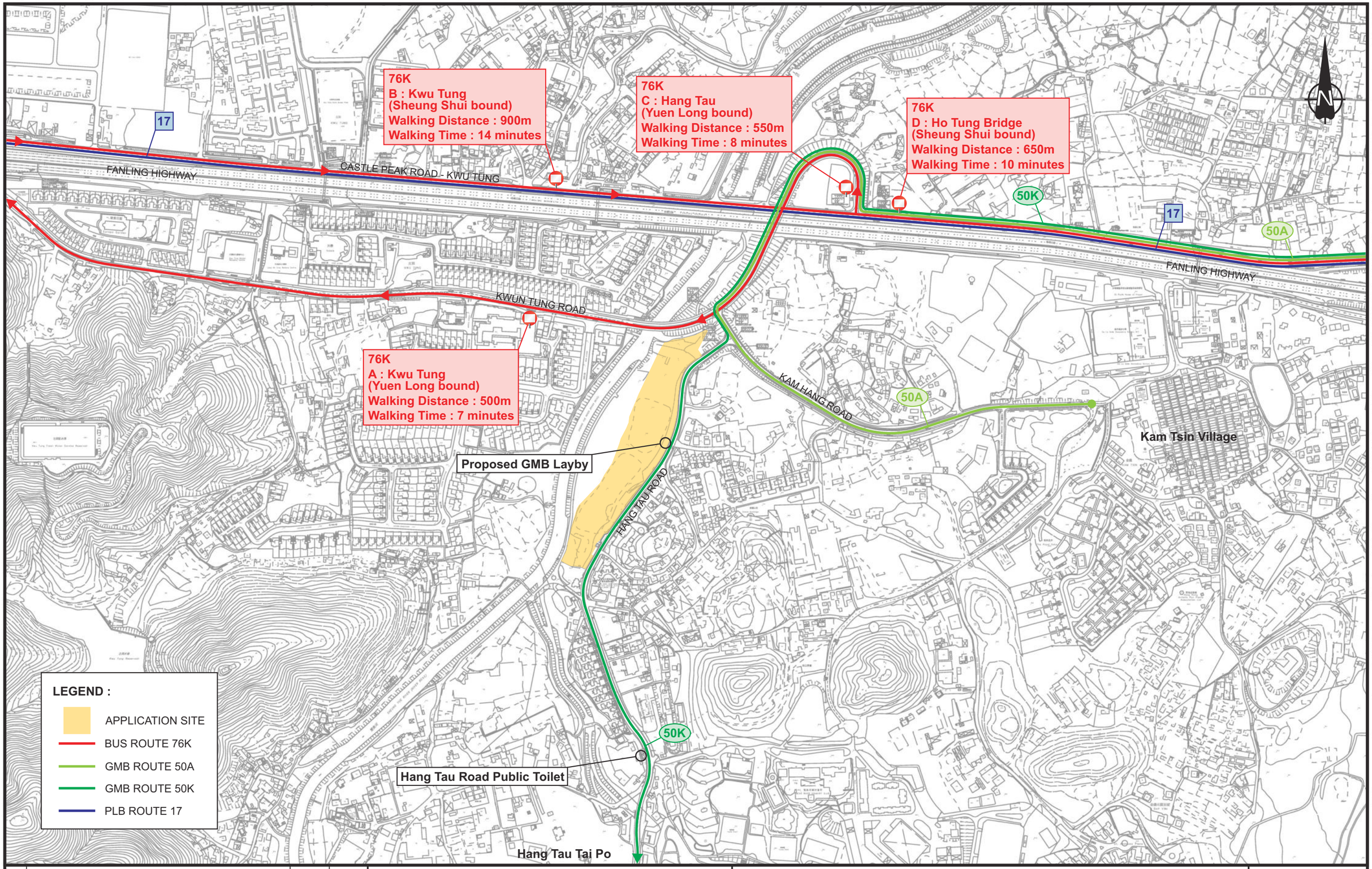

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Project Title
SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title
CURRENT PROVISION OF PUBLIC TRANSPORT SERVICES

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	JUN 2025	2.3	A

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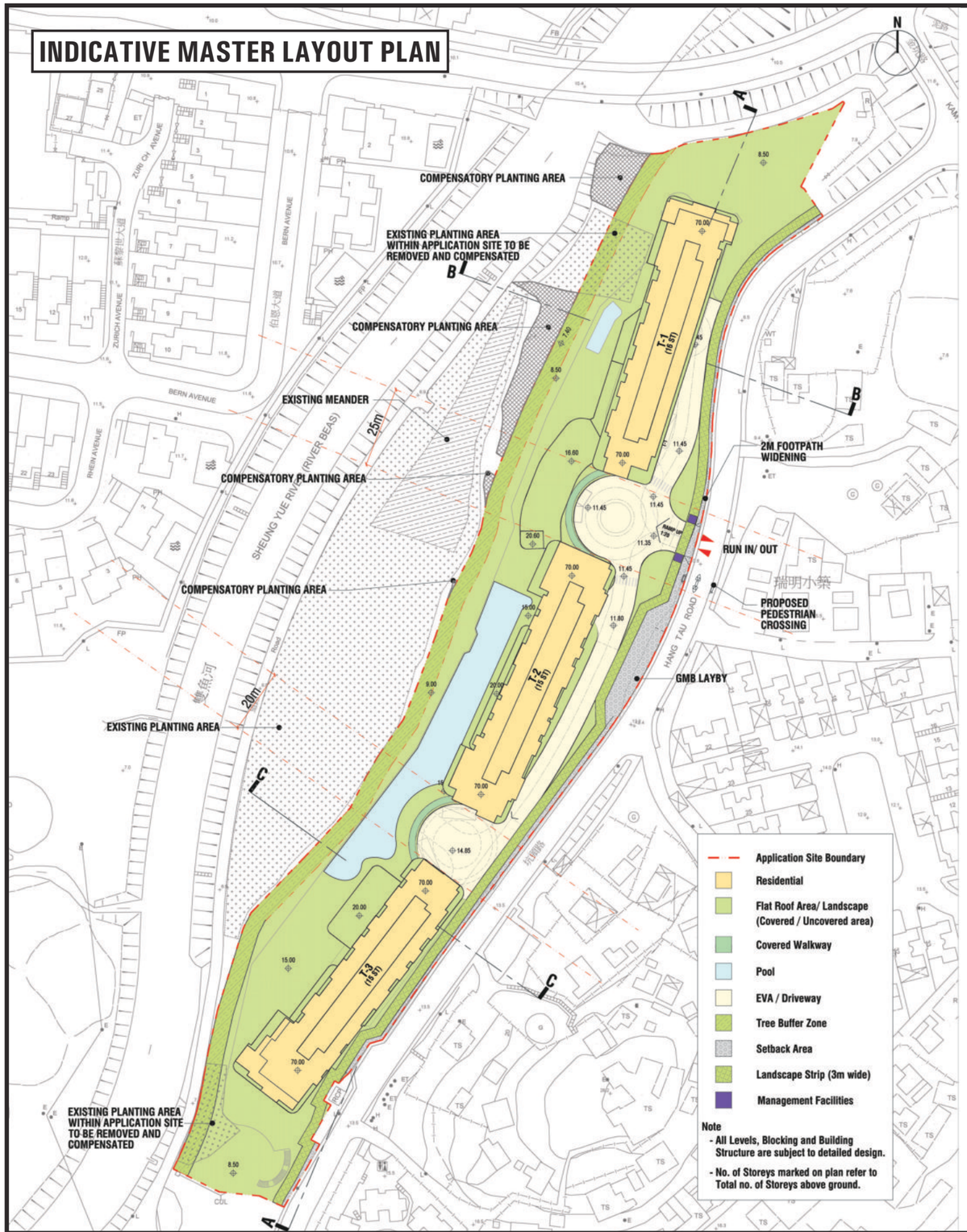

INDICATIVE CARPARK PLAN

Rev.	Description	Checked	Date
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Project Title

SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title

MASTER LAYOUT PLAN

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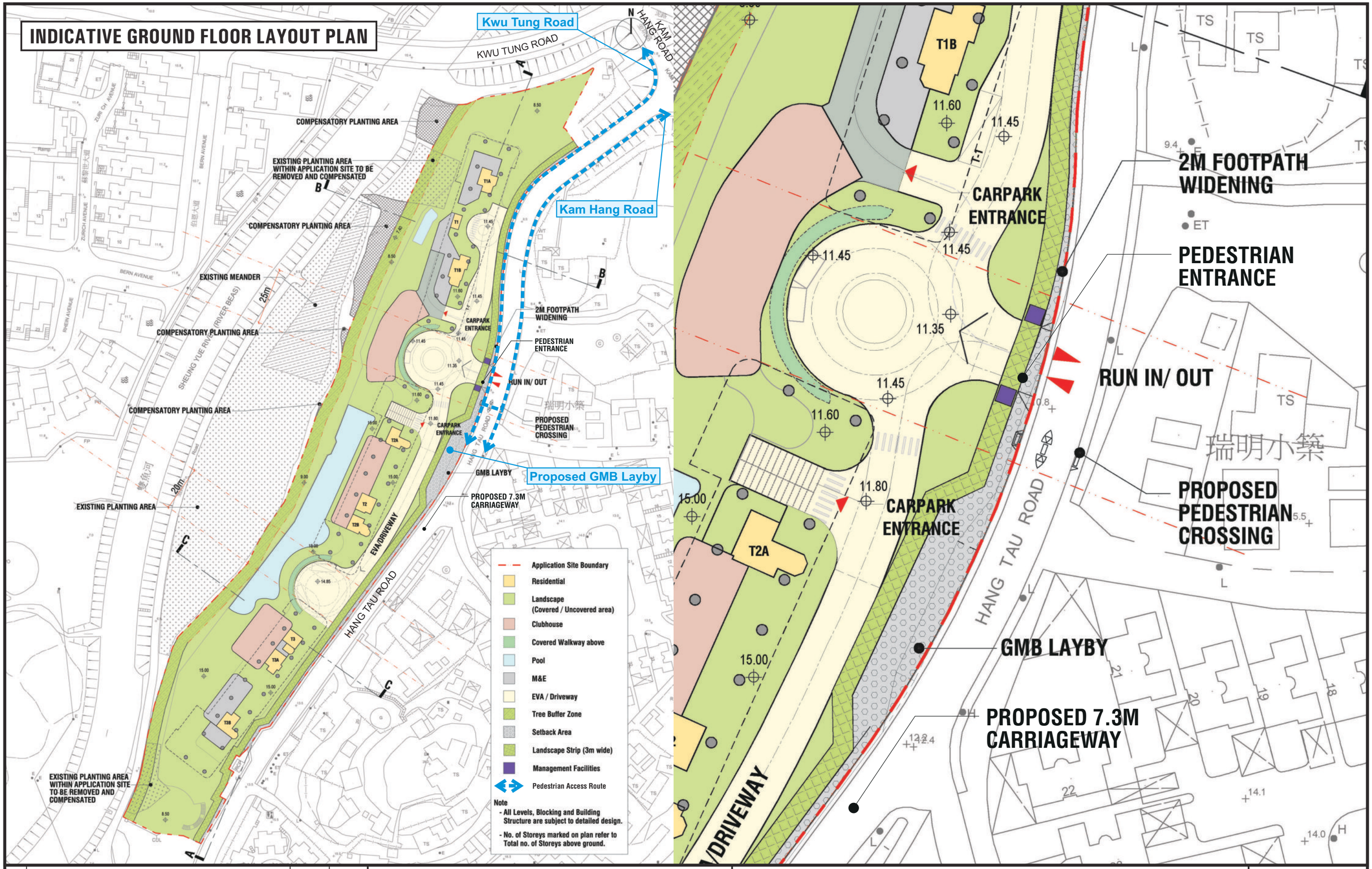

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Project Title
SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title
PROPOSED ROAD IMPROVEMENT WORKS AT HANG TAU ROAD

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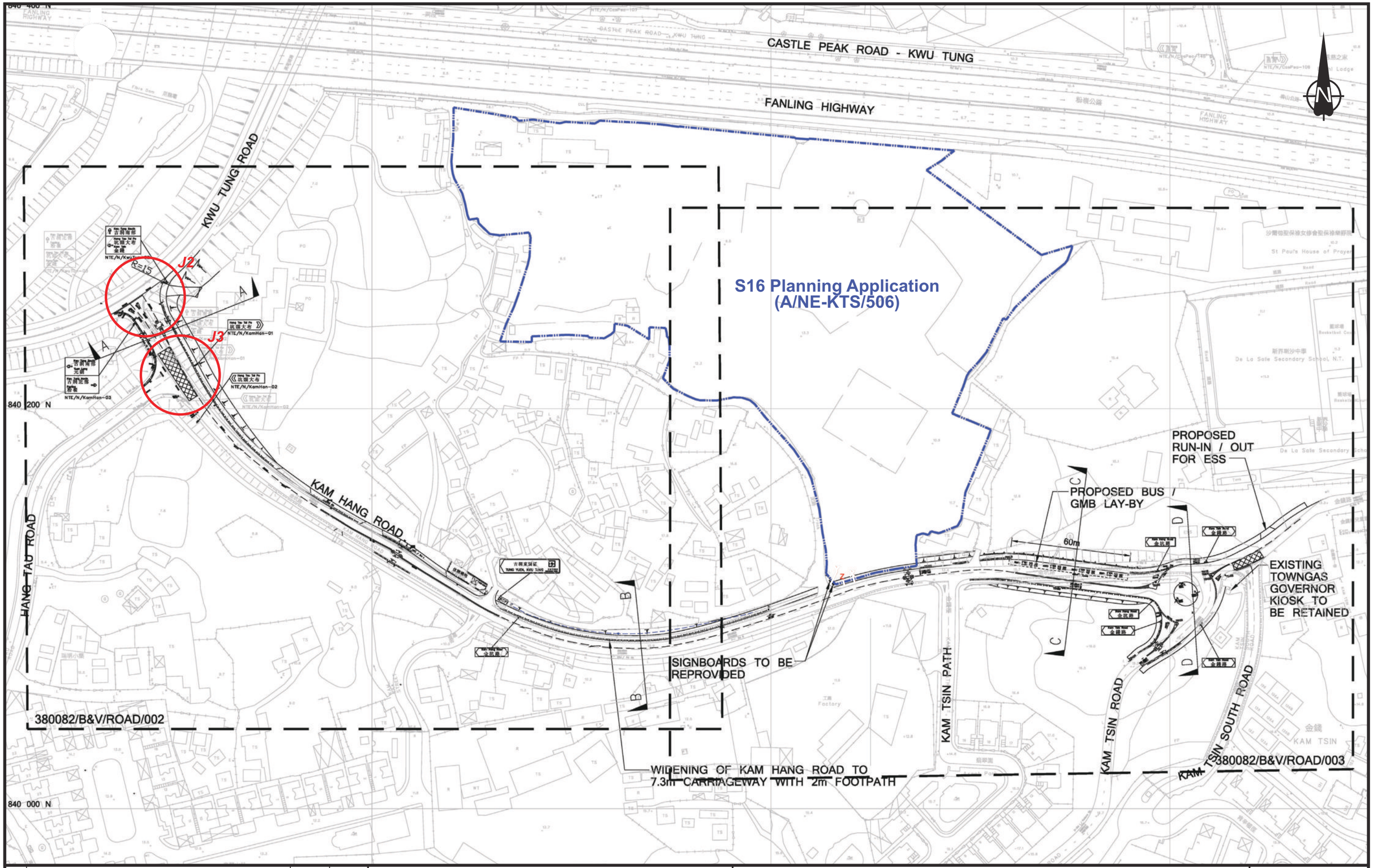

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Project Title
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Drawing Title
PROPOSED ROAD IMPROVEMENT WORKS BY OTHERS AT KAM HANG ROAD (A/NE-KTS/506)

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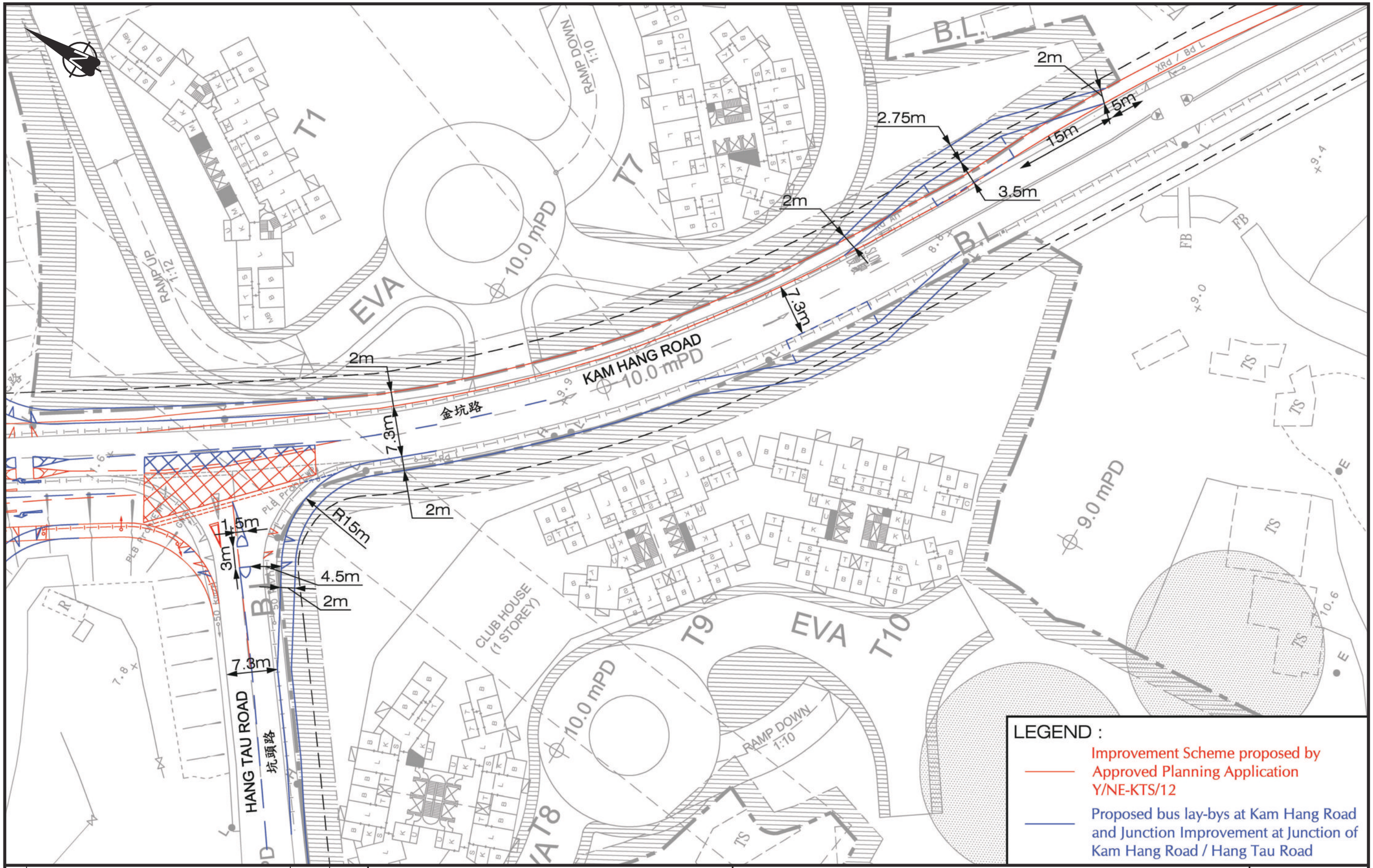

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Drawing Title
PROPOSED ROAD IMPROVEMENT WORKS BY OTHERS AT KAM HANG ROAD (Y/NE-KTS/14)

Designed	Checked	Scale	Date	Drawing No.	Rev.
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SYSTRA MVA

CHK50793310/TIA/F42-A.CDR/LLH/25JUL25

Original Size : A3

Hang Tau Road Public Toilet

PROPOSED ACCESS FOR SITE (B)

HANG TAU ROAD

POTENTIAL REDEVELOPMENT IN SITE (B)

PROPOSED GMB LAYBY

PROPOSED ACCESS FOR SITE (A)

SETBACK AREA RESERVED FOR FUTURE ROAD WIDENING AT HANG TAU ROAD

ACCESS ROAD A

S12A Planning Application No. Y/NE-KTS/13

LEGEND:

- CDA ZONE BOUNDARY
- SITE (A) BOUNDARY
- SITE (B) BOUNDARY

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

Project Title

SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title

PROPOSED ROAD IMPROVEMENT WORKS BY OTHERS AT HANG TAU ROAD (Y/NE-KTS/13)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	JUN 2025	4.3	-

SYSTRA MVA

CHK50793310/TIA/F43.CDR/LLH/3JUN25

Original Size : A3

Site	Key Future Development Sites
★	Private Residential Development at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and adjoining Government Land, Kwu Tung South (Y/NE-KTS/15)
A	Comprehensive Residential Development with Commercial and Social Welfare Facilities at Lot 2579 in D.D. 92, Kwu Tung South (A/NE-KTS/506)
B	Private Residential Development at Lots 958 RP, 959 RP, 961 RP, 962 to 965, 967, 969, 970 to 976, 977 RP, 978 RP, 986 S.B RP, 992 RP, 998 RP (Part), 999 RP, 1000, 1001, 1002 RP, 1003 RP, 1005 RP, 1006 to 1009, 1011, 1012, 1013 RP and 2272 in D.D. 92 and Adjoining Government Land, Kam Hang Road, Kwu Tung South (Y/NE-KTS/14)
C	Private Residential Development at Lots 959 RP, 998 RP (Part), 999 RP (Part), 1005 RP, 1006 to 1009, 1011, 1012, 1013 RP and 2272 in D.D. 92 and adjoining Government Land, Kam Hang Road, Kwu Tung South (Y/NE-KTS/17)
D	Residential Care Home for the Elderly and Retail at Lot 953RP of D.D. 92 and adjoining Government Land, Kam Hang Road, Kwu Tung South (Y/NE-KTS/16)
E	Comprehensive Residential Development at Various Lots in D.D. 92 and D.D 94 and Adjoining Government Land, Hang Tau Tai Po, Kwu Tung South (Y/NE-KTS/13)
F	Private Residential Houses at No. 106 Hang Tau Road, Kwu Tung South (A/NE-KTS/460)
G	Private Residential Development at Various Lots in D.D. 94 and adjoining Government Land, Hang Tau Tai Po, Kwu Tung South (Y/NE-KTS/466)
H	Private Residential Development at Various Lots in D.D. 94, Hang Tau Tai Po, Kwu Tung South (A/NE-KTS/525)
P1	KTN NDA
P2	Private Residential Development in Yin Kong (Y/KTN/2)

KTN NDA

P1

P2

FANLING HIGHWAY

KWU TUNG ROAD

KAM HANG ROAD

LONG VALLEY

NGAU TEI

LEGEND :

APPLICATION SITE

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

Project Title

SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title

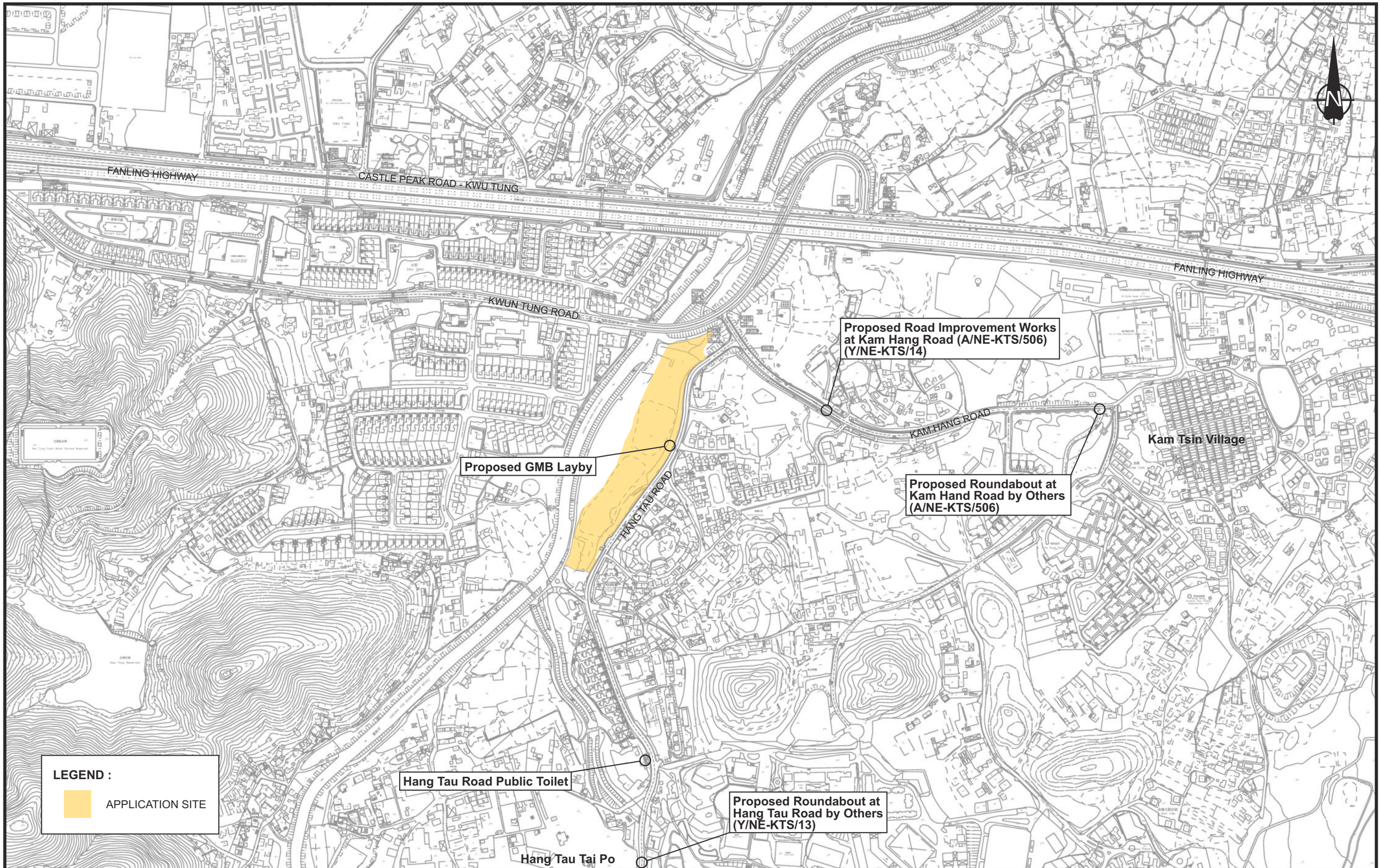
PLANNED / COMMITTED DEVELOPMENTS IN NENT

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	JUN 2025	4.4	-

SYSTRA MVA

CHK50793310/TIA/F44.CDR/LLH/3JUN25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENTS (PRE-SUBMISSION)	LHW	25JUL25

Project Title
SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title
FUTURE ROAD IMPROVEMENT WORKS IN KWU TUNG SOUTH

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	JUN 2025	5.1	A

SYSTRA MVA

CHK50793310/TIA/F51-A.CDR/LLH/25JUL25

Original Size : A3

LEGEND :

- APPLICATION SITE
- PROPOSED BUS STOP
- PROPOSED GMB LAYBY

位置圖

粉嶺北新發展區
落馬洲
古洞北新發展區

馬草壟
梧桐河
河上鄉路
鳳崗
河上鄉
雙魚河
塱原
燕崗
白石凹
青山公路(州頭段)
粉嶺公路
古洞路
TEI AU ROAD
Pipeline
CASTLE PEAK ROAD

05道路
L5道路
L6道路
L7道路
L8道路
D3道路
D2道路
L4道路
L3道路
L2道路
P2道路

Kwu Tung Station

Sheung Shui Station

ROAD L1
ROAD D1
ROAD D2
ROAD L3
CASTLE PEAK ROAD - KWU TUNG
FANLING HIGHWAY
KWU TUNG ROAD
HANG TAU ROAD
KAM HANG ROAD

Tentative Bus Route
(Kam Hang Road - Kwu Tung Station)
Peak Hour Headway : 4-5 Minutes

Tentative GMB Route
(Hang Tau Road - Sheung Shui)
Peak Hour Headway : 10 Minutes

Proposed GMB Layby

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENTS (PRE-SUBMISSION)	LHW	25JUL25

Project Title
SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title
PROPOSED ENHANCEMENT TO PUBLIC TRANSPORT SERVICES

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	JUN 2025	5.2	A

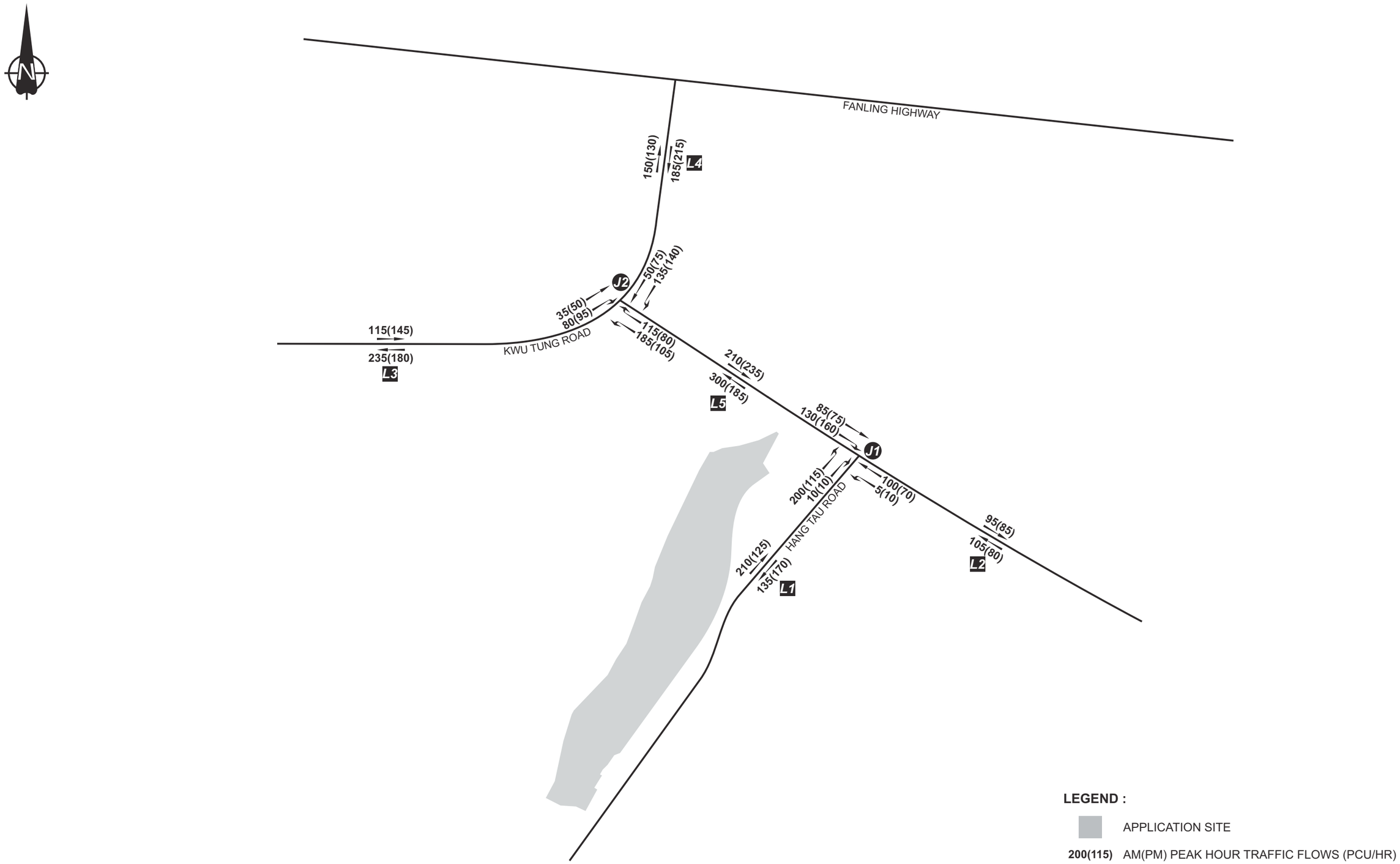
SYSTRA MVA

CHK50793310/TIA/F52-A.CDR/LLH/25JUL25

Original Size : A3

ANNEX A

Traffic Flows



Rev.	Description	Checked	Date
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Project Title
SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

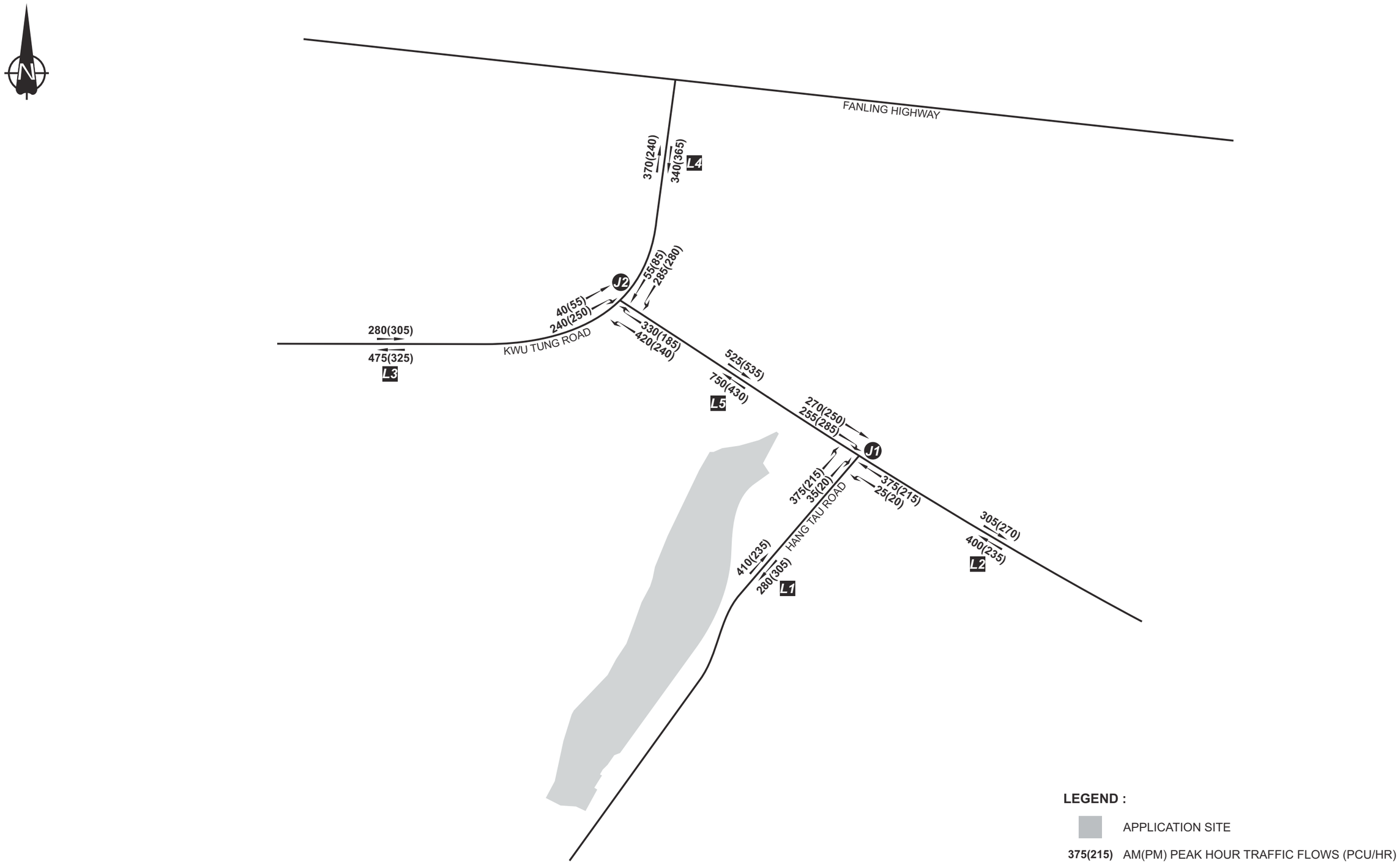
Drawing Title
2024 OBSERVED TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	NOV 2024	ANNEX A1	-

SYSTRA MVA

CHK50793310/TIA/AA1.CDR/LLH/4NOV24

Original Size : A3



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

Project Title
SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

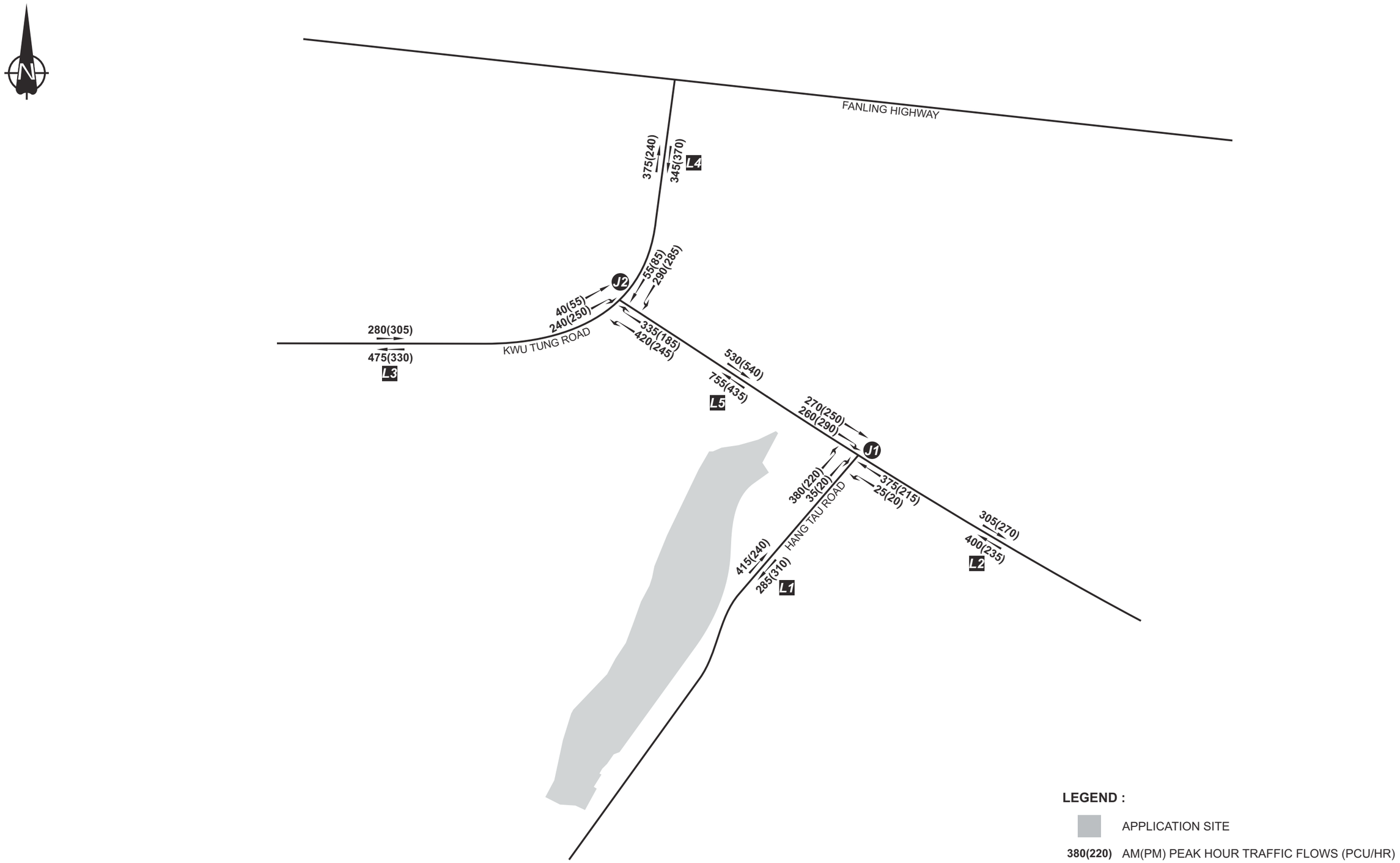
Drawing Title
2035 REFERENCE TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	NOV 2024	**ANNEX A2**	-

SYSTRA MVA

CHK50793310/TIA/AA2.CDR/LLH/4NOV24

Original Size : A3



LEGEND :

APPLICATION SITE

380(220) AM(PM) PEAK HOUR TRAFFIC FLOWS (PCU/HR)

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

Project Title
SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

Drawing Title
2035 DESIGN TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
TSO	LHW	NTS	NOV 2024	**ANNEX A3**	-

SYSTRA MVA

CHK50793310/TIA/AA3.CDR/LLH/4NOV24

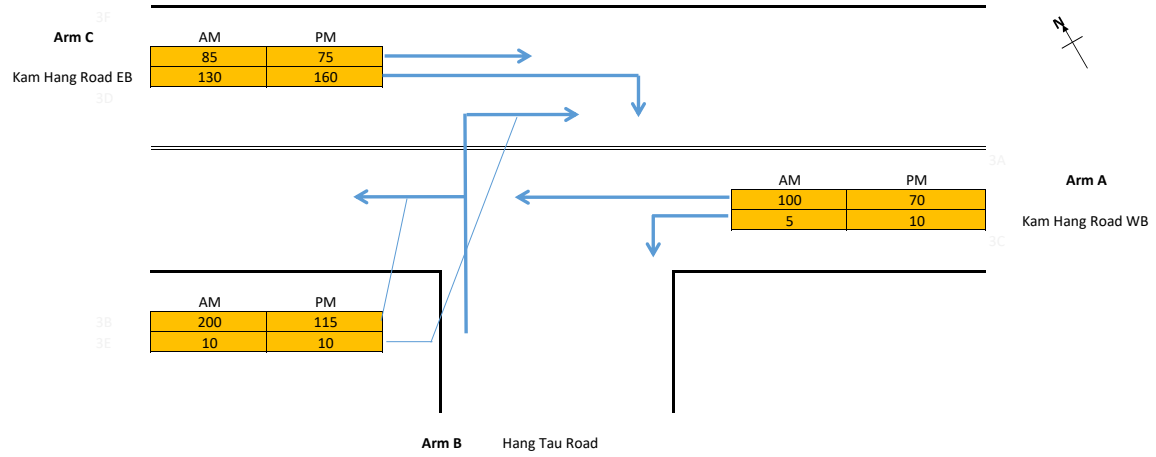
Original Size : A3

ANNEX B

Calculation Details

Simplified Priority Junction Capacity Calculation

Job Title:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories		
Junction:	(J1) Kam Hang Road / Hang Tau Road	Designed by:	TSO
Scheme:	Existing	Checked by:	LHW
Design Year:	2024	Job No.: CHK50793310	Date: Nov-24
Arm A:	Kam Hang Road WB		
Arm B:	Hang Tau Road		
Arm C:	Kam Hang Road EB		



GEOMETRY

Major Road Width (m)	W	6.60	Lane widths (m)	w(b-a)	0.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.30
Blockage of major road right turn	Y/N?	Y		w(c-b)	3.30
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	50	Calculated	D	0.571198
	Vl(b-a)	30	Parameters	E	0.906173
	Vr(b-c)	50		F	0.906173
	Vr(c-b)	50		Y	0.7723

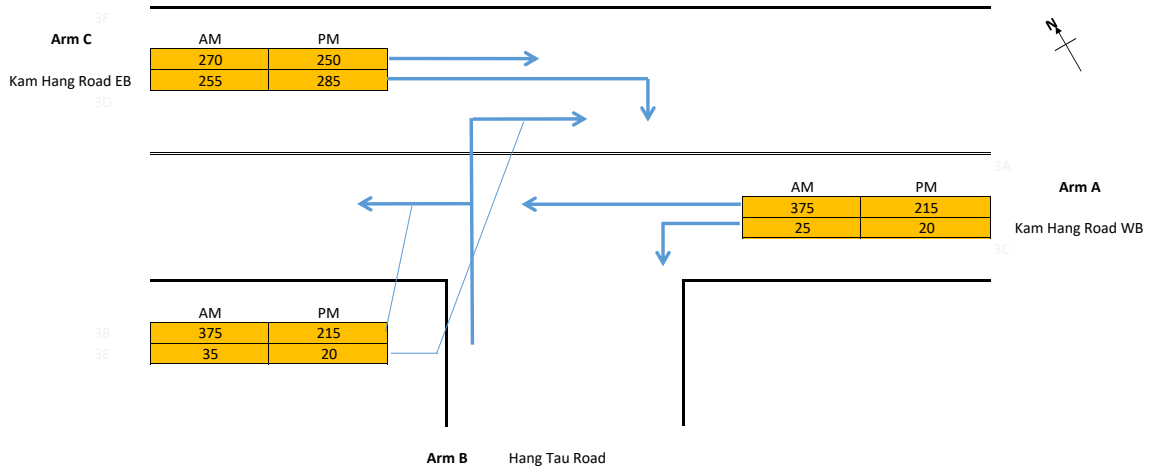
ANALYSIS		**AM PEAK**	**PM PEAK**
TRAFFIC FLOWS (pcu/hr)	q(c-a)	85	75
	q(c-b)	130	160
	q(a-b)	5	10
	q(a-c)	100	70
	q(b-a)	10	10
	q(b-c)	200	115
	f	0.95	0.92
CAPACITIES (pcu/hr)	Q(b-ac)	615.70329	599.9528
	Q(c-a)	1439.0843	1360.117
	Q(c-b)	648.35088	654.7194
RFC's	c-a	0.06	0.06
	c-b	0.20	0.24
	b-ac	0.34	0.21
RFC		**0.34**	**0.24**

Where Vl and Vr are visibility distances to the left or right of the respective streams
D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))
E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))
F = (1+0.094(wc-b)-3.65))(1+0.0009(Vr(c-b)-120))
Y = 1-0.0345W
f = proportion of minor traffic turning left
Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

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

Simplified Priority Junction Capacity Calculation

Job Title:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039		
Junction:	(J1) Kam Hang Road / Hang Tau Road	Designed by:	TSO
Scheme:	Reference (with Improvement scheme under Y/NE-KTS/12)	Checked by:	LHW
Design Year:	2035 Job No.: CHK50793310	Date:	Nov-24
Arm A:	Kam Hang Road WB		
Arm B:	Hang Tau Road		
Arm C:	Kam Hang Road EB		



GEOMETRY

Major Road Width (m)	W	10.00	Lane widths (m)	w(b-a)	0.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.30
Blockage of major road right turn	Y/N?	Y		w(c-b)	3.30
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	50	Calculated	D	0.5712
	Vl(b-a)	30	Parameters	E	0.9062
	Vr(b-c)	50		F	0.9062
	Vr(c-b)	50		Y	0.655

ANALYSIS		**AM PEAK**	**PM PEAK**
TRAFFIC FLOWS (pcu/hr)	q(c-a)	270	250
	q(c-b)	255	285
	q(a-b)	25	20
	q(a-c)	375	215
	q(b-a)	35	20
	q(b-c)	375	215
	f	0.91	0.91
CAPACITIES (pcu/hr)	Q(b-ac)	523.137	556.02
	Q(c-a)	1020.29	978.32
	Q(c-b)	588.679	624.33
RFC's	c-a	0.26	0.26
	c-b	0.43	0.46
	b-ac	0.78	0.42
RFC		**0.78**	**0.46**

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

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

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

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

Y = 1-0.0345W

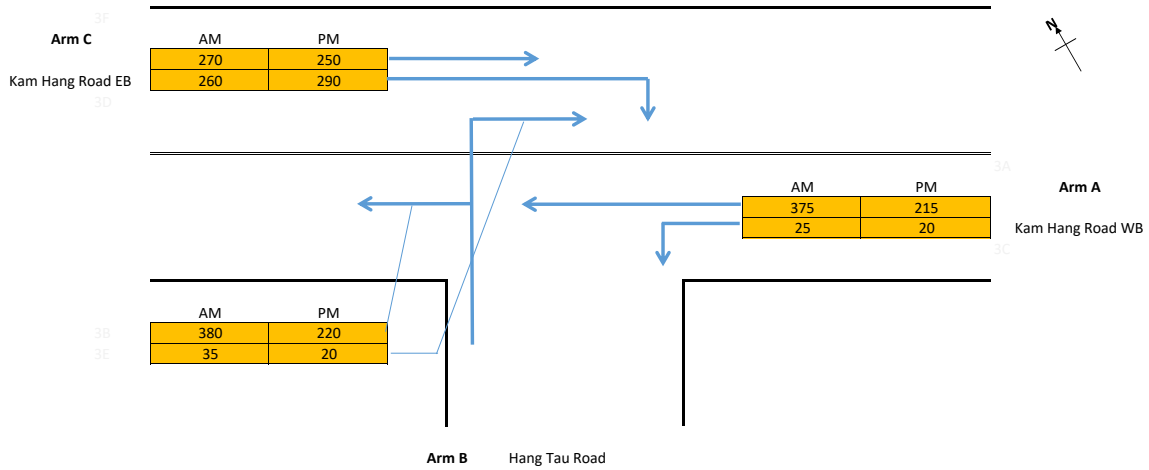
f = proportion of minor traffic turning left

Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

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

Simplified Priority Junction Capacity Calculation

Job Title:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039		
Junction:	(J1) Kam Hang Road / Hang Tau Road	Designed by:	TSO
Scheme:	Design (with Improvement scheme under Y/NE-KTS/12)	Checked by:	LHW
Design Year:	2035 Job No.: CHK50793310	Date:	Nov-24
Arm A:	Kam Hang Road WB		
Arm B:	Hang Tau Road		
Arm C:	Kam Hang Road EB		



GEOMETRY

Major Road Width (m)	W	10.00	Lane widths (m)	w(b-a)	0.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.30
Blockage of major road right turn	Y/N?	Y		w(c-b)	3.30
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	50	Calculated	D	0.5712
	Vl(b-a)	30	Parameters	E	0.9062
	Vr(b-c)	50		F	0.9062
	Vr(c-b)	50		Y	0.655

ANALYSIS		**AM PEAK**	**PM PEAK**
TRAFFIC FLOWS (pcu/hr)	q(c-a)	270	250
	q(c-b)	260	290
	q(a-b)	25	20
	q(a-c)	375	215
	q(b-a)	35	20
	q(b-c)	380	220
	f	0.92	0.92
CAPACITIES (pcu/hr)	Q(b-ac)	523.455	556.94
	Q(c-a)	1005	963.9
	Q(c-b)	588.679	624.33
RFC's	c-a	0.27	0.26
	c-b	0.44	0.46
	b-ac	0.79	0.43
RFC		**0.79**	**0.46**

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

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

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

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

Y = 1-0.0345W

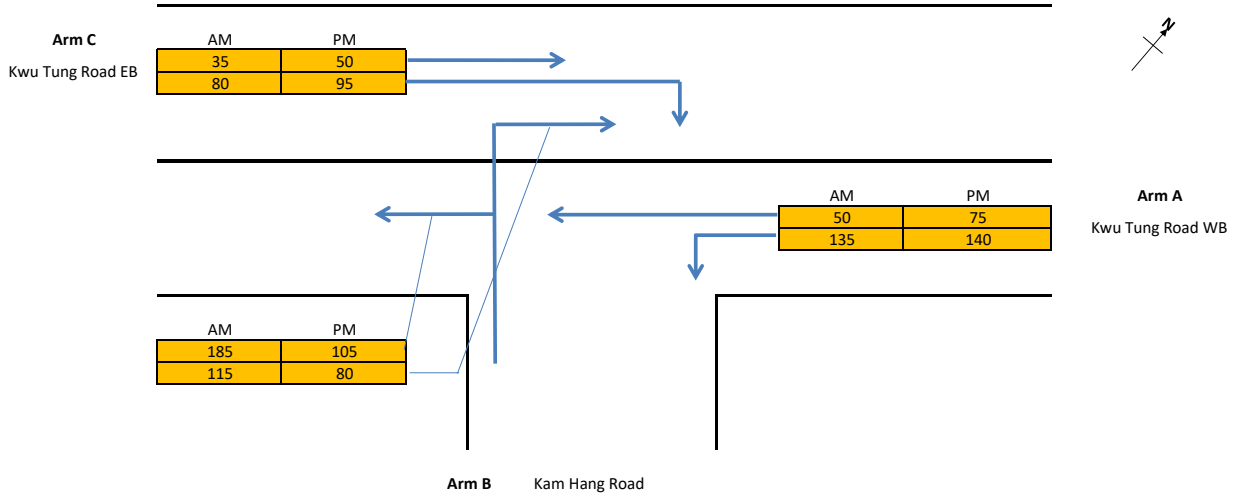
f = proportion of minor traffic turning left

Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

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

Simplified Priority Junction Capacity Calculation

Job Title:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories			
Junction:	(J2) Kwu Tung Road / Kam Hang Road		Designed by:	TSO
Scheme:	Existing		Checked by:	LHW
Design Year:	2024	Job No.: CHK50793310	Date:	Nov-24
Arm A:	Kwu Tung Road WB			
Arm B:	Kam Hang Road			
Arm C:	Kwu Tung Road EB			



GEOMETRY

Major Road Width (m)	W	7.30	Lane widths (m)	w(b-a)	0.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.75
Blockage of major road right turn	Y/N?	Y		w(c-b)	3.60
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	55	Calculated Parameters	D	0.570231
	Vl(b-a)	20		E	0.95035
	Vr(b-c)	55		F	0.950512
	Vr(c-b)	70		Y	0.74815

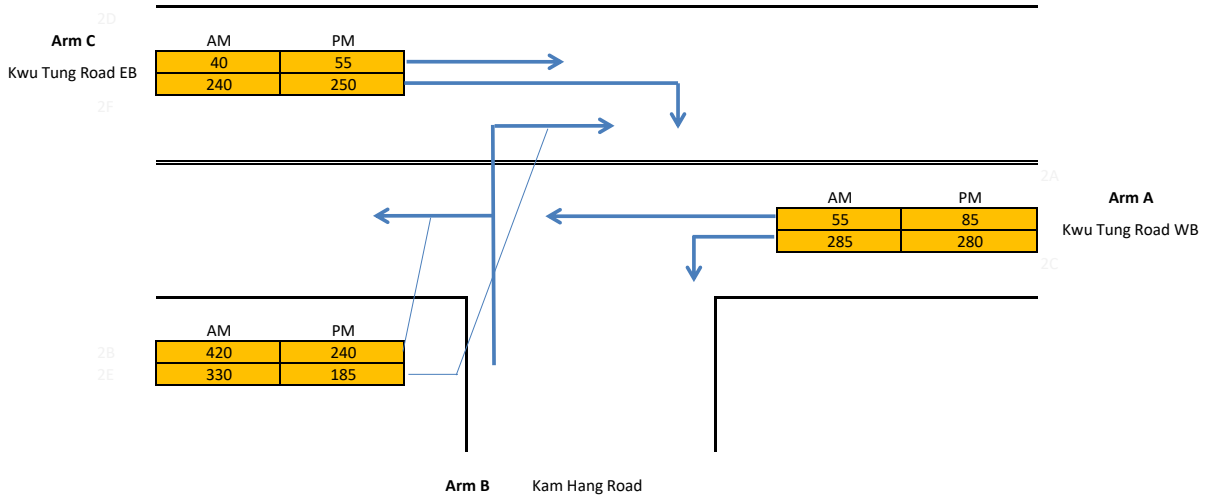
ANALYSIS		**AM PEAK**	**PM PEAK**
TRAFFIC FLOWS (pcu/hr)	q(c-a)	35	50
	q(c-b)	80	95
	q(a-b)	135	140
	q(a-c)	50	75
	q(b-a)	115	80
	q(b-c)	185	105
	f	0.62	0.57
CAPACITIES (pcu/hr)	Q(b-ac)	475.74694	448.2796
	Q(c-a)	1581.8988	1537.922
	Q(c-b)	660.2439	652.4784
RFC's	c-a	0.02	0.03
	c-b	0.12	0.15
	b-ac	0.63	0.41
RFC		**0.63**	**0.41**

Where Vl and Vr are visibility distances to the left or right of the respective streams
D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))
E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))
F = (1+0.094(wc-b)-3.65))(1+0.0009(Vr(c-b)-120))
Y = 1-0.0345W
f = proportion of minor traffic turning left
Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

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

Simplified Priority Junction Capacity Calculation

Job Title:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories		
Junction:	(J2) Kwu Tung Road / Kam Hang Road		Designed by: TSO
Scheme:	Reference (with Improvement scheme under Y/NE-KTS/12)		Checked by: LHW
Design Year:	2035	Job No.: CHK50793310	Date: Nov-24
Arm A:	Kwu Tung Road WB		
Arm B:	Kam Hang Road		
Arm C:	Kwu Tung Road EB		



GEOMETRY

Major Road Width (m)	W	7.30	Lane widths (m)	w(b-a)	3.38
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.38
Blockage of major road right turn	Y/N?	Y		w(c-b)	3.60
Combined stream on minor arm	Y/N?	N			
Visibility Distances (m)	Vr(b-a)	30	Calculated	D	0.8366
	Vl(b-a)	40	Parameters	E	0.9088
	Vr(b-c)	45		F	0.9595
	Vr(c-b)	80		Y	0.7482

ANALYSIS		**AM PEAK**	**PM PEAK**
TRAFFIC FLOWS (pcu/hr)	q(c-a)	40	55
	q(c-b)	240	250
	q(a-b)	285	280
	q(a-c)	55	85
	q(b-a)	330	185
	q(b-c)	420	240
	f	0.56	0.56
CAPACITIES (pcu/hr)	Q(b-a)	402.466	390.68
	Q(b-c)	635.563	628.63
	Q(c-a)	1109.87	1073.5
	Q(c-b)	625.966	619.43
RFC's	c-a	0.04	0.05
	c-b	0.38	0.40
	b-a	0.82	0.47
	b-c	0.66	0.38
RFC		**0.82**	**0.47**

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

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

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

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

Y = 1-0.0345W

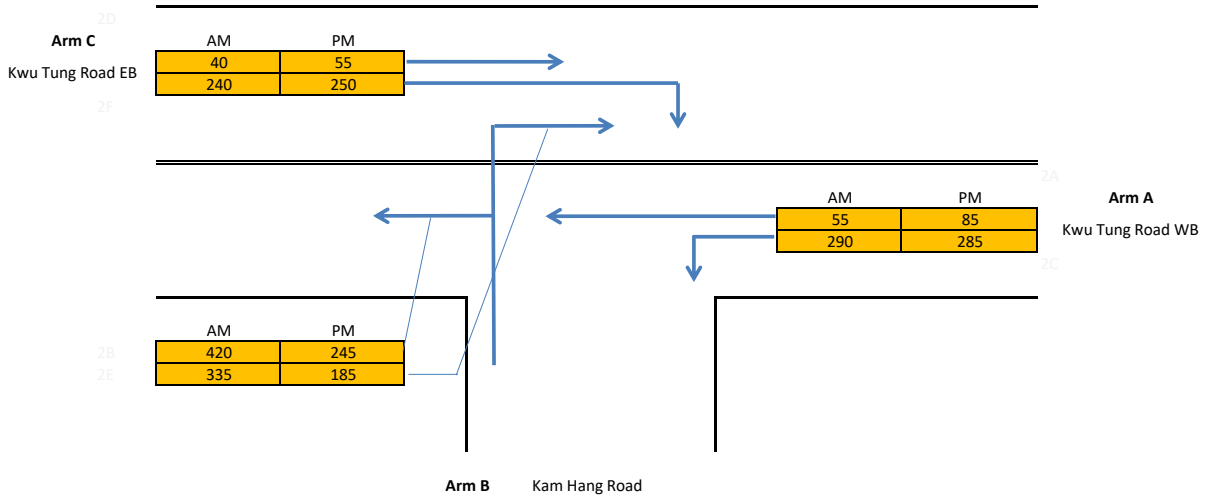
f = proportion of minor traffic turning left

Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

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

Simplified Priority Junction Capacity Calculation

Job Title:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories		
Junction:	(J2) Kwu Tung Road / Kam Hang Road		Designed by: TSO
Scheme:	Design (with Improvement scheme under Y/NE-KTS/12)		Checked by: LHW
Design Year:	2035	Job No.: CHK50793310	Date: Nov-24
Arm A:	Kwu Tung Road WB		
Arm B:	Kam Hang Road		
Arm C:	Kwu Tung Road EB		



GEOMETRY

Major Road Width (m)	W	7.30	Lane widths (m)	w(b-a)	3.38
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.38
Blockage of major road right turn	Y/N?	Y		w(c-b)	3.60
Combined stream on minor arm	Y/N?	N			
Visibility Distances (m)	Vr(b-a)	30	Calculated Parameters	D	0.8366
	Vl(b-a)	40		E	0.9088
	Vr(b-c)	45		F	0.9595
	Vr(c-b)	80		Y	0.7482

ANALYSIS		**AM PEAK**	**PM PEAK**
TRAFFIC FLOWS (pcu/hr)	q(c-a)	40	55
	q(c-b)	240	250
	q(a-b)	290	285
	q(a-c)	55	85
	q(b-a)	335	185
	q(b-c)	420	245
	f	0.56	0.57
CAPACITIES (pcu/hr)	Q(b-a)	402.015	390.23
	Q(b-c)	635.074	628.14
	Q(c-a)	1108.42	1072
	Q(c-b)	624.66	618.13
RFC's	c-a	0.04	0.05
	c-b	0.38	0.40
	b-a	0.83	0.47
	b-c	0.66	0.39
RFC		**0.83**	**0.47**

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

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

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

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

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

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

ANNEX C

Traffic Generation / Attraction Rates from TPDM

Trip Generation Rates on Residential Developments

Development Density / OZP Zoning	Average Flat Size (sq.m)	Upper Limit / Mean / Lower Limit	AM Generation Rate (pcu/hr/flat)	AM Attraction Rate (pcu/hr/flat)	PM Generation Rate (pcu/hr/flat)	PM Attraction Rate (pcu/hr/flat)
Subsidised Housing: Public Rental	30	Upper Limit	0.0413	0.0406	0.0242	0.0262
		Mean	0.0242	0.0226	0.0177	0.0201
		Lower Limit	0.0071	0.0046	0.0112	0.0140
Subsidised Housing: Public Rental	40	Upper Limit	0.0539	0.0439	0.0278	0.0339
		Mean	0.0432	0.0326	0.0237	0.0301
		Lower Limit	0.0325	0.0213	0.0196	0.0263
Subsidised Housing: HOS / PSPS	50	Upper Limit	0.0761	0.0573	0.035	0.0451
		Mean	0.0622	0.0426	0.0297	0.0401
		Lower Limit	0.0483	0.0279	0.0244	0.0351
Private Housing: High-Density / R(A)	40 (1)	Upper Limit	0.0780	0.0574	0.0347	0.0402
		Mean	0.0575	0.0376	0.0262	0.0336
		Lower Limit	0.0370	0.0177	0.0177	0.0270
Private Housing: High-Density / R(A)	45	Upper Limit	0.0836	0.0608	0.0365	0.0430
		Mean (3)	**0.0623**	**0.0401**	**0.0277**	**0.0361**
		Lower Limit	0.0410	0.0194	0.0189	0.0292
Private Housing: High-Density / R(A)	50 (2)	Upper Limit	0.0891	0.0641	0.0383	0.0458
		Mean	0.0670	0.0426	0.0292	0.0386
		Lower Limit	0.0449	0.0210	0.0201	0.0314
Private Housing: High-Density / R(A)	60	Upper Limit	0.1021	0.0709	0.0415	0.0464
		Mean	0.0718	0.0425	0.0286	0.0370
		Lower Limit	0.0415	0.0141	0.0157	0.0276
Private Housing: High-Density / R(A)	70	Upper Limit	0.1117	0.0729	0.0454	0.0551
		Mean	0.0888	0.0515	0.0356	0.0480
		Lower Limit	0.0659	0.0301	0.0258	0.0409
Private Housing: High-Density / R(A)	80	Upper Limit	0.1379	0.0905	0.0563	0.0689
		Mean	0.1058	0.0605	0.0426	0.0590
		Lower Limit	0.0737	0.0305	0.0289	0.0491

From TPDM

Step 1:
Private Housing R(A) 40sqm = [Public Rental 40sqm + Private Housing R(A) 60sqm]/2

Step 2:
Private Housing R(A) 50sqm = [Public Rental 50sqm + Private Housing R(A) 60sqm]/2

Estimated Trip Rate by Interpolation

Step 3:
Private Housing R(A) 45sqm =[Private Housing R(A) 40sqm + Private Housing R(A) 50sqm]/2

From TPDM

Source: Transport Planning and Design Manual (TPDM) Volume 1 Chapter 3

Supplementary Traffic Surveys

To further elaborate the trip generation rates adopted in the TIA, supplementary traffic surveys have been arranged at the below residential developments with the following criteria:

- Average Flat Size <60sqm
- Car Park Ratio = 4 to 8 units per CP
- Beyond 500m walking distance from rail station

As shown in the findings below, the trip rates adopted for the subject planning application are more conservative than the below residential developments with comparable flat size, car park ratio and public transport accessibility.

Location	Nearest Rail Station	Walking Distance	OZP Zoning	Plot Ratio	No. of Units	No. of Parking	Car Park Ratio	Average Size	AM Generation	AM Attraction	PM Generation	PM Attraction
Hang Tau Road (Application Site)	**Kwu Tung**	**>1km**	**CDA**	**2.0**	**1,062**	**156**	**6.8 units/CP**	**37 sqm**	**0.0623**	**0.0401**	**0.0277**	**0.0361**
Royal Green 御皇庭	Sheung Shui	0.5-1km	R(B)2	5.0	922	126	7.3 units/CP	50 sqm	0.0369	0.0195	0.0184	0.0195
Glorious Peak 顯峯	Sheung Shui	0.5-1km	R(B)2	5.0	218	38	5.7 units/CP	45 sqm	0.0367	0.0046	0.0046	0.0321
8 Royal Green 御景峰	Sheung Shui	0.5-1km	R(B)2	5.0	362	81	4.5 units/CP	60 sqm	0.0387	0.0193	0.0249	0.0359
The Regent 天鑽	Tai Po Market	>1km	R(B)8	3.0	1620	358	4.5 units/CP	60 sqm	0.0512	0.0154	0.0278	0.0358
The Reach 尚悅	Yuen Long	>1km	R(B)	3.5	2580	457	5.6 units/CP	50 sqm	0.0391	0.0143	0.0240	0.0275
Park Signature 溱柏	Long Ping	>1km	R(A)1	5.0	1620	329	4.9 units/CP	60 sqm	0.0586	0.0179	0.0253	0.0340
The Bloomsway – The Laguna 滿名山 滿庭	Tuen Mun	>3km	R(B)1	1.3	936	235	4.0 units/CP	60 sqm	0.0609	0.0299	0.0288	0.0374

ANNEX D

Technical Note on Traffic Forecast for EA

SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

ANNEX D
TECHNICAL NOTE ON TRAFFIC FORECASTS FOR EA PURPOSE

1. This technical note is prepared for summarizing the approach and results of the traffic forecasts in support of the environmental assessment for the Proposed Development in Kwu Tung South. The Proposed Development comprises a total of 1,062 residential units.

2. The completion year of the Proposed Development is Year 2032. For environmental assessment, a set of long-term traffic forecast in Year 2047 is derived, which is 15 years after completion. The road links covered in the environment assessment are shown in **Drawing 1**.

3. Due to the long-term design year of 2047, an intermediate medium-term forecast year of 2035 (i.e. the same design year as in the Traffic Impact Assessment (TIA) report for the captioned planning application) has been identified for further projection of traffic forecast by the application of annual growth rates. The adjacent planned developments being considered and the traffic flows in Year 2035 are shown in **Table 1** and **Table 2** respectively.

Table 1 Planned Developments in the Vicinity of the Subject Site

Ref.	Location	Planned Use	Design Parameter	Reference
Application Site	Hang Tau Road	Private Residential (Medium Density)	1,062 units	
Committed Private Developments in Kwu Tung South				
A	Kam Hang Road	Private Residential (Medium Density)	2,589 units	Planning Application No. A/NE-KTS/506
B	Kam Hang Road / Hang Tau Road	Private Residential (Medium Density)	971 units	Planning Application No. Y/NE-KTS/14
C	Kam Hang Road / Hang Tau Road	Private Residential (Medium Density)	360 units	Planning Application No. Y/NE-KTS/17
D	Kam Hang Road	Residential Care Home for Elderly	150 beds	Planning Application No. Y/NE-KTS/16
E	Hang Tau Tai Po	Private Residential (Medium Density)	320 units	Planning Application No. Y/NE-KTS/13
F	106 Hang Tau Road	Private Residential (Low Density)	2 houses	Planning Application No. A/NE-KTS/528
G	Various Lots in D.D. 94, Hang Tau Tai Po	Private Residential (Low Density)	19 houses	Planning Application No. A/NE-KTS/466
H	Various Lots in D.D. 94, Hang Tau Tai Po	Private Residential (Low Density)	42 houses	Planning Application No. A/NE-KTS/525
Planned Developments in Kwu Tung North				
P1	KTN NDA	Mixed Use	49,900 units	Planning Application No. A/KTN/93
P2	Yin Kong	Private Residential (Medium Density)	527 units	Planning Application No. Y/ KTN/2

Table 2 Traffic Flows in Design Year 2035

Index	Road Name	Direction	AM Peak Traffic Flow (veh/hr)	PM Peak Traffic Flow (veh/hr)	Speed Limit (km/h)
19a	Kwu Tung Road	EB	202	195	50
19b	Kwu Tung Road	WB	340	236	50
20a	Kam Hang Road	EB	311	313	50
20b	Kam Hang Road	WB	461	277	50
21a	Kam Hang Road	EB	193	158	50
21b	Kam Hang Road	WB	230	156	50
25a	Hang Tau Road	NB	255	145	50
25b	Hang Tau Road	SB	147	188	50

4. According to the "Improvement of Tai Tau Leng Roundabout and Fanling Highway (Kwu Tung Section) – Design and Construction" (Agreement No. CE20/2019(HY)) commissioned by CEDD , the existing Fanling Highway will be widened from dual 3-lane to dual 4-lane with hard shoulder between San Tin Interchange and Po Shek Wu Interchange. Improvement works to the existing Pak Shek Au Interchange and a new elevated Kwu Tung Interchange will be implemented to serve the future Kwu Tung North (KTN) NDA.

5. With reference to the latest gazette of road network and the development parameters in Kwu Tung North New Development Area (KTN NDA), the proposed modification to Kwu Tung Road across Fanling Highway will have minimal impact to the long-term traffic forecast, given that the configuration of single 2-lane carriageway will be maintained as current situation. The traffic forecast in Kwu Tung South is also anticipated to be more conservative with reference to the assumptions in the Traffic Impact Assessment (TIA) report under the current S16 planning application.

6. Therefore, the traffic forecast in Year 2047 for Fanling Highway, Castle Peak Road – Kwu Tung Section and the new roads proposed in the future Kwu Tung North NDA would be estimated with reference to the Year 2047 traffic flows in the Environment Impact Assessment (EIA) report under the Approved S16 Planning Application (No. A/KTN/93).

7. For other local roads mentioned in **Table 2**, traffic flows for Year 2047 would be derived from the expected growth of traffic in the area based on the historical growth trend in Annual Traffic Census (ATC). The traffic counts at key road links in the vicinity of the Subject Site between 2013 and 2022 are summarised in **Table 3** below.

Table 3 ATC Counting Station Records

ATC Station No.	Road Name	Average Annual Daily Traffic (A.A.D.T)										Growth Rate (p.a.)(1)
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2022/2013
6602	Castle Peak Road (Kwu Tung)	10,670	11,120	10,560	10,690	11,540	10,800	10,660	11,000	11,000	10,480	+4.1%
6606	Kwu Tung Road	2,980	3,290	3,670	4,070	4,450	4,630	4,610	4,050	4,290	4,280	-0.2%
Total		**13,650**	**14,410**	**14,230**	**14,760**	**15,990**	**15,430**	**15,270**	**15,050**	**15,290**	**14,760**	**+0.9%**

(1) The best-fitted growth is estimated by an exponential trend line (i.e. $y = b * m^x$) by regression analysis.

8. As indicated in **Table 3**, the average growth between 2013 and 2022 is represented by a rate of +1.0% per annum which has been adopted for the long-term traffic forecast from 2035 to 2047 for the local roads in Kwu Tung South.

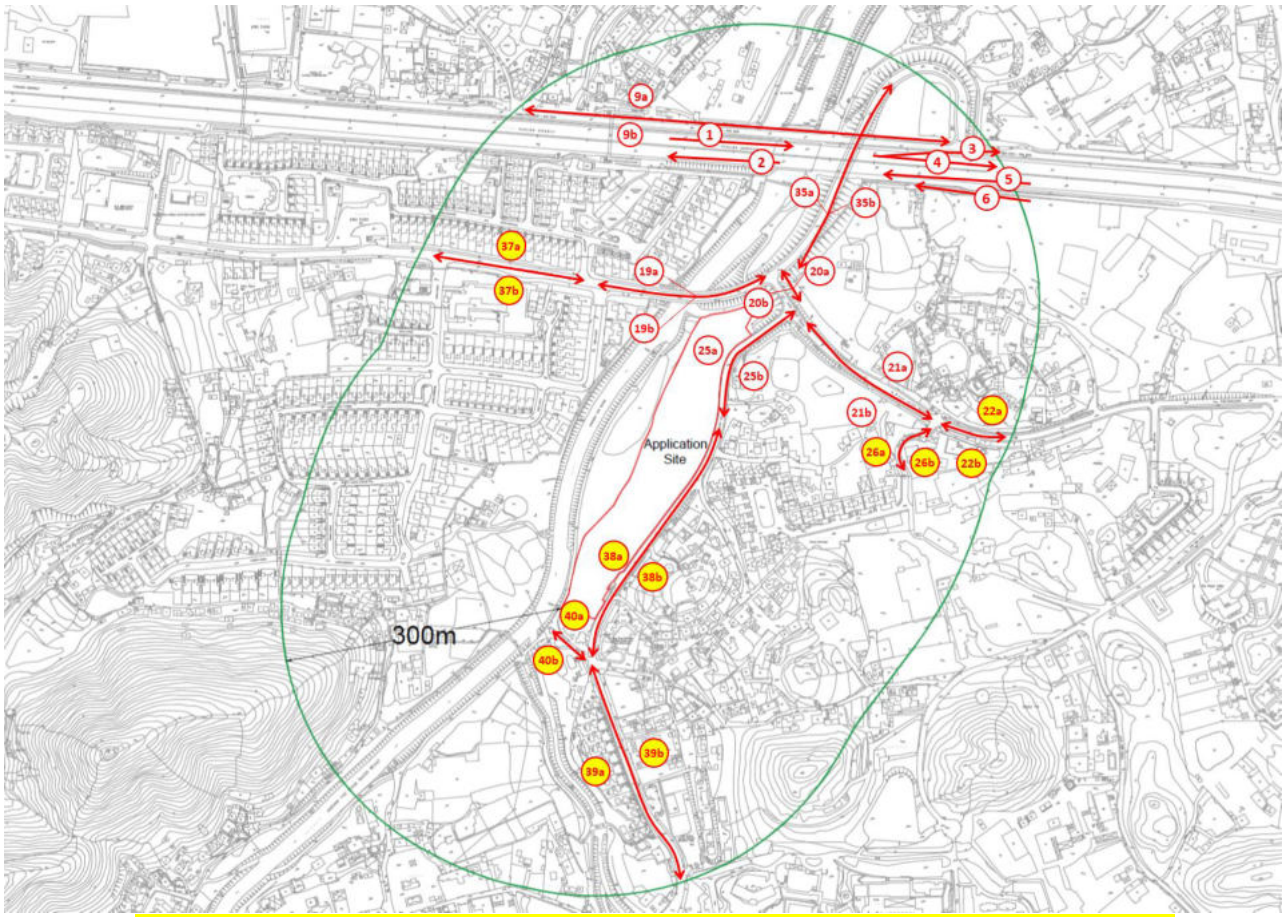
9. The estimated traffic flows for Year 2047 are tabulated in **Table 4** below. The flows have been converted to units in veh/hr for environmental assessment purposes.

Table 4 Estimated Traffic Flows in Design Year 2047

Index	Road	Road Type & Direction	AM Peak Traffic Flow (veh/hr)	AM Peak HV (%)	PM Peak Traffic Flow (veh/hr)	PM Peak HV (%)	Speed Limit (km/h)
1	Fanling Highway	EX EB	4,036	38.1%	5,370	23.7%	100
2	Fanling Highway	EX WB	5,024	31.2%	5,026	30.1%	100
3	Fanling Highway Slip Road	EX EB	86	21.5%	135	11.9%	50
4	Fanling Highway	EX EB	3,950	38.5%	5,235	24.0%	100
5	Fanling Highway	EX WB	4,725	32.1%	4,878	30.4%	100
6	Fanling Highway Slip Road	EX WB	299	17.7%	150	20.3%	50
9a	Castle Peak Road - Kwu Tung	LD EB	258	38.0%	255	34.4%	50
9b	Castle Peak Road - Kwu Tung	LD WB	183	43.8%	238	32.7%	50
37a	Kwu Tung Road	LD NB	200	43.1%	218	29.2%	50
37b	Kwu Tung Road	LD SB	337	27.0%	235	25.0%	50
19a	Kwu Tung Road	LD NB	211	40.9%	229	27.8%	50
19b	Kwu Tung Road	LD SB	355	25.6%	247	23.8%	50
20a	Kam Hang Road	LD EB	323	27.9%	345	23.8%	50
20b	Kam Hang Road	LD WB	479	22.3%	287	26.7%	50
21a	Kam Hang Road	LD EB	199	23.3%	164	27.1%	50
21b	Kam Hang Road	LD WB	235	24.3%	163	28.2%	50
22a	Kam Hang Road	LD EB	182	25.3%	168	30.0%	50
22b	Kam Hang Road	LD WB	234	25.2%	171	23.9%	50
25a	Hang Tau Road	LD NB	269	23.1%	156	21.9%	50
25b	Hang Tau Road	LD SB	155	27.7%	198	19.2%	50
26a	Kam Ka Street	LD NB	11	24.0%	6	12.5%	50
26b	Kam Ka Street	LD SB	15	23.3%	12	8.3%	50
38a	Hang Tau Road	LD NB	218	23.1%	133	21.9%	50
38b	Hang Tau Road	LD SB	123	27.7%	171	19.2%	50
39a	Hang Tau Road	LD NB	216	23.3%	131	22.2%	50
39b	Hang Tau Road	LD SB	122	28.0%	170	19.3%	50
40a	DSD Access Road	RR EB	5	52.8%	5	15.0%	50
40b	DSD Access Road	RR WB	4	87.4%	5	20.0%	50

Note:

- Road Type: EX = Expressway;
- Road Type: LD = Local Distributor;
- Road Type: RR = Rural Road



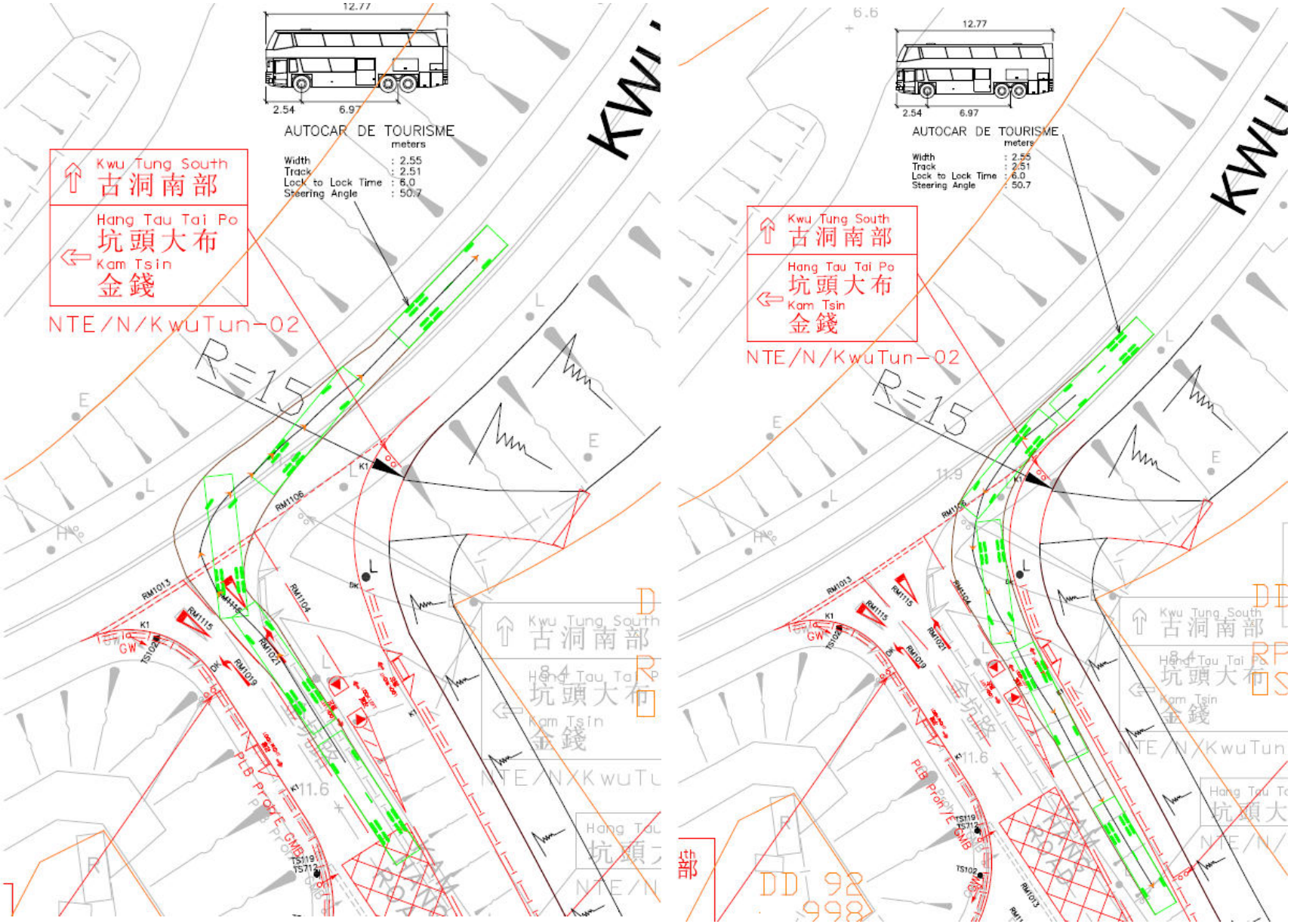
Drawing 1 Key Index Plan of Traffic Forecast for Traffic Noise Impact Assessment

ANNEX E

Swept Path Analysis

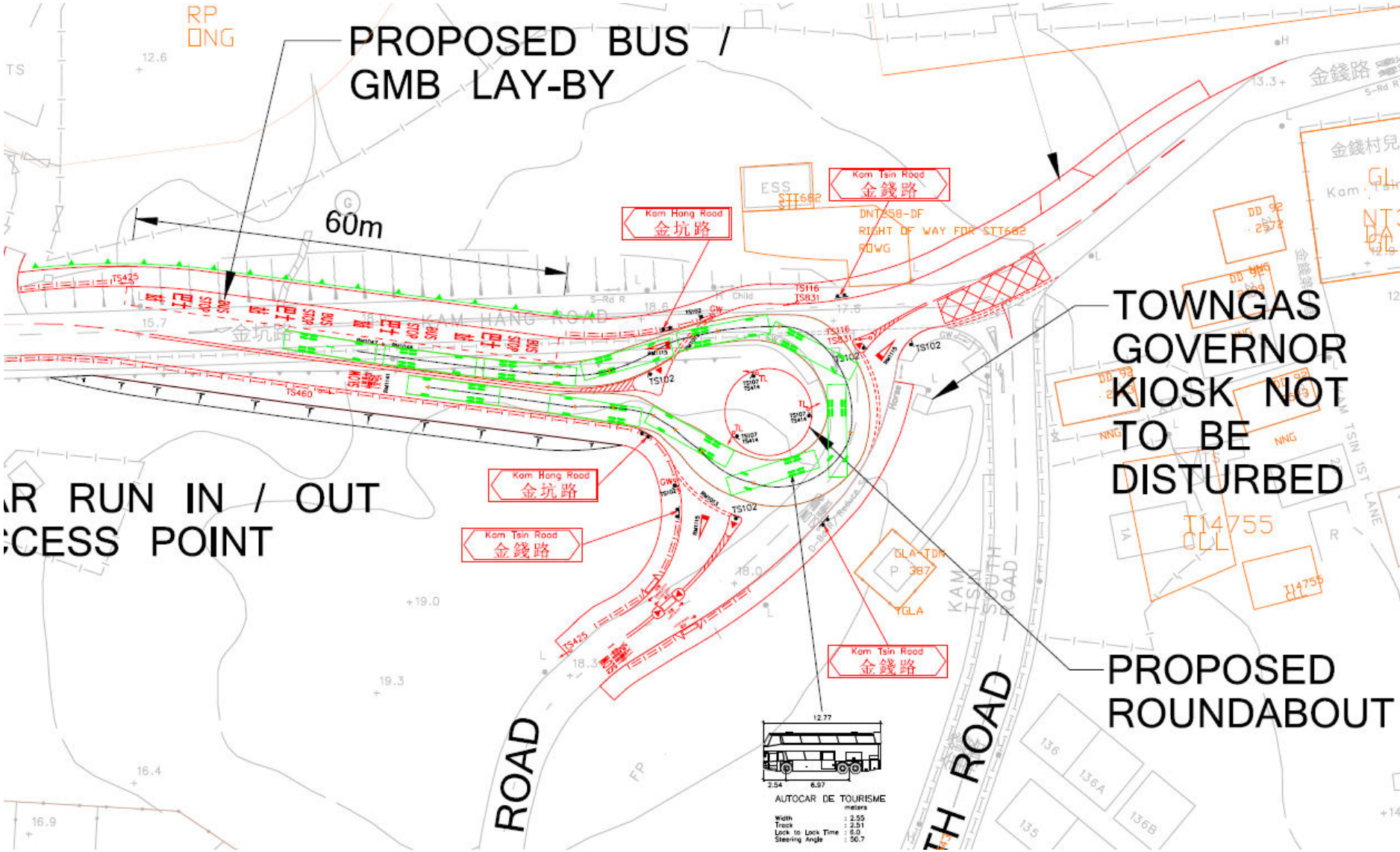
Swept Path Analysis

- 12.8m double decker bus at junction of Kam Hang Road / Kwu Tung Road



Swept Path Analysis

- 12.8m double decker bus at roundabout junction of Kam Hang Road / Kam Tsin Road



Swept Path Analysis

- 8m GMB at roundabout junction south of Hang Tau Road Public Toilet