Attachment 2

Revised Traffic Impact Assessment

Proposed Development at Lot 453 in DD 399, Ting Kau

Traffic Impact Assessment Final Report

14th February 2025

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Issue	Document Ref.	Date	Report Title	Remark
4.	J7316_TIA_FR_R3	14th February 2025	3rd Final Report	Revised per comments from PlanD
3.	J7316_TIA_FR_R2	17th September 2024	2nd Final Report	Revised per comments from Pre-submission
2.	J7316_TIA_FR_R1	20th June 2024	1st Final Report	Issue to Project Team
1.	J7316_TIA_DR_R1	22nd March 2024	1st Draft Report	Issue to Client for Review

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1.0 INTRODUCTION

Background

1.1 The Subject Site is located at Lot 453 in DD 399, Ting Kau, the New Territories. At present, it is occupied by a 2-storey single-family house which is known as *La Casetta* (the "Existing House"). **Figure 1.1** shows the location of the Subject Site.

1.2 The Owner intends to reconstruct the Existing House into a new 3-storey single-family house with a carport (hereinafter "the Proposed Development").

1.3 Against this background, CKM Asia Limited, a traffic and transportation planning consultancy firm, was commissioned to conduct this Traffic Impact Assessment ("TIA") in support of the S16 planning application for the Proposed Development. This report presents the findings and recommendations of the TIA for the Proposed Development.

Structure of Report

1.4 The report is structured as follows:

Chapter One	-	Gives the background of the project;
Chapter Two	-	Describes the existing situation;
Chapter Three	-	Provides details on the Proposed Development and the access arrangement;
Chapter Four	-	Describes the traffic impact analysis; and
Chapter Five	-	Gives the overall conclusion.

2.0 EXISTING SITUATION

The Subject Site

2.1 The Subject Site is located on the hillside of Ting Kau at the eastern end of Ting Yat Road, and to the immediate north of Castle Peak Road – New Ting Kau.

2.2 At present, the Subject Site is occupied by a 2-storey single-family house built at base level of +42.4mPD, which is some 13m higher than the street level of Ting Yat Street at +29.6mPD. The Existing House is only accessible on foot via a series of staircase through a narrow street frontage of approximately 4.5m at the cul-de-sac of Ting Yat Road

2.3 In addition, the Existing House is located behind and above a retaining structure along its frontage at Castle Peak Road – New Ting Kau (Tsuen Wan bound), which is located at around +24.8mPD, i.e. some 17.6m below. Footbridge NF390 and its landing are also situated below and along the site frontage. Hence, vehicular access to/from the Subject Site is not available at present.

2.4 **Photo 2.1** below shows the existing site condition in relation to the abutting road network.

Photo 2.1 – Existing Condition of the Subject Site

The Road Network

2.5 Ting Yat Road is a local road of single 2 carriageway standard. It connects to Castle Peak Road – Ting Kau to the west, and terminates as a cul-de-sac to the east abutting the Subject Site. It only serves several houses, including the Existing House, and the Private Water Works Road owned by the Water Supplies Department ("WSD").

2.6 The section of Castle Peak Road – New Ting Kau fronting the Existing House is a Rural Road classified by Transport Department, and is of dual 2 carriageway 2-lane standard.

2.7 Whereas, the section of Castle Peak Road – Ting Kau to the south of the Existing House is of a single carriageway 2 lane road serving the Ting Kau Village, which connects with Castle Peak Road – New Ting Kau at both ends.

2.8 To the east and to the west, Castle Peak Road – Ting Kau continues as of dual 2 carriageway 2-lane road extending towards Tsuen Wan and Sham Tseng respectively providing regional access.

Existing Traffic Flows

2.9 To quantify the existing traffic flows in the vicinity, manual classified counts were conducted on Wednesday 17th January 2024, during the AM and PM peak periods at the following junctions:

J01 - Castle Peak Road – Ting Kau / Castle Peak Road – New Ting Kau, and
J02 - Castle Peak Road – Ting Kau / Ting Yat Road / Open Car Park

2.10 **Figure 2.1** shows the locations of the surveyed junctions, and **Figure 2.2** shows their existing layouts.

2.11 The traffic counts were classified by vehicle types to enable traffic flows in passenger car units ("pcu") to be calculated. The AM and PM peak hours identified from the surveys are between 0730 and 0830 hours, and between 1730 and 1830 hours respectively.

2.12 Reference is made to the Annual Traffic Census ("ATC") published by Transport Department, and found that the closest ATC station is 6209 Castle Peak Road – Tsuen Wan, Ting Kau & Sham Tseng. The annual average daily traffic ("AADT") information for this ATC station is found in **Table 2.1**.

TABLE 2.1 AADT FOR ATC CORE STATION 6209

Station	6209
Road	Castle Peak Road - Tsuen Wan, Ting Kau & Sham Tseng
From	Tuen Mun Road
To	Sham Tseng
2017	11,520
2018	11,110
2019	11,000
2020	10,770
2021	11,360
2022	*10,070*
Average Annual Growth (2017 to 2021)	-0.4%

2.13 It should be noted that the AADT for 2022 is the lowest in since 2017, of which may have been impacted by the COVID-19 pandemic. Hence, the AADT for 2022 are shown above for **reference only**, and excluded in determining the average annual growth.

2.14 As shown **Table 2.1,** the historical AADT of Castle Peak Road – Tsuen Wan, Ting Kau & Sham Tseng has an average annual growth rate of -0.4%, between 2017 and 2021.

2.15 With reference to the 2021 ATC, traffic flow in January is around 6% lower than the average month, and it is also around 10% lower than the highest monthly average being occurred in December.

2.16 Moreover, the daily traffic flow on a typical Wednesday is around 0.5% lower than the average daily traffic flow, and is around 5% lower than the highest weekday daily average traffic flow in 2021 occurred on a Friday.

2.17 To be conservative, a factor of 1.155 (i.e. (1+10%) x (1+5%) = 1.155) is applied to the surveyed flows, and **Figure 2.3** presents the adjusted existing peak hour traffic flows after considering the seasonal adjustments.

Performance of the Surveyed Junctions

2.18 The performance of the surveyed junctions is calculated based on the existing traffic flows presented in **Figure 2.3**, and the analyses were undertaken using the methods outlined in Volume 2 of Transport Planning and Design Manual ("TPDM") published by Transport Department. **Table 2.2** presents the analysis results and the detailed calculations are found in **Annex A**.

TABLE 2.2 EXISTING JUNCTION PERFORMANCE

Ref.	Junction	Type of Junction	Parameter	AM Peak Hour	PM Peak Hour
J01	Castle Peak Road – Ting Kau / Castle Peak Road – New Ting Kau	Roundabout	RFC	0.197	0.264
J02	Castle Peak Road – Ting Kau / Ting Yat Road / Open Car Park	Priority	RFC	0.03	0.04

Note: RFC – Ratio of Flow to Capacity

2.19 The above results indicate the surveyed junctions operate with capacities.

Existing Road-Based Public Transport Services

2.20 The Existing House is accessible to road-based public transport services with the nearest bus stops located less than 100m away. **Table 2.3** summarises details of the available services, and **Figure 2.4** shows their locations.

TABLE 2.3 EXISTING ROAD-BASED PUBLIC TRANSPORT SERVICES NEAR THE SUBJECT SITE

Route	Routings	Frequency	Remark
KMB 48P	*Fo Tan Chun Estate → Tsing Lun Tau*	*2 per AM, and 2 per PM*	*(1)*
	Tsing Lun Tau → Fo Tan Chun Estate	*3 per AM and 2 per PM*	*(1)*
KMB 53	Tsuen Wan (Nina Tower) ↔ Yuen Long (YOHO Mall)	25 - 35	
KMB 234B	Tsuen Wan West Station ↔ Sham Tseng (Sea Crest Villa)	12 - 30	
KMB 234C	*Sham Tseng → Kwun Tong (Tsui Ping North Estate)*	*4 per AM* *2 per AM*	*(1)* *(2)*
	Kwun Tong (Tsui Ping North Estate) → Sham Tseng	*2 per PM*	*(1)*
KMB 234D	*Tsing Lun Tau → Kwun Tong (Tsui Ping North Estate)*	*3 per AM*	*(1)*
	Kwun Tong (Tsui Ping North Estate) → Tsing Lun Tau	*2 per PM*	*(1)*
KMB N252	*Mei Foo → Tuen Mun (Sam Shing Estate)*	*2 per night*	*(3)*

Note: KMB – Kowloon Motor Bus GMB – Green Minibus RMB – Red Minibus

- Service information as of 22nd March, 2024.
- *Limited services during specific hours only.*

(1) Monday to Friday only, except public holidays.
(2) Saturday only, except public holidays.
(3) Overnight service.

TABLE 2.3 EXISTING ROAD-BASED PUBLIC TRANSPORT SERVICES NEAR THE SUBJECT SITE (CONTINUED)

Route	Routings	Frequency	Remark
LWB A38	Tsuen Wan (Allway Gardens) ↔ Airport	30 - 60	
GMB 96	Tsing Lung Tau ↔ Tsuen Wan (Hoi Pa Street)	6 - 25	
GMB 96C	Bellagio ↔ Tsuen Wan Staiton	15 - 30	
GMB 96M	Tsing Lung Tau ↔ Tsuen Wan Staiton	10 - 25	
RMB AN3	*So Kwun Wat → Tai Wai Station*	*1 per AM, and 1 per PM*	*(1)*
	Tai Wai Station → So Kwun Wat	*1 per PM*	*(1)*
RMB	Yuen Long / Tuen Mun ↔ Jordan Road (Parkes Street)	n/a	
RMB	Mong Kok (Reclamation Street) → Yuen Long / Tuen Mun	n/a	

Note: KMB – Kowloon Motor Bus GMB – Green Minibus RMB – Red Minibus
- Service information as of 22nd March, 2024.
- *Limited services during specific hours only.*

(1) Monday to Friday only, except public holidays.
(2) Saturday only, except public holidays.
(3) Overnight service.

Existing Pedestrian Flow

2.21 Pedestrian counts were conducted at following nearby pedestrian facilities, i.e. footpath and footbridges:

FP01 - Ting Yat Road
FP02 - Castle Peak Road – New Ting Kau (Northern Footpath)
FP03 - Castle Peak Road – Ting Kau (Southern Footpath)
FP04 - Footbridge NF390 across Castle Peak Road – New Ting Kau / Ting Kau
FP05 - Ramp between FP02 and FP04
FP06 - Staircase between FP02 and FP04
FP07 - Ramp between FP03 and FP04
FP08 - Staircase between FP04 and FP04

2.22 **Figure 2.5** shows locations of the above pedestrian facilities.

Operational Performance of the Surveyed Pedestrian Facilities

2.23 Levels of Service ("LOS") analysis for the AM and PM peak hour was conducted. To be conservative, a 'dead area' of 0.5m is assumed on either side when calculating the "Effective Width". The LOS grading is as per TPDM Vol 6, Section 10.4, and the analysis results are summarised in **Table 2.4.**

TABLE 2.4 EXISTING OPERATIONAL PERFORMANCE FOR NEARBY PEDESTRIAN FACILITIES

Footpath	Measured Width (m)	Effective Width (m)	2-Way Pedestrian Flow (ped/hour)		Flow Rate [LOS] (ped/m/min)	
			AM Peak	PM Peak	AM Peak	PM Peak
FP01	1.5m	0.5m	5	5	0.2 [A]	0.2 [A]
FP02	2.8m	1.8m	15	15	0.1 [A]	0.1 [A]
FP03	1.5m	1.0m	15	15	0.3 [A]	0.3 [A]
FP04	3.0m	2.0m	15	15	0.1 [A]	0.1 [A]
FP05	3.0m	2.0m	10	10	0.1 [A]	0.1 [A]
FP06	2.5m	1.5m	5	5	0.1 [A]	0.1 [A]
FP07	2.5m	1.5m	5	5	0.1 [A]	0.1 [A]
FP08	2.0m	1.0m	10	10	0.2 [A]	0.2 [A]

Note: Due to the small amount of pedestrian observed, 2-way pedestrian flow is rounded-up to nearest 5.
FP01 - Ting Yat Road
FP02 - Castle Peak Road – New Ting Kau (Northern Footpath)
FP03 - Castle Peak Road – Ting Kau (Southern Footpath)
FP04 - Footbridge NF390 across Castle Peak Road – New Ting Kau / Ting Kau
FP05 - Ramp between FP02 and FP04
FP06 - Staircase between FP02 and FP04
FP07 - Ramp between FP03 and FP04
FP08 - Staircase between FP04 and FP04

2.24 The above results indicate the surveyed footpaths and footbridge operate with capacities.

3.0 THE PROPOSED DEVELOPMENT

Proposed Development

3.1 The Proposed Development is a new single-family house, reconstructing from the Existing House. **Table 3.1** summarises the development parameters.

TABLE 3.1 DETAILS OF DEVELOPMENT PARAMETERS

Item	Parameters
Site Area	Approximately 773m^2
Existing and Proposed Use	Domestic – Single-Family House
Proposed Plot Ratio	0.748
Proposed Gross Floor Area	Approximately 578 m^2
Planned Population	No more than 10 people

Internal Transport Facilities

3.2 Internal transport facilities for the Proposed Development are to be provided in accordance to the recommendation of the Hong Kong Planning Standards and Guidelines ("HKPSG").

3.3 **Table 3.2** compares the HKPSG recommended internal transport provision and the proposed provision.

TABLE 3.2 PROVISION OF INTERNAL TRANSPORT FACILITIES FOR THE PROPOSED DEVELOPMENT

Use	HKPSG Recommendation	Proposed Provision
	Car Parking Space	
Residential [a]	Number of space = GPS x R1 x R2 x R3, where: Global Parking Standard (GPS) = 1 space per 4 – 7 flats R1 = 7 for flat size of > 160m^2 R2 = 1.0 for development outside 500m of rail station R3 = 1.3 for domestic plot ratio (PR) ≤ 1.00 Minimum (1 ÷ 7 x 7 x 1.0 x 1.3) = 1.3, say **2 nos.** Maximum (1 ÷ 4 x 7 x 1.0 x 1.3) = 2.3, say **3 nos.**	**4 nos., including** - **3 nos.** @ 5.0m (L) x 2.5m (W) x min. 2.4m (H) - **1 no.** @ 5.0m (L) x 3.5m (W) x min. 2.4m (H) **=HKPSG Maximum, OK**
Visitor [b]	For private residential developments with 75 units or less per block, the visitor car parking provision will be determined by Transport Department on a case-by-case basis. 1 space for 30 units or less, = **1 no.**	
Total [a]+[b]	Minimum = 2 + 1 = 3 nos. Maximum = 3 + 1 = **4 nos.**	
	Motorcycle Parking Space	
Residential	1 space per 100 – 150 flat Minimum 1 ÷ 150 = 0.01, say 1 no. Maximum 1 ÷ 100 = 0.01, say **1 no.**	**1 no.** @ 2.4m (L) x 1.0m (W) x min. 2.4m (H) **=HKPSG Maximum, OK**

TABLE 3.2 PROVISION OF INTERNAL TRANSPORT FACILITIES FOR THE PROPOSED DEVELOPMENT (CONTINUED)

Use	HKPSG Recommendation	Proposed Provision
	Loading / Unloading Bay	
Residential	Minimum of 1 loading / unloading bay for goods vehicles within the site for every 800 flats or part thereof, subject to a minimum of 1 bay for each housing block. Since the Proposed Development is a house, not a residential block, the HKPSG recommendation on loading / unloading bay is opined not applicable.	**Nil** *Remarks:* *Loading / unloading can be conducted at the new internal driveway. Owner will coordinate to prevent interference of family members accessing the proposed development.*

3.4 The proposed internal transport layout is found in **Figures 3.1**, and a schematic section of the Proposed Development is shown in **Figure 3.2**.

3.5 It should be noted that to overcome the significant difference in vertical levels between the proposed carport at level +44mPD and the street level of Ting Tat Road at +29.6mPD, a car lift is proposed, which will lift the car between the 2 levels. In connection, an internal driveway will be constructed from Ting Yat Road by craving out the existing slope.

3.6 Goods vehicle loading / unloading will be conducted within the Proposed Development at the new internal driveway at the Ting Yat Road level, indicated in **Figure 3.2**, which is presently carried out on Ting Yat Road. Demand on loading / unloading for a single-family house is expected to be negligible, and the Owner will schedule the time of delivery, so that it will not interfere with ingress and egress of his/her private cars to and from the carport.

3.7 Feasibility on provision of a goods vehicle loading / unloading was reviewed, but was found impractical. This is due to severe constraints at the Subject Site, including narrow and small site area at Ting Yat Road level, and significant level difference between the carport level, and the vehicular access at Ting Yat Road. Hence, use of the new private internal driveway for occasional loading / unloading is found to be the most suitable solution to avoid loading / unloading activities to be carried out on public roads.

3.8 In addition, the proposed internal transport provision in the Proposed Development is considered a merit from traffic engineering viewpoint when comparing to the Existing House, which has no internal transport facilities and access is for pedestrians only. Moreover, the Proposed Development provides barrier-free-access from Ting Yat Road, which is currently absent from the Existing House.

Swept Path Analysis

3.9 Swept path analyses using CAD-based simulation program were conducted to ensure ease of vehicle manoeuvring within the Proposed Development. No manoeuvring issues are encountered and the swept path analysis drawings are found in **Annex B.**

Car Lift Analysis

3.10 Car lift analysis was conducted and found that the probability of more than 1 vehicle arriving at the same time when the car lift is occupied is 0.1%, which is acceptable from traffic engineering viewpoint. Detail calculation, which is based on the Queuing Theory, is found in **Annex C**.

3.11 In addition, the new internal ramp from Ting Yat Road to the car lift is some 13m long, and is capable to hold 2 private cars in queue at the same time. Hence, queuing of entering vehicles for the Proposed Development to be extended onto public roads is not expected.

Contingency Plan of Car Lift

3.12 In case of mechanical breakdown, the Owner will immediately contact the maintenance contractor. Usually, the car lift maintenance team is committed to arrive as soon as possible.

3.13 The Owner will also immediately notify all other family members about the mechanical breakdown, and tell them to make their own alternative travel and parking arrangement due to the suspension of the car lift service.

3.14 In case if a car is trapped in the car lift, the Owner will also immediately contact the Fire Service Department via 999 emergency call for assistance.

3.15 To minimize the potential of mechanical breakdown, regular maintenance will be scheduled routinely, and the works will be performed during the off-peak period.

4.0 TRAFFIC IMPACT

Design Year

4.1 The Proposed Development is expected to be completed in 2028, and the design year adopted in this TIA is 2031, i.e. 3 years after completion. For reference, a tentative project programme prepared by the Project Architect is attached in **Annex D**.

Traffic Forecasting

4.2 The 2031 traffic flows used for the junction analysis are produced with reference to the following:

(i) 2031 traffic flows derived with reference to 2019-based Base District Traffic Model ("BDTM") purchased from Transport Department;

(ii) Traffic generated by other identified planned and committed developments in the vicinity; and

(ii) Traffic generated by the Proposed Development.

Alternative methods of traffic forecasting

4.3 Beside the method stated in paragraph 4.2, alternative traffic forecasting by growth factor method was also reviewed, including the following:

(a) historic AADT from the ATC, which is illustrated in **Table 2.1**

(b) "*2019-based Territorial Population and Employment Data Matrix*" ("TPEDM") published by Planning Department ("PlanD"), and

(c) "*Hong Kong Population Projections for 2022 - 2046*" published by Census and Statistics Department ("C&SD").

4.4 Information from the above sources (b) and (c) are summarised in **Tables 4.1 and 4.2** respectively.

TABLE 4.1 TPEDM DATA FOR TSUEN WAN DISTRICT

Item	Year 2019	Year 2026	Year 2031	Annual Growth Rate		
				2019 - 2026	2026 - 2031	2019 - 2031
Population	293,700	279,450	249,400	-0.7%	**-2.3%**	-1.4%
Employment	165,000	166,100	160,650	**0.1%**	-0.7%	-0.2%
TOTAL	**458,700**	**445,550**	**410,050**	**-0.4%**	**-1.7%**	**-0.9%**

Source: "*2019-based Territorial Population and Employment Data Matrix*," Planning Department, December 2021
<https://www.pland.gov.hk/pland_en/resources/info_serv/statistic/tpedm19.html>

TABLE 4.2 POPULATION PROJECTIONS BY C&SD

Year	Hong Kong Resident Population (in Thousands)
2024	7,526.8
2031	7,820.2
Average Annual Growth (2024 – 2031) =	**+0.6%**

Source: "*Hong Kong Population Projections for 2022 – 2046*," Census and Statistics Department, 15th August 2023.
<https://gia.info.gov.hk/general/202308/15/P2023081500308_428784_1_1692085684250.pdf>

4.5 **Table 4.1** shows that the overall population and employment is reduced by 0.4% to 1.7% per annum from 2019 to 2031. According to **Table 4.2**, the overall population of Hong Kong is expected to increase by +0.6% per annum from 2024 to 2031.

4.6 Based on the 2031 traffic flow produced as stated in paragraph 4.2, the average AM and PM Peak hour annual growths are 6.1% and 2.7% (the "adopted annual growths") respectively, and the calculations are presented in **Table 4.3**.

TABLE 4.3 ANNUAL TRAFFIC GROWTH OF TRAFFIC FLOWS FOR CASTLE PEAK ROAD – NEW TING KAU

Case	2-Way Traffic Flows for Castle Peak Road – New Ting Kau (pcu/hr)	
	AM Peak Hour	PM Peak Hour
Existing (2024) [a]	902	1,023
2031 without Proposed Development [b]	1,368	1,234
Average Annual Growth Rate (Note 1)	**+6.1%**	**+2.7%**

Note (1) Average Annual Growth = $([b] / [a])^{1 / (2031 - 2024)} - 1$

4.7 **Table 4.3** shows that the 2031 traffic flows derived with reference to the 2019-based BDTM resulted in higher than those in **Tables 4.1 and 4.2**, which is considered more conservative.

Committed and Planned Developments in the Vicinity

4.8 Other known major committed and planned developments in vicinity of the Proposed Development have been identified and summarised in **Table 4.4**.

TABLE 4.4 DETAILS OF KNOWN MAJOR COMMITTED AND PLANNED DEVELOPMENTS IDENTIFIED

Ref.	Location	Use	Development Parameter
A.	Starter Home for Hong Kong Residents Project by Hong Kong Housing Society in Yau Kam Tau	Subsidised Sale Flats	About 1,940 flats
B.	Proposed Private Housing Development in Yau Kam Tau north of Tuen Mun Road	Private Housing	About 613 flats
C.	Proposed Private Housing Development in Yau Kam Tau near Po Fung Terrace	Private Housing	About 490 flats
D.	Lot No. 407 in DD. 399, Ting Kau, Tsuen Wan West	Private Housing	1 residential house with about 911m^2 GFA
E.	Lot 162RP (Part) in DD. 399 and Adjoining Government Land, Ting Kau, Tsuen Wan West	Private Housing	1 residential house with about 435m^2 GFA
F.	400 Castle Peak Road - Ting Kau	Private Housing	1 residential house with about 487m^2 GFA
G.	Lots 99, 100, 101R.P., 110R.P., 171C and 183 in D.D. 390 and Adjoining Government Land, Sham Tseng, Tsuen Wan	Private Housing	About 56 flats
H.	Lot No. 408 in DD. 399 & the Extension Thereto, Ting Kau, Tsuen Wan, N.T.	Private Housing	1 residential house with about 450m^2 GFA
I.	House 117, Ting Kau Village, Tsuen Wan, New Territories	Retail	About 113m^2 GFA
J.	Redevelopment of existing hotel development to residential development with social welfare facility at Tsuen Wan Inland Lot 5 and Lot No. 429 in D.D. 399, Ting Kau, Tsuen Wan (TPB Application No. Y/TWW/7 & A/TWW/130)	Private Housing & G/IC	674 flats and 60-place Day Care Centre for the Elderly

4.9 Traffic generations of the above identified major committed and planned developments in vicinity are summarized in **Table 4.5**, and this traffic generation are added to the trip ends of the 2031 BDTM, and then assigned onto the road network, including within the AOI.

TABLE 4.5 TRAFFIC GENERATIONS OF THE KNOWN MAJOR COMMITTED AND PLANNED DEVELOPMENTS IDENTIFIED

Ref.	Development Parameters	Adopted Trip Rates from TPDM (unit)				Traffic Generation (pcu / hr)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Gen.	Att.	Gen.	Att.	Gen.	Att.	Gen.	Att.
A.	1,940 Subsidised Sale Flats @ Average Flat Size = 50m²	0.0761	0.0573	0.0350	0.0451	148	112	68	68
		(pcu/hr/flat)							
B.	613 Flats Private Housing @ Average Flat Size = 70m²	0.1021	0.0709	0.0415	0.0464	63	44	26	29
		(pcu/hr/flat)							
C.	490 Flats Private Housing @ Average Flat Size = 70m²	0.1021	0.0709	0.0415	0.0464	51	35	21	23
		(pcu/hr/flat)							
D.	1 residential house (911m² GFA)	0.3896	0.3423	0.4970	0.3598	1	1	1	1
		(pcu/hr/house)							
E.	1 residential house (435m² GFA)	0.3896	0.3423	0.4970	0.3598	1	1	1	1
		(pcu/hr/house)							
F.	1 residential house (487m² GFA)	0.3896	0.3423	0.4970	0.3598	1	1	1	1
		(pcu/hr/house)							
G.	56 Flats Private Housing @ Average Flat Size = 80m²	0.1379	0.0905	0.0563	0.0689	8	6	4	4
		(pcu/hr/flat)							
H.	1 residential house (450m² GFA)	0.3896	0.3423	0.4970	0.3598	1	1	1	1
		(pcu/hr/house)							
I.	About 113m² Retail GFA	0.3307	0.3342	0.3839	0.4504	1	1	1	1
		(pcu/hr/100m² GFA)							
J.	Changing existing 688-room hotel to proposed 674 flats and 60-bed Day Care Centre for Elderly	Net change between existing and proposed uses from TIA of Y/TWW/7 and Y/TWW/130				+36	-4	-10	+17

Note: Gen – Generation Att. – Attraction

A. Starter Home for Hong Kong Residents Project by Hong Kong Housing Society in Yau Kam Tau
B. Proposed Private Housing Development in Yau Kam Tau north of Tuen Mun Road
C. Proposed Private Housing Development in Yau Kam Tau near Po Fung Terrace
D. Lot No. 407 in DD. 399, Ting Kau, Tsuen Wan West
E. Lot 162RP (Part) in DD. 399 and Adjoining Government Land, Ting Kau, Tsuen Wan West
F. 400 Castle Peak Road - Ting Kau
G. Lots 99, 100, 101R.P., 110R.P., 171C and 183 in D.D. 390 and Adjoining Government Land, Sham Tseng, Tsuen Wan
H. Lot No. 408 in DD. 399 & the Extension Thereto, Ting Kau, Tsuen Wan, N.T.
I. House 117, Ting Kau Village, Tsuen Wan, New Territories
J. Redevelopment of existing hotel development to residential development with social welfare facility at Tsuen Wan Inland Lot 5 and Lot No. 429 in D.D. 399, Ting Kau, Tsuen Wan (Approved TPB No. Y/TWW/7 and A/TWW/130)

Traffic Generated by the Proposed Development

4.10 Traffic generation of the Proposed Development is calculated based on the trip rates for "Private Housing: Low-Density / R(C)" with an average flat size of 300m²; and to be conservative, the upper limit trip rates are adopted. **Table 4.6** summarises the trip rates adopted and the calculated traffic generation.

TABLE 4.6 ADOPTED TRIP RATES AND TRAFFIC GENERATION OF THE PROPOSED DEVELOPMENT

Item	AM Peak Hour		PM Peak Hour	
	Generation	Attraction	Generation	Attraction
Trip Generation Rates (pcu/hour/flat)				
Private Housing: Low-Density / R(C) with an average flat size of 300m²	0.3896	0.3423	0.4970	0.3598
Traffic Generation (pcu/hour)				
Proposed Development (1 house with about 531m² GFA)	1	1	1	1
	2 (2-way)		2 (2-way)	

4.11 **Table 4.6** shows that the Proposed Development is expected to generate only 2 pcu/hour (2-way) during the AM and PM peak hours respectively.

4.12 In addition, to err of the high side, the traffic generation associated with the Existing House is not deducted from the 2031 traffic analysis.

Construction Traffic Generated by the Proposed Development

4.13 In view scale of the Proposed Development is small, the associated construction traffic is expected to be negligible. Conservatively, 2 construction vehicles trips per hour by goods vehicles are assumed, and **Table 4.7** summarizes the details.

TABLE 4.7 CONSTRUCTION TRAFFIC GENERATION OF THE PROPOSED DEVELOPMENT

Item	AM Peak Hour		PM Peak Hour	
	Generation	Attraction	Generation	Attraction
Construction Vehicles (1 veh = 2.5 pcu)	2 veh [5 pcu]	2 veh [5 pcu]	2 veh [5 pcu]	2 veh [5 pcu]
	4 veh [10 pcu] (2-way)		**4 veh [10 pcu] (2-way)**	

4.14 **Table 4.7** shows that the Proposed Development, conservatively, is expected to generate 10 pcu/hour (2-way) during the AM and PM peak hours respectively.

2031 Traffic Flows

4.15 Year 2031 traffic flows for the following cases are derived:

2031 without the Proposed Development [A] (Figure 4.1) = *2031 traffic flows derived with reference to BDTM + Traffic generated by other known major committed and planned developments (Table 4.7)*

2031 with the Proposed Development [B] (Figure 4.2) = *[A] + Traffic generated by the Proposed Development (Table 4.4)*

2031 with the Construction Traffic of the Proposed Development [C] (Figure 4.3) = *[A] + Construction Traffic generated (Table 4.5)*

4.16 **Figures 4.1, 4.2** and **4.3** show the 2031 peak hour traffic flows for the above 3 cases respectively.

2031 Junction Capacity Analysis

4.17 2031 junction capacity analyses for the cases without and with the Proposed Development, and with the construction traffic of the Proposed Development are analyzed. **Table 4.8** summarises the results, and the detailed calculations are presented in **Annex A**.

TABLE 4.8 2031 JUNCTION PERFORMANCE

Ref.	Junction	Type of Junction / Parameter	Without the Proposed Development		With the Proposed Development		With Construction Traffic	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
J01	Castle Peak Road – Ting Kau / Castle Peak Road – New Ting Kau	Round-about / RFC	0.372	0.332	0.372	0.332	0.372	0.334
J02	Castle Peak Road – Ting Kau / Ting Yat Road / Open Car Park	Priority / RFC	0.03	0.04	0.03	0.04	0.03	0.04

Note: RFC – Ratio of Flow to Capacity

4.18 The above results indicate that the operational traffic generated by the Proposed Development, as well as the construction traffic generated, will have no impact to the junctions analysed, and is acceptable from traffic engineering viewpoint.

Pedestrian Forecasting

4.19 Year 2031 pedestrian flows are produced: (i) with reference to the 2024 observed pedestrian flows, (ii) the expected growth of 0.6% per annum from 2024 to 2031 in reference with the change in population projection by C&SD presented in **Table 4.2,** and (iii) pedestrian generation of the Approved Planning Application No. A/TWW/130 located in the vicinity.

4.20 Hence, Year 2031 pedestrian flows are derived as follows:

2031 without the Proposed Development [A] = *Existing Pedestrian Flows + Expected Growth of Pedestrian Flows from 2022 to 2032 in reference with the 2019-based TPEDM + Pedestrian generated by Approved Planning Application No. A/TWW/130*

2031 with the Proposed Development [B] = *[A] + Pedestrian Generation of the Proposed Development*

4.21 According to the TIA of the Approved Planning Application No. A/TWW/130, the total peak hour pedestrian generation is expected to be about 400 persons.

Pedestrian Generated by the Proposed Development

4.22 Pedestrian generation of the Proposed Development is estimated based a pedestrian generation survey carried out at the adjacent existing residential developments also located at the end of Ting Yat Road, and the survey results are summarized in **Table 4.9.**

TABLE 4.9 RESULTS OF PEDESTRIAN GENERATION SURVEYS

Surveyed Locations	AM Peak Hour (persons / hour)		PM Peak Hour (persons / hour)	
	Generation	Attraction	Generation	Attraction
The Wonderland (Lot 439 in DD399)	3	1	1	2
Vodana Court (Lot 461 in DD399)	1	1	1	1

4.23 **Table 4.9** shows the peak hour pedestrian generation and attraction of similar existing residential located nearby are no more than 2 to 3 people respectively.

4.24 Hence, to err on the high side, pedestrian generation and attraction for the Proposed Development are assumed to be 5 people in either direction for analysis purpose, which are summarized in **Table 4.10**.

TABLE 4.10 ADOPTED PEDESTRIAN GENERATION

Item	AM Peak Hour (persons / hour)		PM Peak Hour (persons / hour)	
	Generation	Attraction	Generation	Attraction
Proposed Development	5	5	5	5
	10 (2-way)		10 (2-way)	

2031 Levels of Service Analysis

4.25 2031 Levels of Services ("LOS") analyses for the cases without and with the Proposed Development are analyzed, and **Table 4.11** summarises the results.

TABLE 4.11 OPERATIONAL PERFORMANCE FOR NEARBY PEDESTRIAN FACILITIES

Footpath	Measured Width (m)	Effective Width (m)	Without the Proposed Development				With the Proposed Development			
			2-Way Pedestrian Flow (ped/hour)		Flow Rate [LOS] (ped/m/min)		2-Way Pedestrian Flow (ped/hour)		Flow Rate [LOS] (ped/m/min)	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
FP01	1.5m	0.5m	10	10	0.3 [A]	0.3 [A]	20	20	0.7 [A]	0.7 [A]
FP02	2.8m	1.8m	420	420	3.9 [A]	3.9 [A]	425	425	3.9 [A]	3.9 [A]
FP03	1.5m	1.0m	420	420	7.0 [A]	7.0 [A]	425	425	7.1 [A]	7.1 [A]
FP04	3.0m	2.0m	420	420	3.5 [A]	3.5 [A]	425	425	3.5 [A]	3.5 [A]
FP05	3.0m	2.0m	415	415	3.5 [A]	3.5 [A]	425	425	3.5 [A]	3.5 [A]
FP06	2.5m	1.5m	10	10	0.1 [A]	0.1 [A]	10	10	0.1 [A]	0.1 [A]
FP07	2.5m	1.5m	210	210	2.3 [A]	2.3 [A]	215	215	2.4 [A]	2.4 [A]
FP08	2.0m	1.0m	215	215	3.6 [A]	3.6 [A]	220	220	3.7 [A]	3.7 [A]

Note: 2-way pedestrian flow rounded-up to nearest 5.
FP01 - Ting Yat Road
FP02 - Castle Peak Road – New Ting Kau (Northern Footpath)
FP03 - Castle Peak Road – Ting Kau (Southern Footpath)
FP04 - Footbridge NF390 across Castle Peak Road – New Ting Kau / Ting Kau
FP05 - Ramp between FP02 and FP04
FP06 - Staircase between FP02 and FP04
FP07 - Ramp between FP03 and FP04
FP08 - Staircase between FP04 and FP04

4.26 The above results indicate that the pedestrian generated by the Proposed Development will have no impact to the pedestrian facilities analysed, and is acceptable from traffic engineering viewpoint.

Impact on Existing Public Transport Services

4.27 The Proposed Development is reconstruction of an **existing** single-family house with similar population of no more than 10 people. Hence, in view the Proposed Development has no change from the Existing House in terms of both land use and population, impact on the existing public transport service is not anticipated.

5.0 SUMMARY

5.1 The Proposed Development is located at Lot 453 in DD.399 Castle Peak Road, Ting Kau, the New Territories. It is a 3-storey single-family house including a carport with some 579 m^2 GFA.

5.2 The proposed internal transport facilities to be provided at the Proposed Development satisfy the recommendation of the HKPSG, and are enhanced from the Existing House.

5.3 Manual classified counts were conducted at junctions located in the vicinity in order to establish the existing traffic flows during the AM and PM peak hours.

5.4 The design year 2031 traffic flows were derived with reference to 2031 traffic flows from the BDTM. The traffic generations associated with other known future developments in the vicinity are also taken into account.

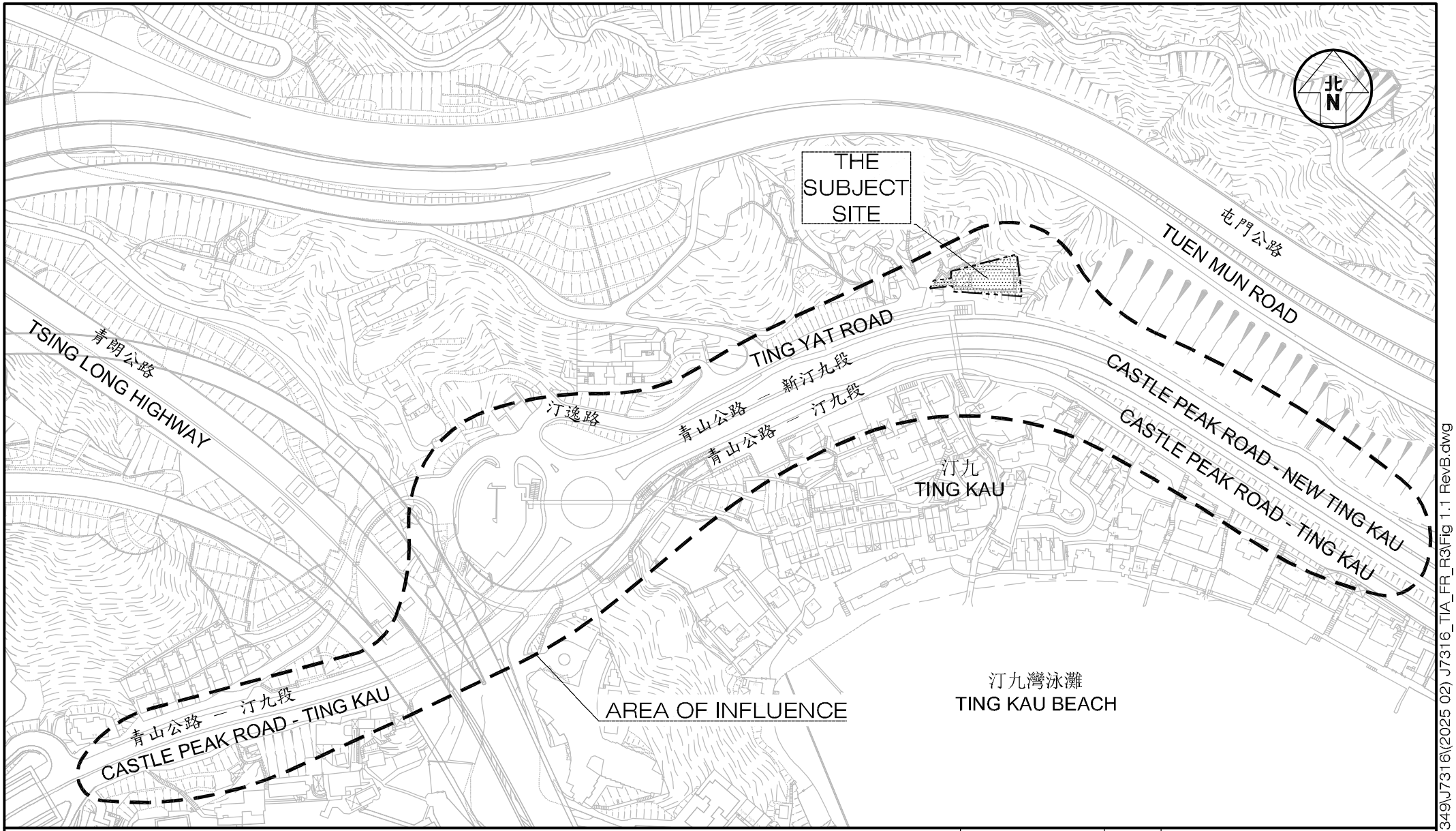
5.5 The year 2031 capacity analysis concluded that the junctions analysed have sufficient capacity to accommodate the expected traffic growth and the traffic generated by the Proposed Development.

5.6 Pedestrian counts were conducted at nearby pedestrian facilities during the AM and PM peak hour to establish the existing pedestrian flows, of which are then forecasted to establish the year 2031 pedestrian flows, including the pedestrian generation of the Proposed Development.

5.7 Levels of Service analyses concluded that the pedestrian facilities have sufficient capacity to accommodate the expected pedestrian growth and pedestrian generated by the Proposed Development.

5.8 Hence, it can be concluded that the Proposed Development will result in no adverse traffic and pedestrian impact to the road and pedestrian network in the vicinity of the Subject Site, and is acceptable from traffic engineering viewpoint.

FIGURES



Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 1.1	Revision B
Figure Title: LOCATION OF THE SUBJECT SITE AND AREA OF INFLUENCE		Designed by W C H / Drawn by S C Y / Checked by K C	
		Scale in A4: 1 : 3,000	Date: 14 FEB 2025

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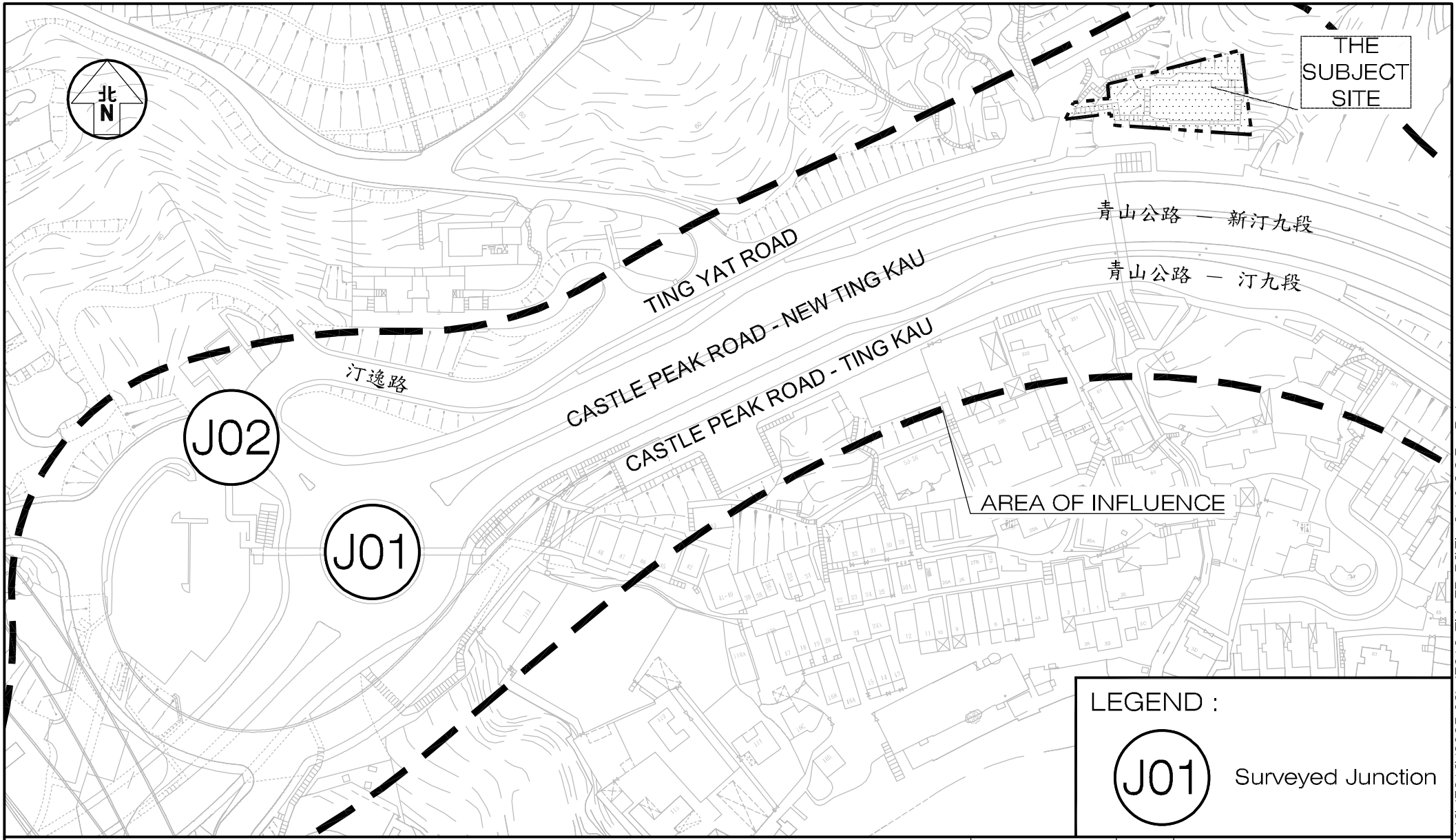

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 2.1	Revision B
Figure Title: LOCATION OF SURVEYED JUNCTIONS		Designed by W C H / Drawn by S C Y / Checked by K C	
		Scale in A4: 1 : 1,500	Date: 14 FEB 2025

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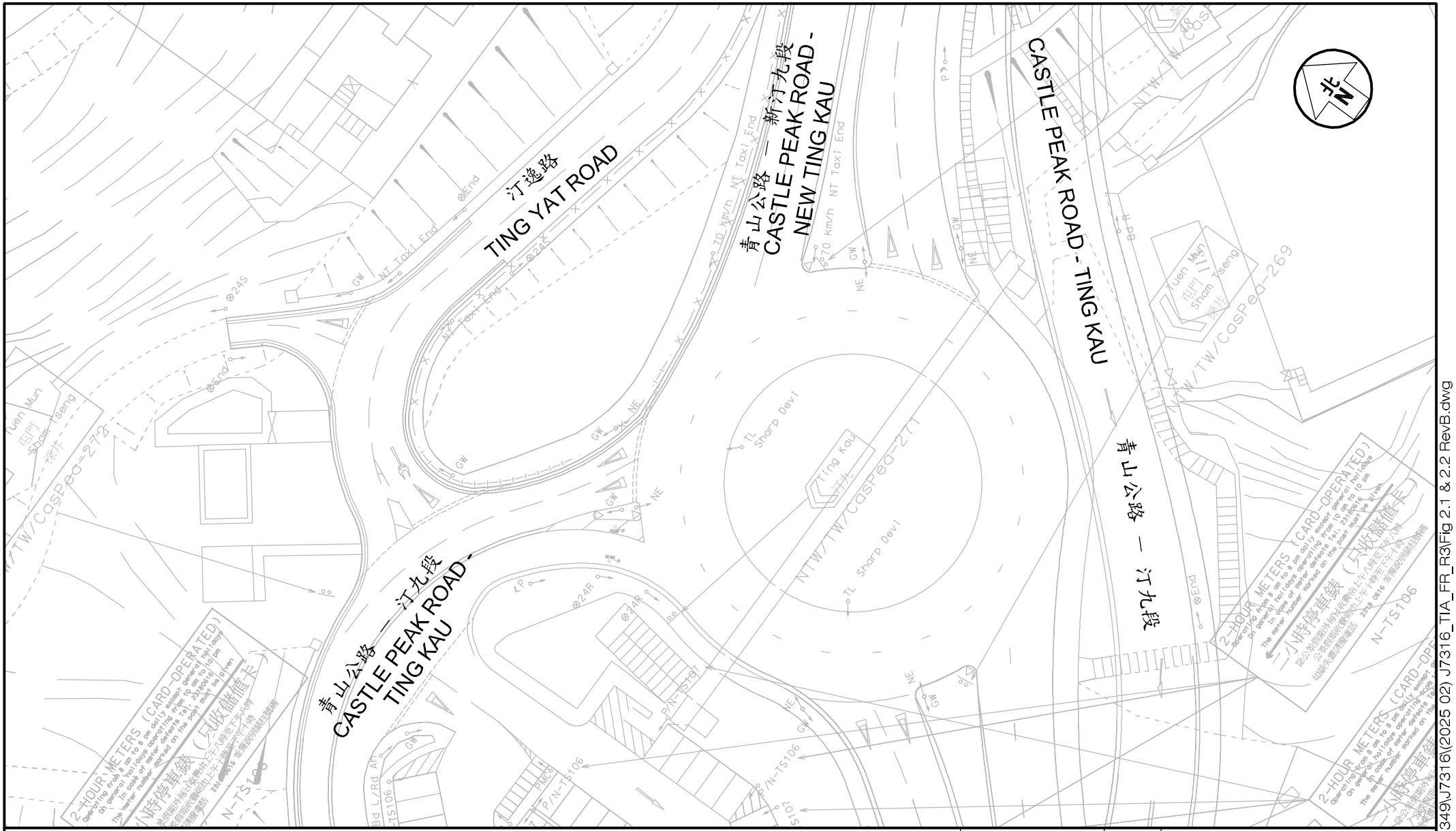

Project Title	PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 2.2 / Revision B
Figure Title	EXISTING LAYOUT OF SURVEYED JUNCTIONS CASTLE PEAK ROAD – TING KAU / CASTLE PEAK ROAD – NEW TING KAU (J01), ANDCASTLE PEAK ROAD – TING KAU / TING YAT ROAD (J02)	Designed by W C H / Drawn by S C Y / Checked by K C Scale in A4 1 : 600 / Date 14 FEB 2025	

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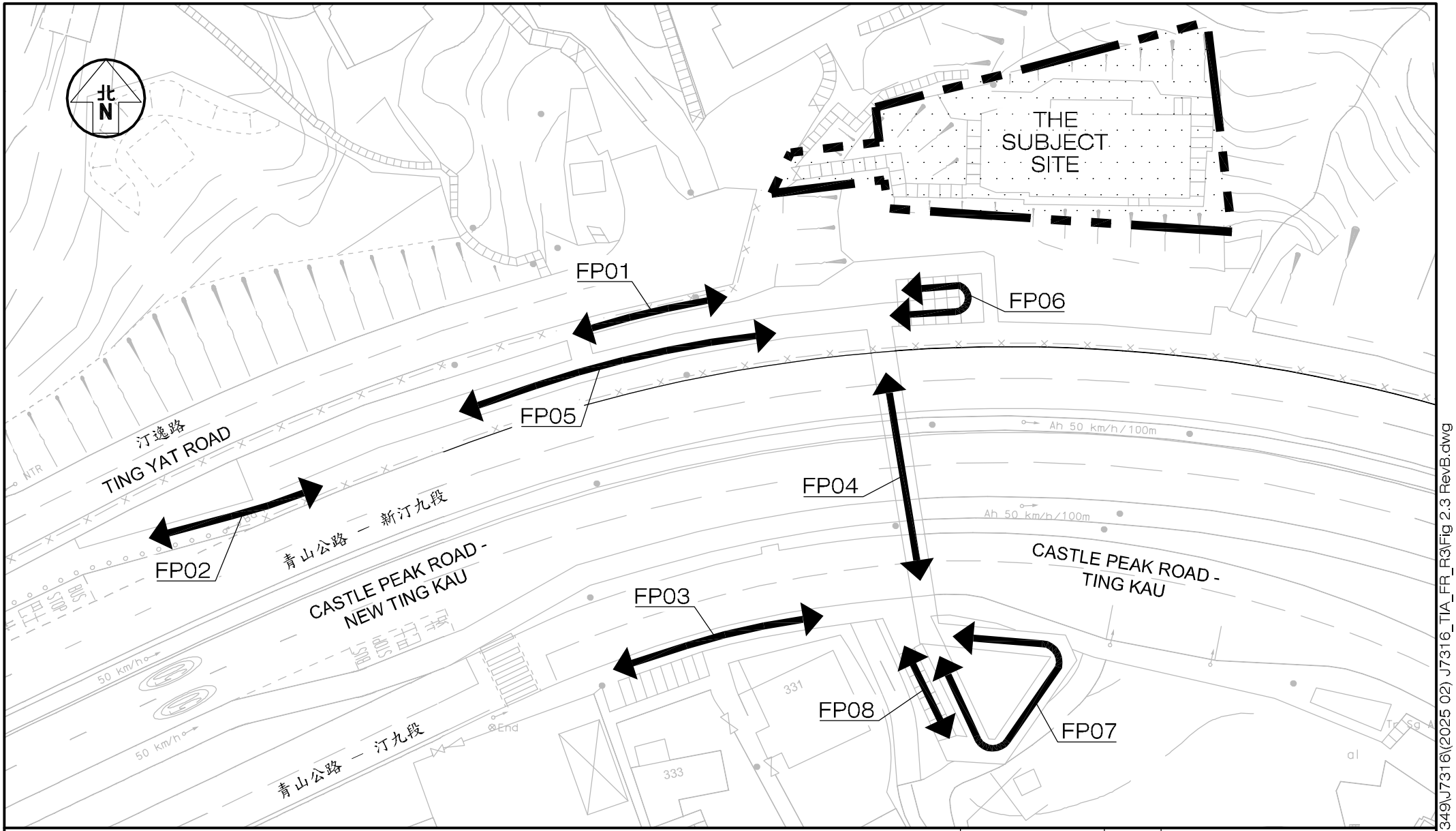

Project Title	PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 2.3 / Revision B
Figure Title	LOCATIONS OF SURVEYED PEDESTRIAN FACILITIES	Designed by W C H / Drawn by S C Y / Checked by K C	Scale in A4 1 : 800 / Date 14 FEB 2024

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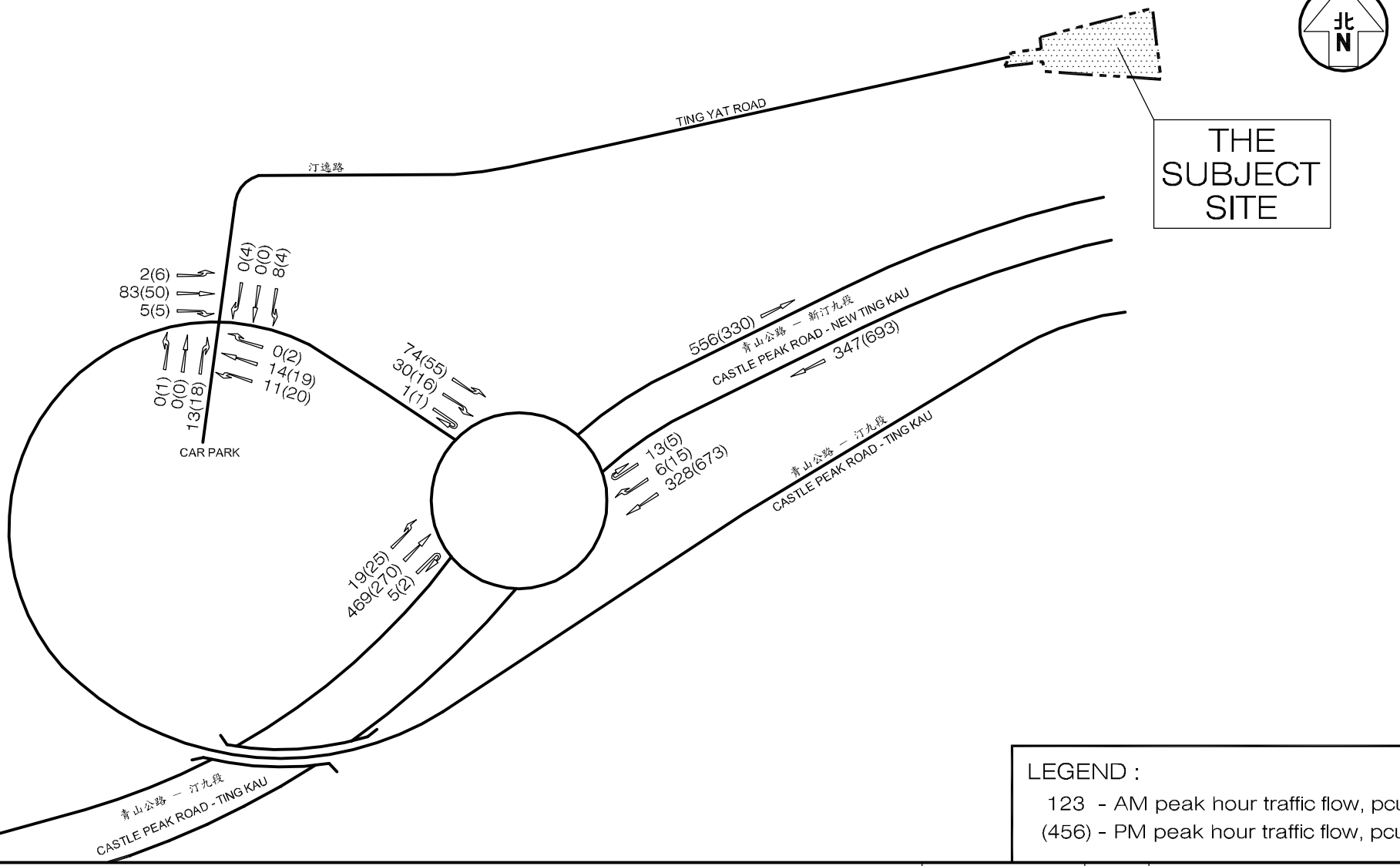

LEGEND :

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 2.4	Revision B
Figure Title: ADJUSTED EXISTING PEAK HOUR TRAFFIC FLOWS		Designed by W C H / Drawn by S C Y / Checked by K C	
		Scale in A4 N.T.S. / Date 14 FEB 2025	

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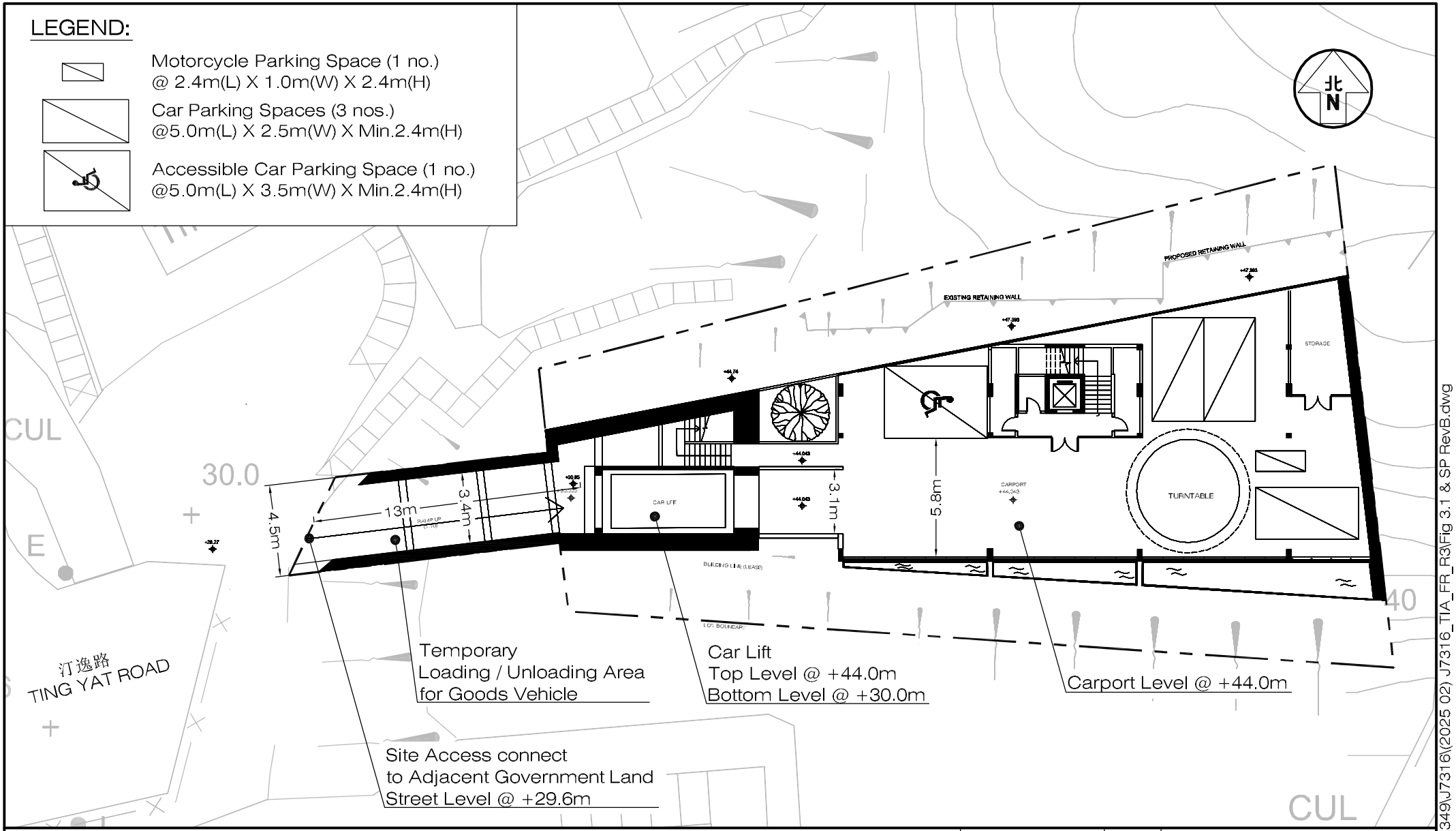

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 3.1	Revision A
Figure Title: PROPOSED INTERNAL TRANSPORT LAYOUT		Designed by W C H / Drawn by S C Y / Checked by K C	
		Scale in A4: 1 : 300	Date: 14 FEB 2025

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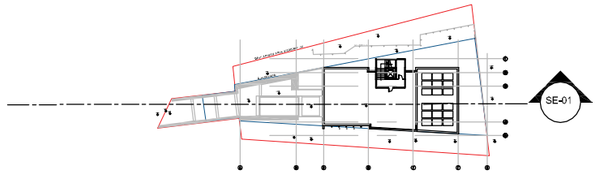
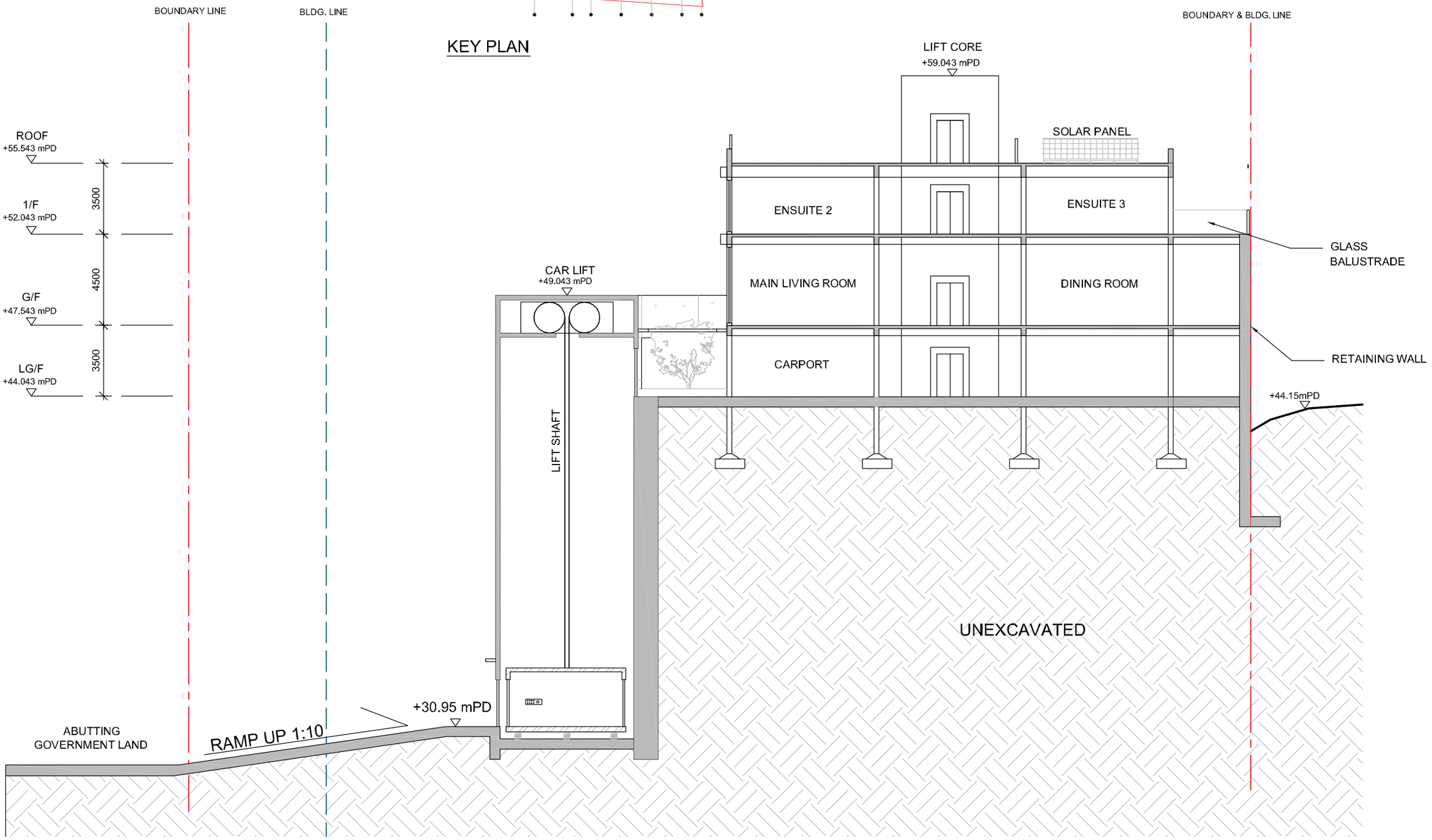


KEY PLAN



Schematic Section 01

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 3.2	Revision B
Figure Title: SCHEMATIC SECTION OF PROPOSED DEVELOPMENT		Designed by W C H / Drawn by S C Y / Checked by K C	
		Scale N.T.S. / Date 14 FEB 2025	

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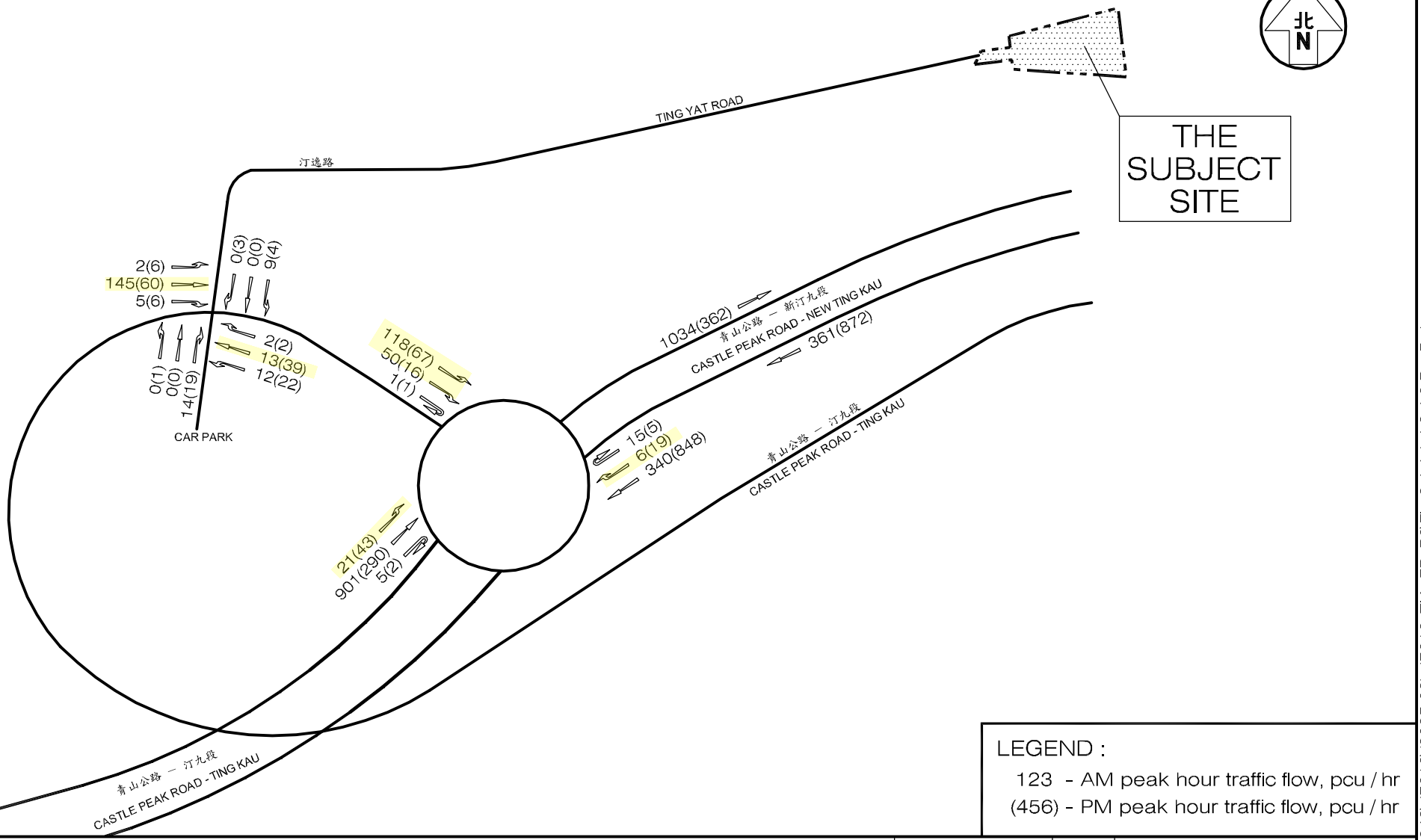

LEGEND :

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 4.1	Revision B
Figure Title: 2031 TRAFFIC FLOWS WITHOUT THE PROPOSED DEVELOPMENT		Designed by W C H / Drawn by S C Y / Checked by K C	
		Scale in A4: N.T.S.	Date: 14 FEB 2025

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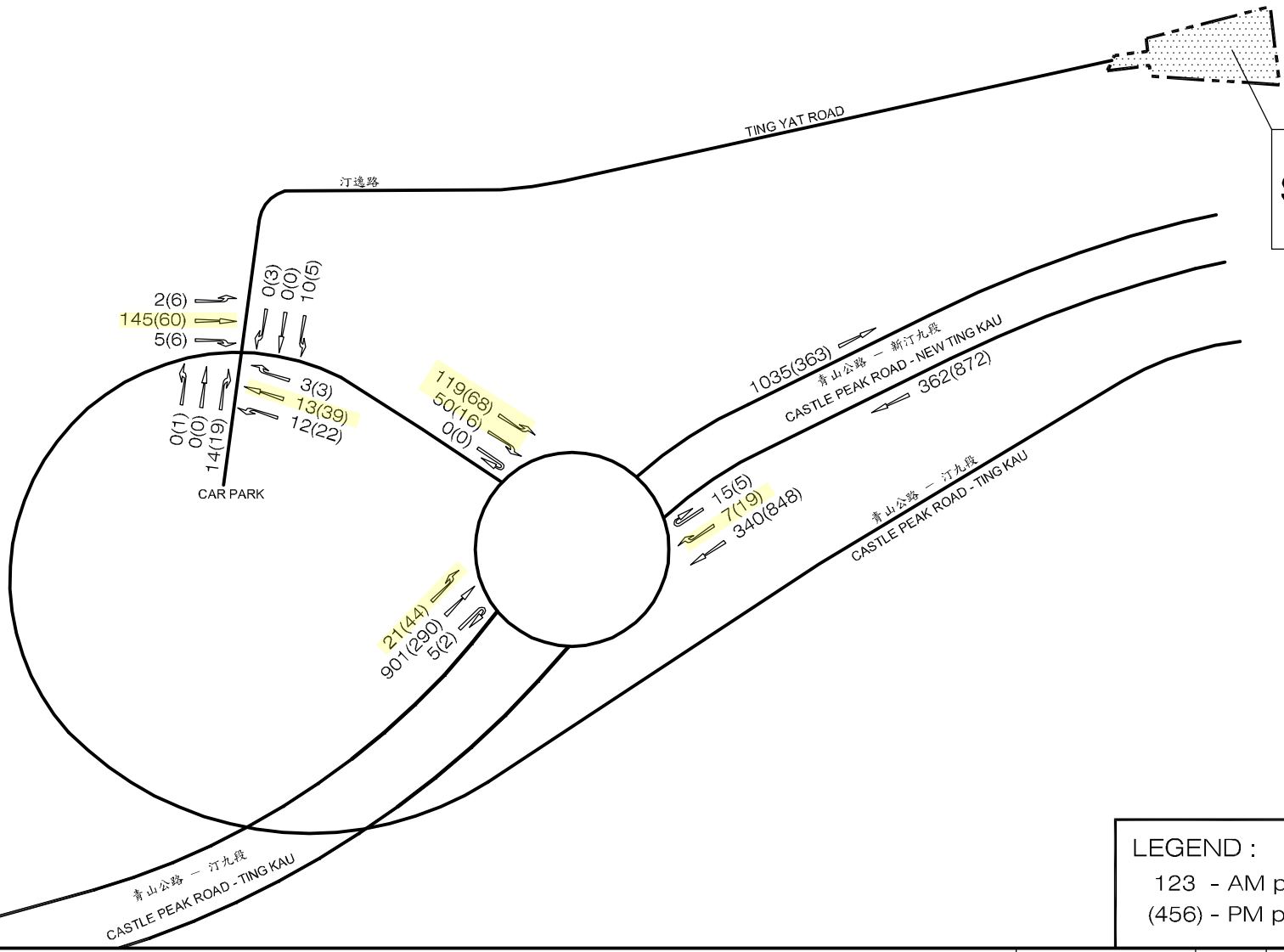

LEGEND :

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 4.2	Revision B
Figure Title: 2031 TRAFFIC FLOWS WITH THE PROPOSED DEVELOPMENT		Designed by W C H / Drawn by S C Y / Checked by K C	
		Scale in A4: N.T.S.	Date: 14 FEB 2025

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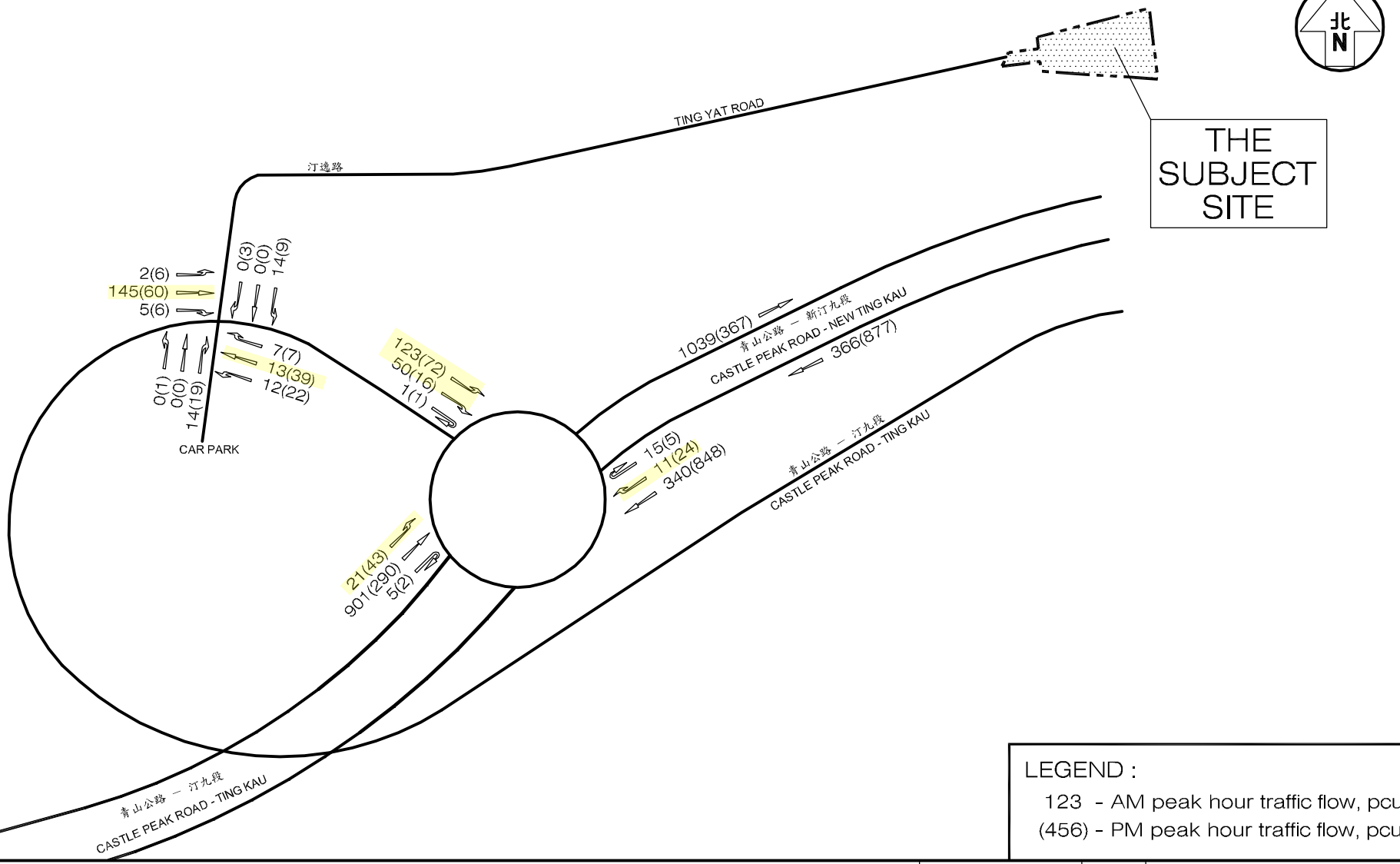

LEGEND :

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title	PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. 4.3 / Revision B
Figure Title	2031 TRAFFIC FLOWS WITH CONSTRUCTION TRAFFIC FOR THE PROPOSED DEVELOPMENT		Designed by W C H / Drawn by S C Y / Checked by K C
			Scale in A4 N.T.S. / Date 14 FEB 2025

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ANNEX A -
JUNCTION CAPACITY ANALYSIS

Roundabout Analysis

Junction: Castle Peak Road - Ting Kau / Castle Peak Road - New Ting Kau Job Number: J7316
Scenario: Existing Condition Page J1- 1
Design Year: 2025 Designed By: WCH Checked By: WCH Date: 14 February 2025

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	13	328	6						347	36
From B	469	5	19						493	19
From C	74	30	1						105	486
From D										
From E										
From F										
From G										
From H										
Total	556	363	26						944	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	5	673	15						693	19
From B	270	2	25						297	21
From C	55	16	1						73	277
From D										
From E										
From F										
From G										
From H										
Total	330	692	41						1063	

Legend

Arm	Road (in clockwise order)
A	Castle Peak Road - New Ting Kau East
B	Castle Peak Road - Ting Kau West
C	Castle Peak Road - Ting Kau North
D	
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.0	7.0	20.0	20.0	50	40	0.2
From B	10.5	7.0	20.0	20.0	50	60	0.3
From C	10.0	6.0	20.0	10.0	50	50	0.6
From D							
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.027	0.368	1.366	0.965	2735	0.804	2612	2625	347	693	0.133	0.264
From B	9.244	0.368	1.366	0.896	2801	0.817	2495	2494	493	297	0.197	0.119
From C	7.754	0.368	1.366	0.931	2350	0.731	1855	1998	105	73	0.057	0.036
From D												
From E												
From F												
From G												
From H												

Roundabout Analysis

Junction: Castle Peak Road - Ting Kau / Castle Peak Road - New Ting Kau Job Number: J7316
Scenario: Without Proposed Development Page J1- 2
Design Year: 2031 Designed By: WCH Checked By: WCH Date: 14 February 2025

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	15	340	6						361	57
From B	901	5	21						927	23
From C	118	50	2						170	921
From D										
From E										
From F										
From G										
From H										
Total	1034	395	29						1458	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	5	848	19						872	20
From B	290	2	43						335	26
From C	67	16	2						85	297
From D										
From E										
From F										
From G										
From H										
Total	362	866	64						1292	

Legend

Arm	Road (in clockwise order)
A	Castle Peak Road - New Ting Kau East
B	Castle Peak Road - Ting Kau West
C	Castle Peak Road - Ting Kau North
D	
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.0	7.0	20.0	20.0	50	40	0.2
From B	10.5	7.0	20.0	20.0	50	60	0.3
From C	10.0	6.0	20.0	10.0	50	50	0.6
From D							
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_3	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.027	0.368	1.366	0.965	2735	0.804	2596	2625	361	872	0.139	**0.332**
From B	9.244	0.368	1.366	0.896	2801	0.817	2492	2490	927	335	**0.372**	0.135
From C	7.754	0.368	1.366	0.931	2350	0.731	1560	1984	170	85	0.109	0.043
From D												
From E												
From F												
From G												
From H												

Roundabout Analysis

Junction: Castle Peak Road - Ting Kau / Castle Peak Road - New Ting Kau Job Number: J7316
Scenario: With Proposed Development Page J1- 3
Design Year: 2031 Designed By: WCH Checked By: WCH Date: 14 February 2025

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	15	340	7						362	57
From B	901	5	21						927	24
From C	119	50	2						171	921
From D										
From E										
From F										
From G										
From H										
Total	1035	395	30						1460	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	5	848	19						872	20
From B	290	2	44						336	26
From C	68	16	2						86	297
From D										
From E										
From F										
From G										
From H										
Total	363	866	65						1294	

Legend

Arm	Road (in clockwise order)
A	Castle Peak Road - New Ting Kau East
B	Castle Peak Road - Ting Kau West
C	Castle Peak Road - Ting Kau North
D	
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.0	7.0	20.0	20.0	50	40	0.2
From B	10.5	7.0	20.0	20.0	50	60	0.3
From C	10.0	6.0	20.0	10.0	50	50	0.6
From D							
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_4	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.027	0.368	1.366	0.965	2735	0.804	2596	2625	362	872	0.139	**0.332**
From B	9.244	0.368	1.366	0.896	2801	0.817	2492	2490	927	336	**0.372**	0.135
From C	7.754	0.368	1.366	0.931	2350	0.731	1560	1984	171	86	0.110	0.043
From D												
From E												
From F												
From G												
From H												

Roundabout Analysis

Junction: Castle Peak Road - Ting Kau / Castle Peak Road - New Ting Kau — Job Number: J7316
Scenario: With Construction Traffic — Page J1- 4
Design Year: 2031 — Designed By: WCH — Checked By: WCH — Date: 14 February 2025

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	qc
From A	15	340	11						366	57
From B	901	5	21						927	28
From C	123	50	2						175	921
From D										
From E										
From F										
From G										
From H										
Total	1039	395	34						1468	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	qc
From A	5	848	24						877	20
From B	290	2	43						335	31
From C	72	16	2						90	297
From D										
From E										
From F										
From G										
From H										
Total	367	866	69						1302	

Legend

Arm	Road (in clockwise order)
A	Castle Peak Road - New Ting Kau East
B	Castle Peak Road - Ting Kau West
C	Castle Peak Road - Ting Kau North
D	
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.0	7.0	20.0	20.0	50	40	0.2
From B	10.5	7.0	20.0	20.0	50	60	0.3
From C	10.0	6.0	20.0	10.0	50	50	0.6
From D							
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							QE		Entry Flow		RFC	
Arm	x_4	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.027	0.368	1.366	0.965	2735	0.804	2596	2625	366	877	0.141	**0.334**
From B	9.244	0.368	1.366	0.896	2801	0.817	2489	2487	927	335	**0.372**	0.135
From C	7.754	0.368	1.366	0.931	2350	0.731	1560	1984	175	90	0.112	0.045
From D												
From E												
From F												
From G												
From H												

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.2.5947

For sales and distribution information, program advice and maintenance, contact TRL:
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Filename: J7316_TIA_R3.j9
Path: J:\ENG\Job\J73XX\J7316 Ting Kau - Redevelopment of La Casette\Working\Jct9
Report generation date: 14/2/2025 17:37:58

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2024							
Stream B-ACD	0.0	6.72	0.03	A	0.0	6.68	0.04	A
Stream A-BCD	0.0	0.00	0.00	A	0.0	5.88	0.00	A
Stream D-ABC	0.0	5.46	0.01	A	0.0	6.18	0.01	A
Stream C-B	0.0	5.32	0.01	A	0.0	5.35	0.01	A
	2031 Without							
Stream B-ACD	0.0	6.85	0.03	A	0.0	6.78	0.04	A
Stream A-BCD	0.0	6.13	0.00	A	0.0	5.79	0.00	A
Stream D-ABC	0.0	5.59	0.02	A	0.0	6.10	0.01	A
Stream C-B	0.0	5.32	0.01	A	0.0	5.40	0.01	A
	2031 With Development							
Stream B-ACD	0.0	6.86	0.03	A	0.0	6.79	0.04	A
Stream A-BCD	0.0	6.14	0.01	A	0.0	5.80	0.01	A
Stream D-ABC	0.0	5.60	0.02	A	0.0	6.02	0.01	A
Stream C-B	0.0	5.33	0.01	A	0.0	5.40	0.01	A
	2031 With Construction							
Stream B-ACD	0.0	6.89	0.03	A	0.0	6.81	0.04	A
Stream A-BCD	0.0	6.19	0.01	A	0.0	5.83	0.01	A
Stream D-ABC	0.0	5.64	0.02	A	0.0	5.87	0.02	A
Stream C-B	0.0	5.34	0.01	A	0.0	5.42	0.01	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	J7316
Location	CPR-TK / Ting Yat Rd / Open Car Park
Site number	
Date	14/2/2025
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	CKM
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024	AM	ONE HOUR	08:00	09:30	15
D2	2024	PM	ONE HOUR	17:00	18:30	15
D3	2031 Without	AM	ONE HOUR	08:00	09:30	15
D4	2031 Without	PM	ONE HOUR	17:00	18:30	15
D5	2031 With Development	AM	ONE HOUR	08:00	09:30	15
D6	2031 With Development	PM	ONE HOUR	17:00	18:30	15
D7	2031 With Construction	AM	ONE HOUR	08:00	09:30	15
D8	2031 With Construction	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	1.16	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	CPR-TK		Major
B	Open Car Park		Minor
C	CPR-TK		Major
D	Ting Yat Rd		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - CPR-TK	10.30				50.0	✓	0.00
C - CPR-TK	10.30		✓	3.50	50.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Open Car Park	One lane	4.00	50	50
D - Ting Yat Rd	One lane	3.50	50	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	603	-	-	-	-	-	-	0.190	0.271	0.190	-	-	-
1	B-A	570	0.084	0.213	0.213	-	-	-	0.134	0.305	-	0.213	0.213	0.107
1	B-C	721	0.090	0.227	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	570	0.084	0.213	0.213	-	-	-	0.134	0.305	0.134	-	-	-
1	B-D, offside lane	570	0.084	0.213	0.213	-	-	-	0.134	0.305	0.134	-	-	-
1	C-B	688	0.217	0.217	0.310	-	-	-	-	-	-	-	-	-
1	D-A	688	-	-	-	-	-	-	0.217	-	0.086	-	-	-
1	D-B, nearside lane	544	0.128	0.128	0.291	-	-	-	0.204	0.204	0.081	-	-	-
1	D-B, offside lane	544	0.128	0.128	0.291	-	-	-	0.204	0.204	0.081	-	-	-
1	D-C	544	-	0.128	0.291	0.102	0.204	0.204	0.204	0.204	0.081	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	25	100.000
B - Open Car Park		✓	13	100.000
C - CPR-TK		✓	90	100.000
D - Ting Yat Rd		✓	8	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	11	14	0
	B - Open Car Park	13	0	0	0
	C - CPR-TK	83	5	0	2
	D - Ting Yat Rd	8	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.03	6.72	0.0	A
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.01	5.46	0.0	A
C-D				
C-A				
C-B	0.01	5.32	0.0	A

2024, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	1.67	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2024	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	41	100.000
B - Open Car Park		✓	19	100.000
C - CPR-TK		✓	61	100.000
D - Ting Yat Rd		✓	8	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	20	19	2
	B - Open Car Park	18	0	1	0
	C - CPR-TK	50	5	0	6
	D - Ting Yat Rd	4	0	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.04	6.68	0.0	A
A-BCD	0.00	5.88	0.0	A
A-B				
A-C				
D-ABC	0.01	6.18	0.0	A
C-D				
C-A				
C-B	0.01	5.35	0.0	A

2031 Without, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	0.92	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2031 Without	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	27	100.000
B - Open Car Park		✓	14	100.000
C - CPR-TK		✓	152	100.000
D - Ting Yat Rd		✓	9	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	12	13	2
	B - Open Car Park	14	0	0	0
	C - CPR-TK	145	5	0	2
	D - Ting Yat Rd	9	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.03	6.85	0.0	A
A-BCD	0.00	6.13	0.0	A
A-B				
A-C				
D-ABC	0.02	5.59	0.0	A
C-D				
C-A				
C-B	0.01	5.32	0.0	A

2031 Without, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	1.38	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2031 Without	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	63	100.000
B - Open Car Park		✓	20	100.000
C - CPR-TK		✓	72	100.000
D - Ting Yat Rd		✓	7	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	22	39	2
	B - Open Car Park	19	0	1	0
	C - CPR-TK	60	6	0	6
	D - Ting Yat Rd	4	0	3	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.04	6.78	0.0	A
A-BCD	0.00	5.79	0.0	A
A-B				
A-C				
D-ABC	0.01	6.10	0.0	A
C-D				
C-A				
C-B	0.01	5.40	0.0	A

2031 With Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	0.97	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2031 With Development	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	28	100.000
B - Open Car Park		✓	14	100.000
C - CPR-TK		✓	152	100.000
D - Ting Yat Rd		✓	10	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	12	13	3
	B - Open Car Park	14	0	0	0
	C - CPR-TK	145	5	0	2
	D - Ting Yat Rd	10	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.03	6.86	0.0	A
A-BCD	0.01	6.14	0.0	A
A-B				
A-C				
D-ABC	0.02	5.60	0.0	A
C-D				
C-A				
C-B	0.01	5.33	0.0	A

2031 With Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	1.44	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2031 With Development	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	64	100.000
B - Open Car Park		✓	20	100.000
C - CPR-TK		✓	72	100.000
D - Ting Yat Rd		✓	8	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	22	39	3
	B - Open Car Park	19	0	1	0
	C - CPR-TK	60	6	0	6
	D - Ting Yat Rd	5	0	3	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.04	6.79	0.0	A
A-BCD	0.01	5.80	0.0	A
A-B				
A-C				
D-ABC	0.01	6.02	0.0	A
C-D				
C-A				
C-B	0.01	5.40	0.0	A

2031 With Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	1.17	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2031 With Construction	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	32	100.000
B - Open Car Park		✓	14	100.000
C - CPR-TK		✓	152	100.000
D - Ting Yat Rd		✓	14	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	12	13	7
	B - Open Car Park	14	0	0	0
	C - CPR-TK	145	5	0	2
	D - Ting Yat Rd	14	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.03	6.89	0.0	A
A-BCD	0.01	6.19	0.0	A
A-B				
A-C				
D-ABC	0.02	5.64	0.0	A
C-D				
C-A				
C-B	0.01	5.34	0.0	A

2031 With Construction, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	CPR-TK / Ting Yat Rd	Crossroads	Two-way	1.65	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2031 With Construction	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - CPR-TK		✓	68	100.000
B - Open Car Park		✓	20	100.000
C - CPR-TK		✓	72	100.000
D - Ting Yat Rd		✓	12	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	22	39	7
	B - Open Car Park	19	0	1	0
	C - CPR-TK	60	6	0	6
	D - Ting Yat Rd	9	0	3	0

Vehicle Mix

Heavy Vehicle Percentages

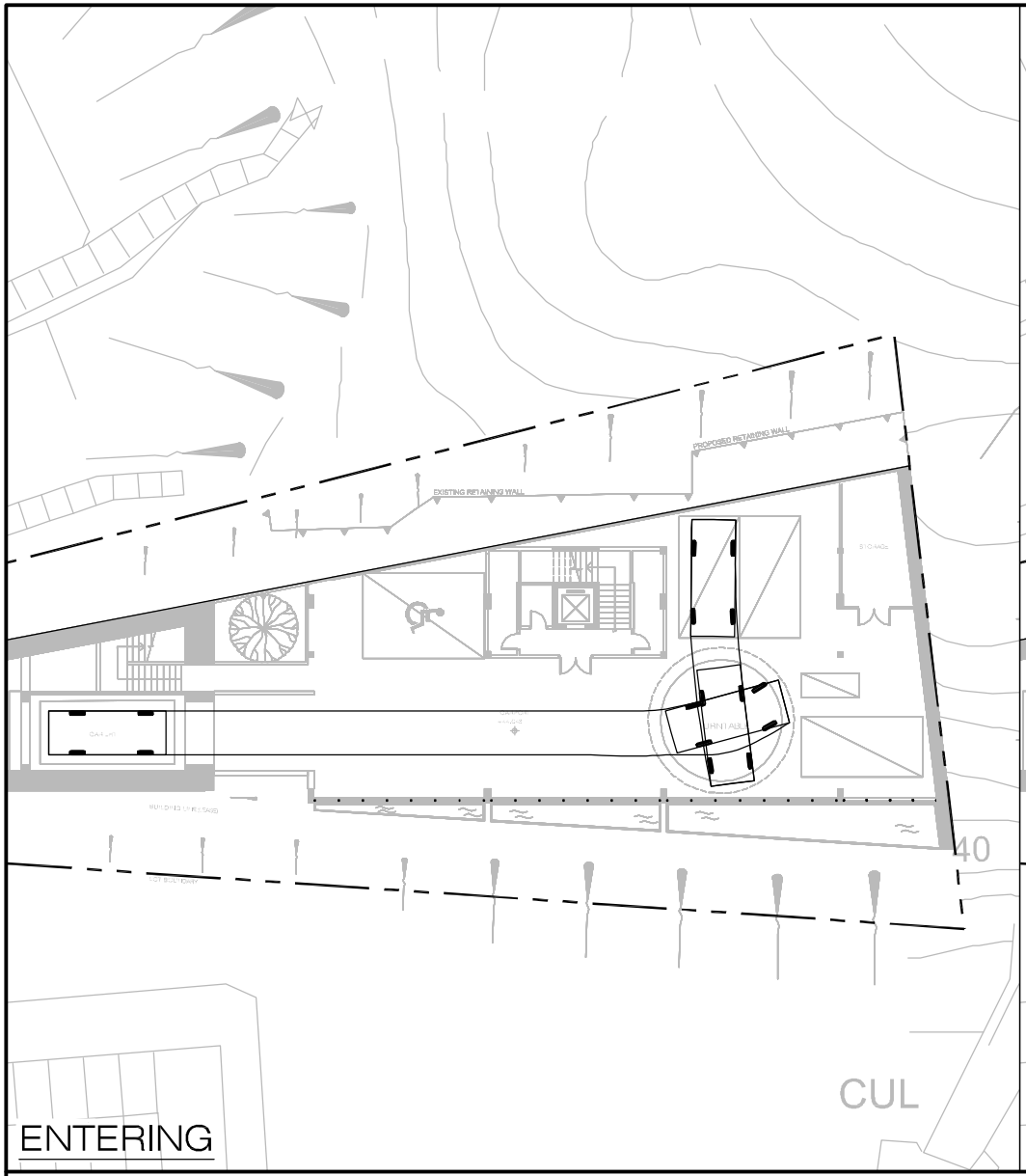
		To			
		A - CPR-TK	B - Open Car Park	C - CPR-TK	D - Ting Yat Rd
From	A - CPR-TK	0	0	0	0
	B - Open Car Park	0	0	0	0
	C - CPR-TK	0	0	0	0
	D - Ting Yat Rd	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.04	6.81	0.0	A
A-BCD	0.01	5.83	0.0	A
A-B				
A-C				
D-ABC	0.02	5.87	0.0	A
C-D				
C-A				
C-B	0.01	5.42	0.0	A

ANNEX B
SWEPT PATH ANALYSIS



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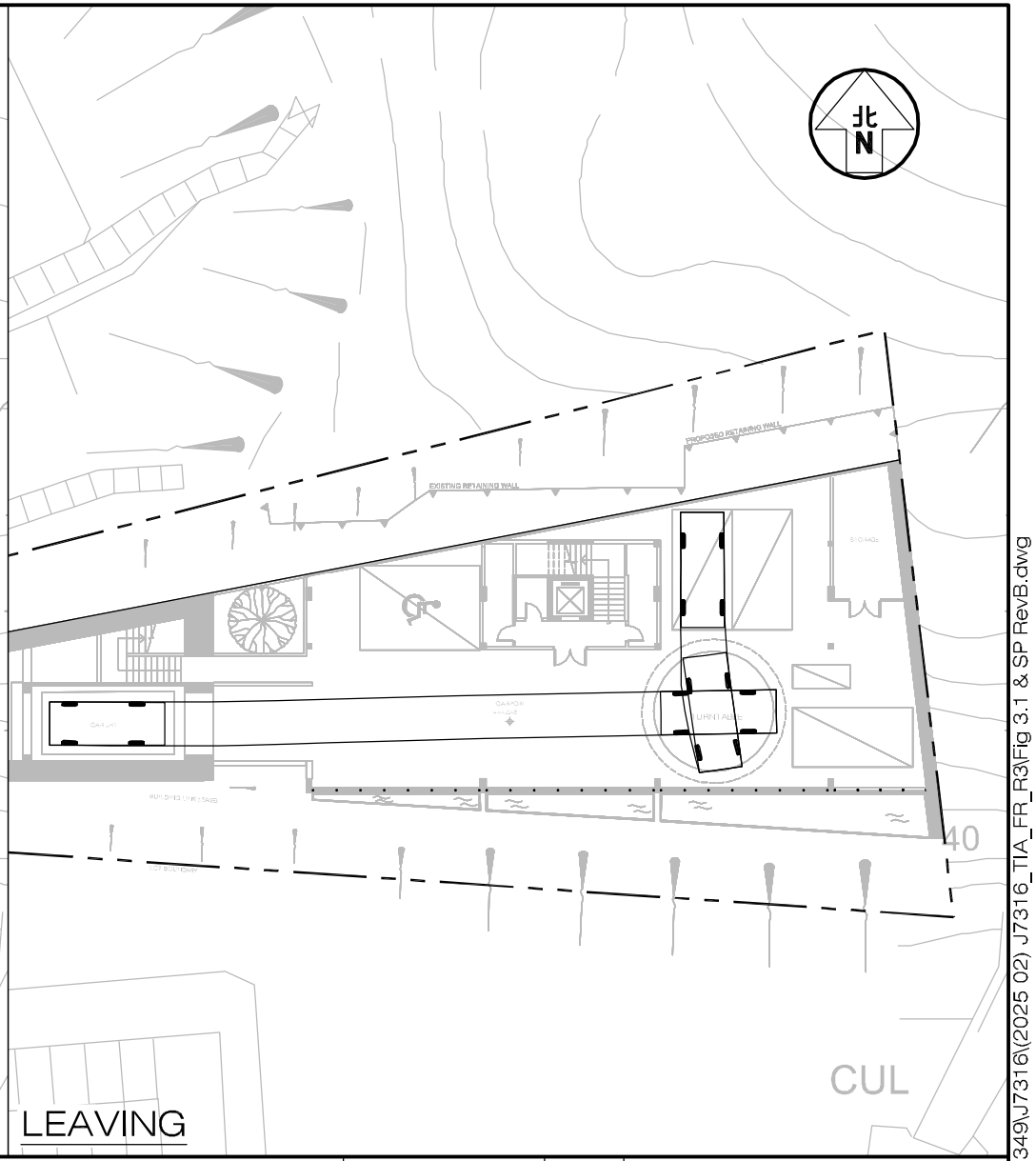

LEAVING

Project Title	PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. SP1 / Revision B
Figure Title	SWEPT PATH OF PRIVATE CAR ENTERING & LEAVING THE CAR PARKING SPACE IN CARPORT		Designed by W C H / Drawn by S C Y / Checked by K C Scale in A4 1 : 300 / Date 14 FEB 2025

CKM Asia Limited
Traffic and Transportation Planning Consultants
21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong
Tel : (852) 2520 5990 Fax : (852) 2528 6343
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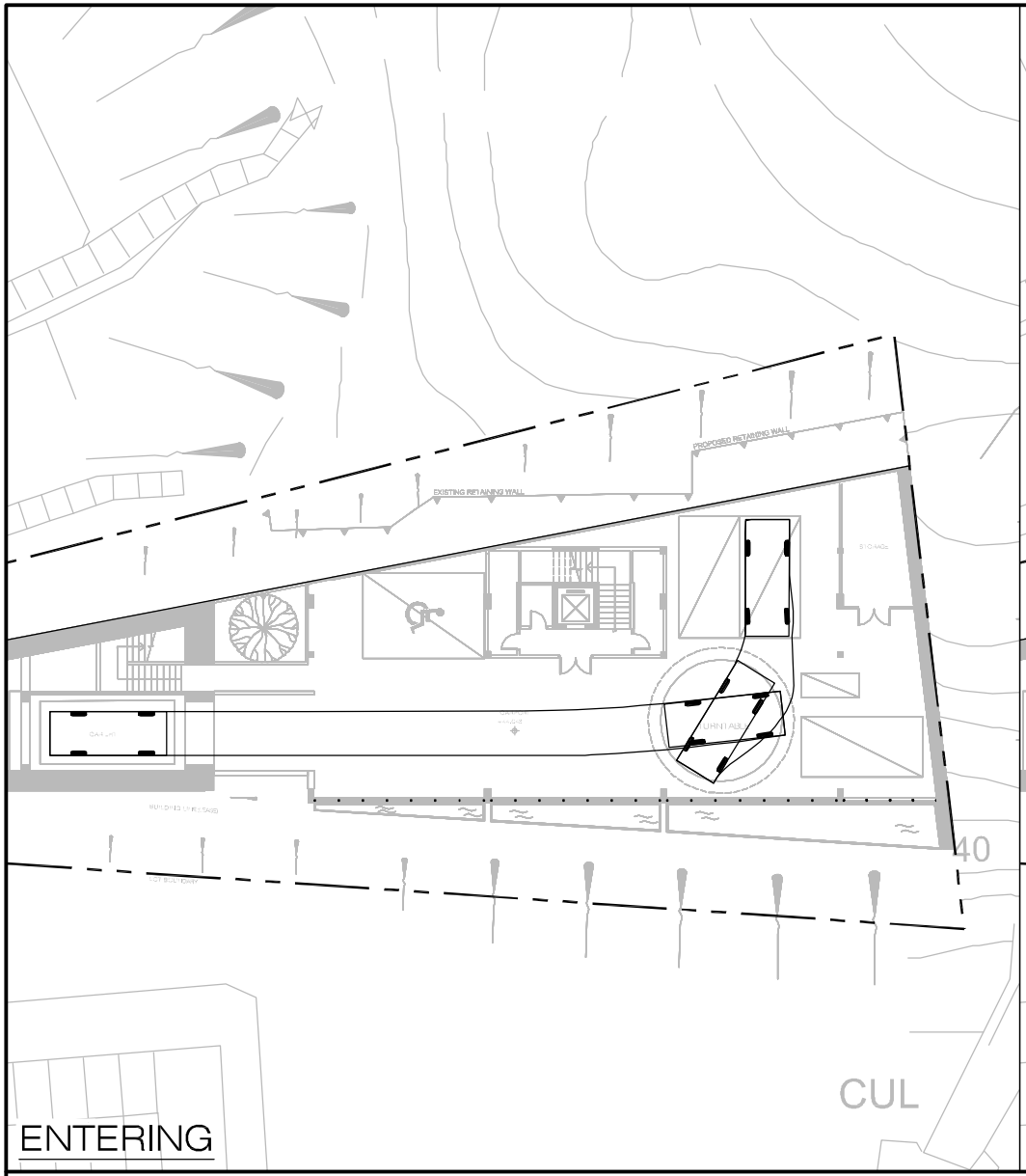
T:\JOBS\J7300-J7349\J7316\(2025 02) J7316_TIA_FR_R3\Fig 3.1 & SP RevB.dwg



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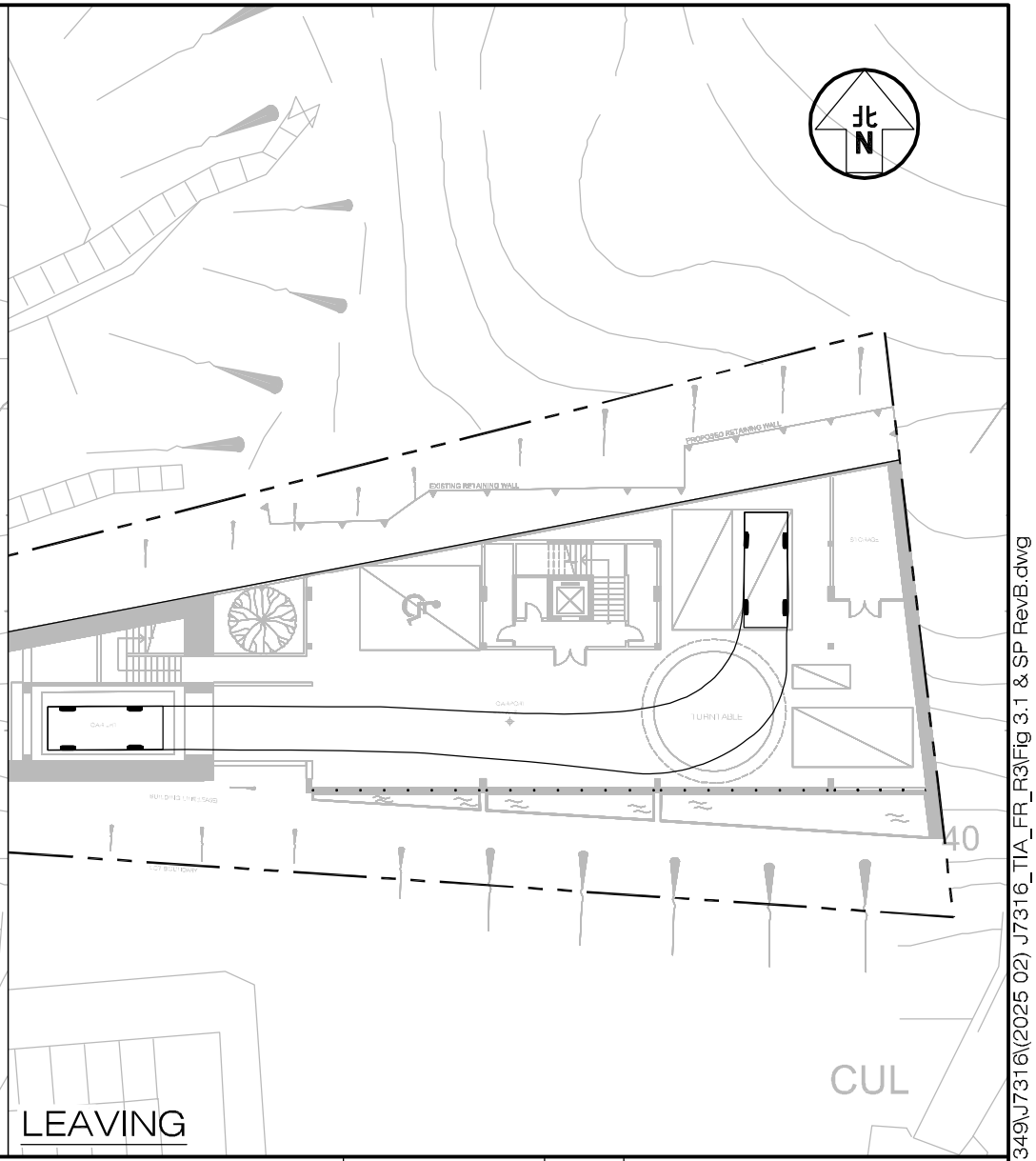

LEAVING

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No.: SP2	Revision: B
Figure Title: SWEPT PATH OF PRIVATE CAR ENTERING & LEAVING THE CAR PARKING SPACE IN CARPORT		Designed by: W C H / Drawn by: S C Y / Checked by: K C	
		Scale in A4: 1 : 300 / Date: 14 FEB 2025	

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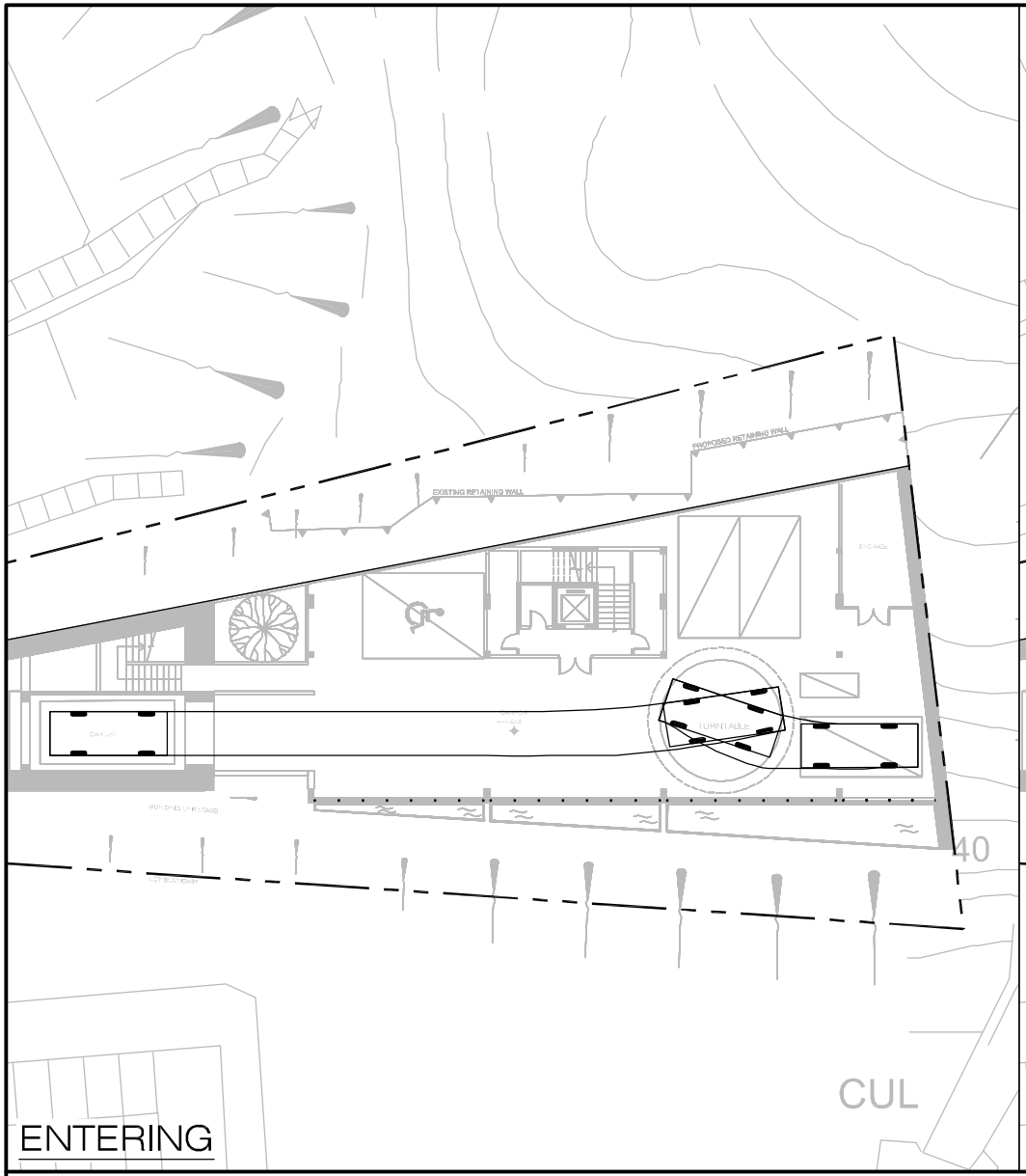

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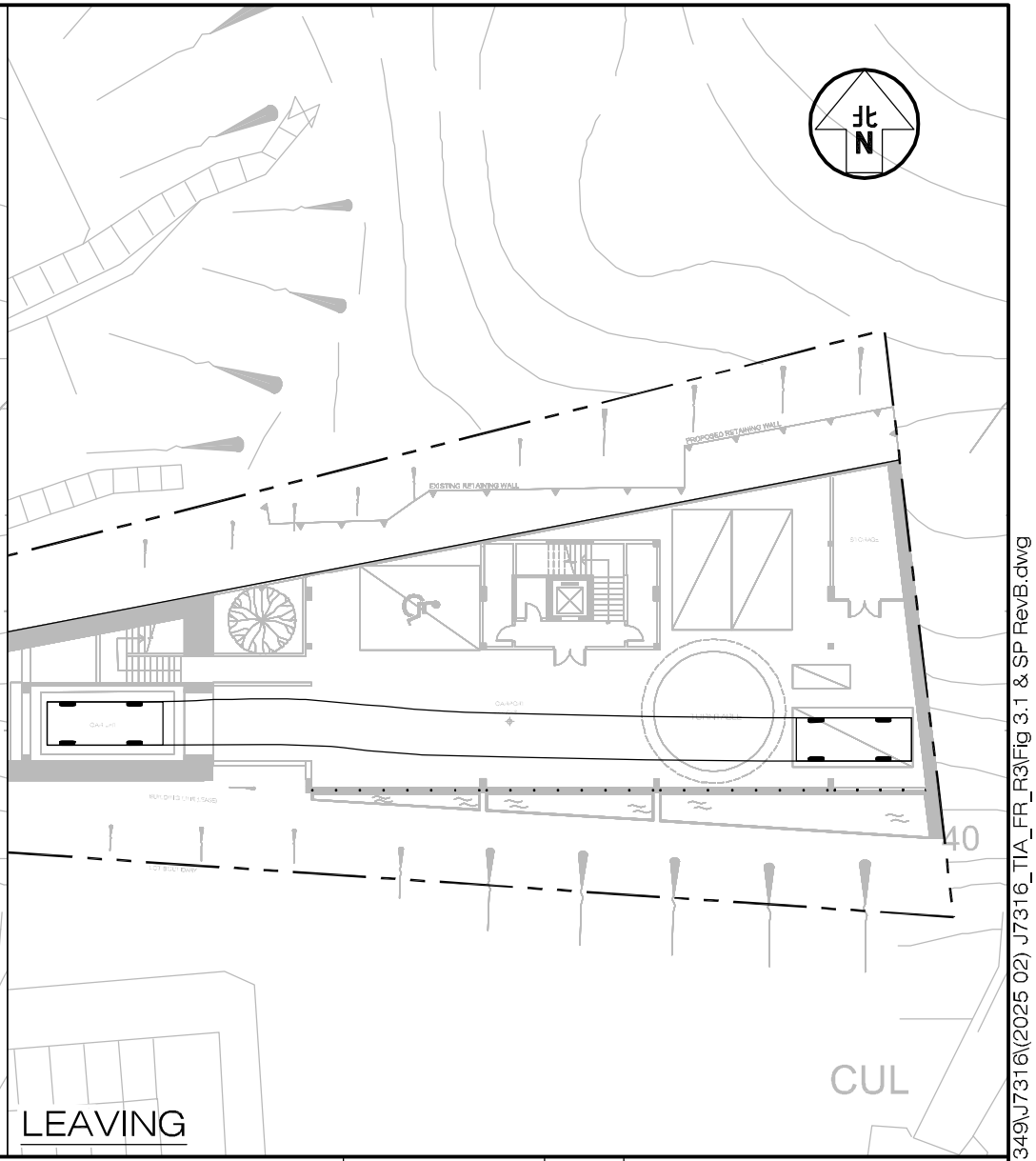

LEAVING

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No.: SP3	Revision: B
Figure Title: SWEPT PATH OF PRIVATE CAR ENTERING & LEAVING THE CAR PARKING SPACE IN CARPORT		Designed by: W C H / Drawn by: S C Y / Checked by: K C	
		Scale in A4: 1 : 300	Date: 14 FEB 2025

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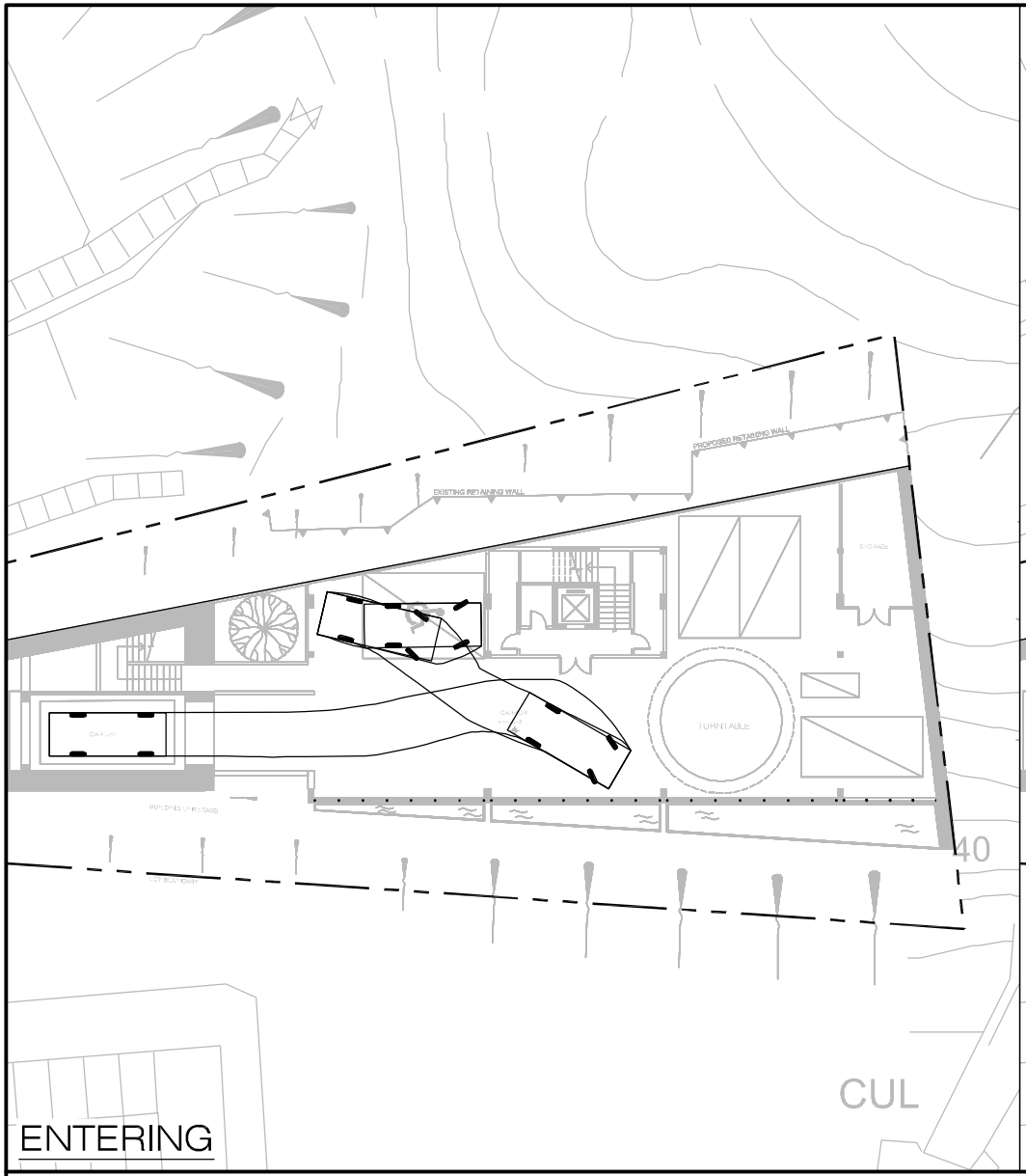

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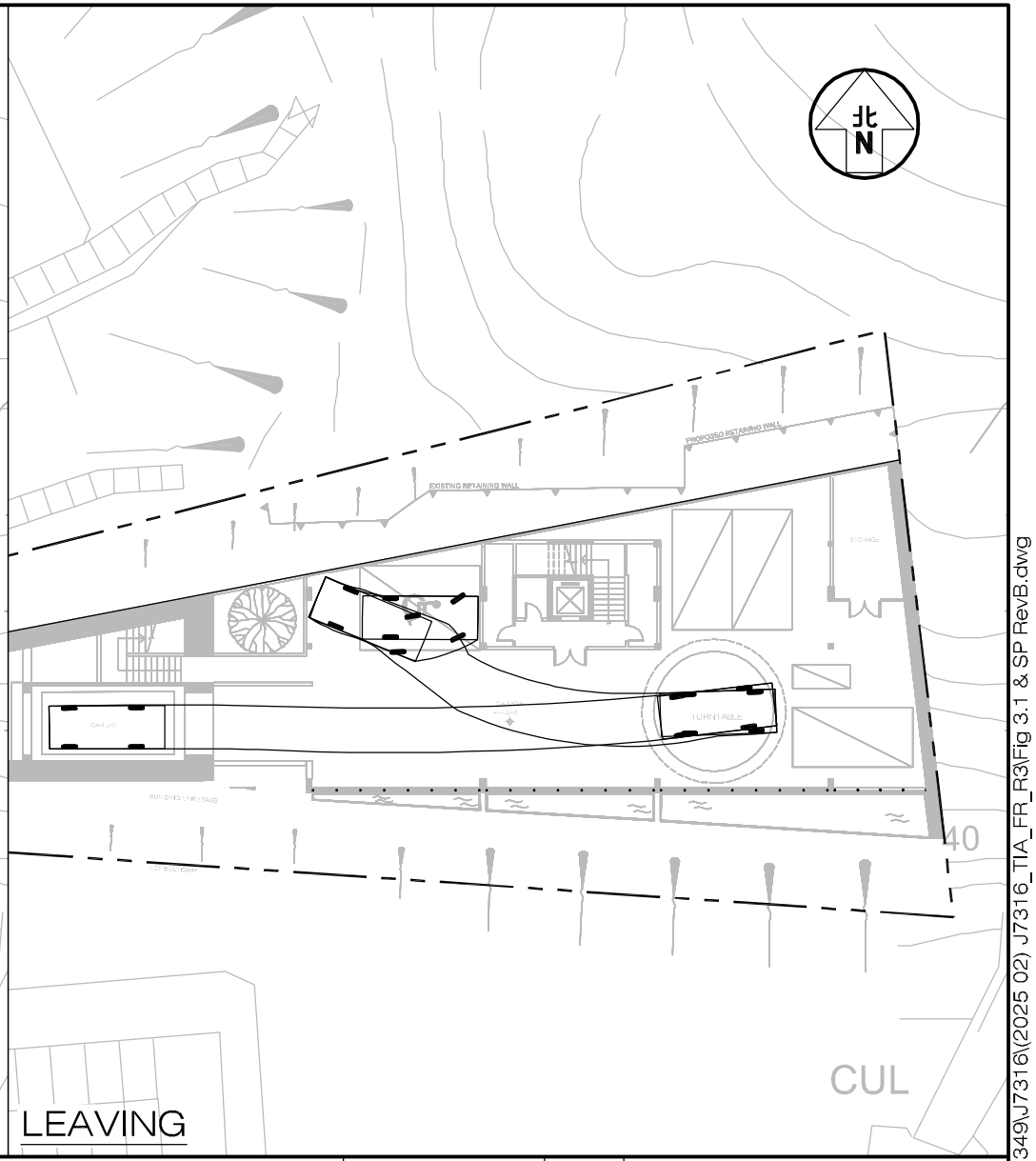

LEAVING

Project Title

PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT

J7316

Figure Title

SWEPT PATH OF PRIVATE CAR
ENTERING & LEAVING THE CAR PARKING SPACE IN CARPORT

Figure No.	Revision
SP4	B

Designed by	Drawn by	Checked by
W C H	S C Y	K C

Scale in A4	Date
1 : 300	14 FEB 2025

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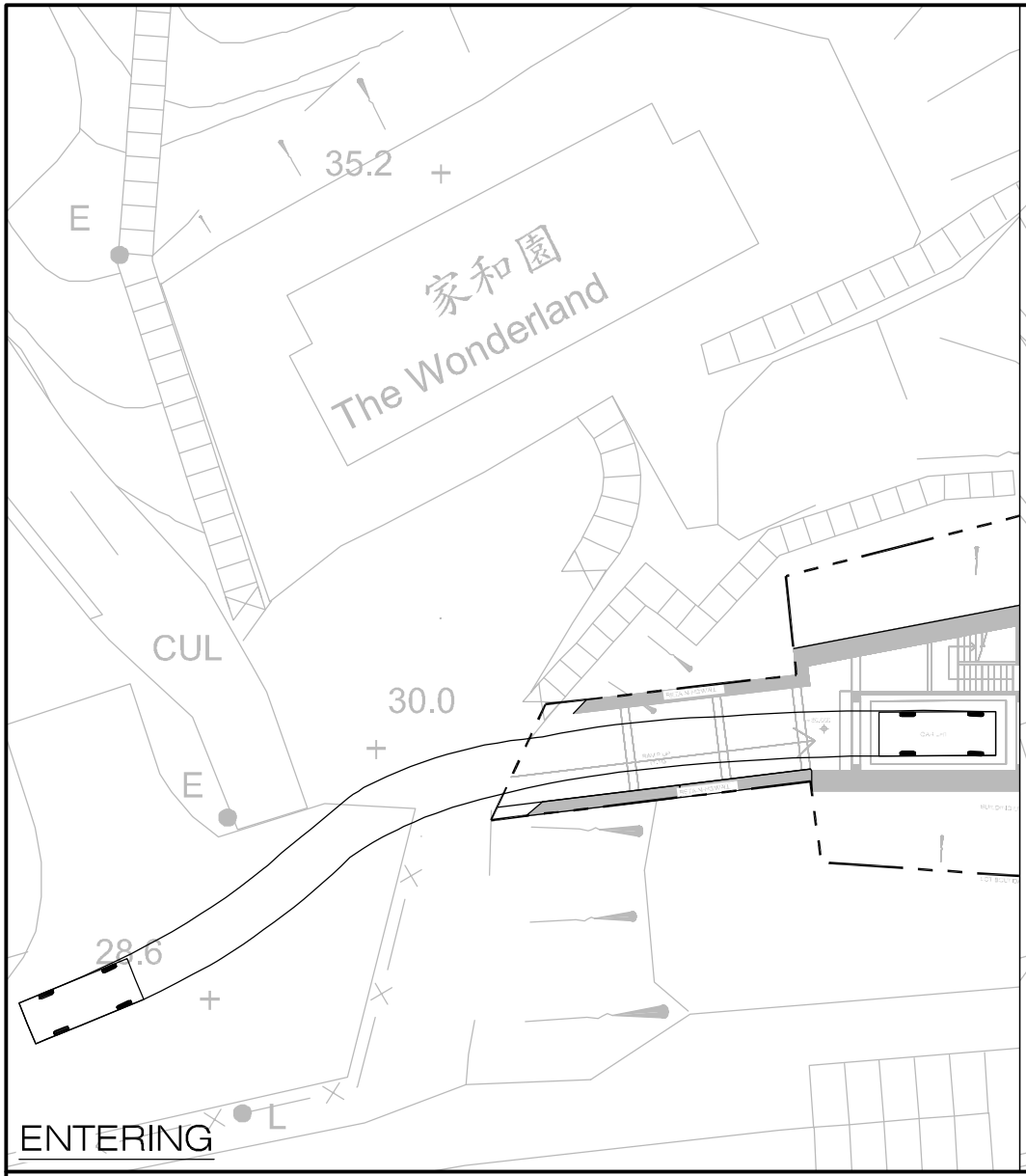

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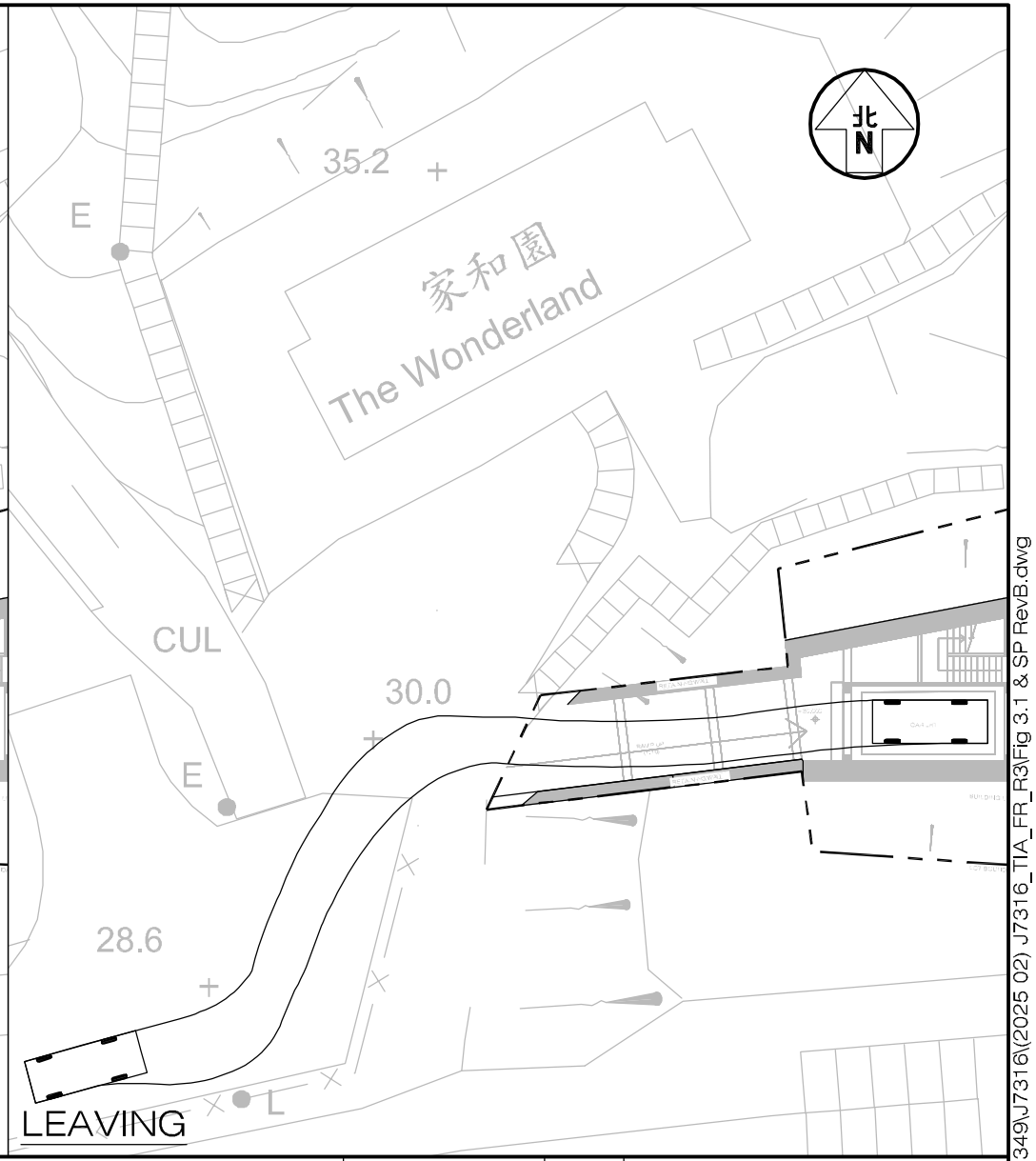

LEAVING

Project Title: PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No.: SP5	Revision: B
Figure Title: SWEPT PATH OF PRIVATE CAR ENTERING & LEAVING THE CAR LIFT AT STREET LEVEL		Designed by: W C H / Drawn by: S C Y / Checked by: K C	
		Scale in A4: 1 : 300	Date: 14 FEB 2025

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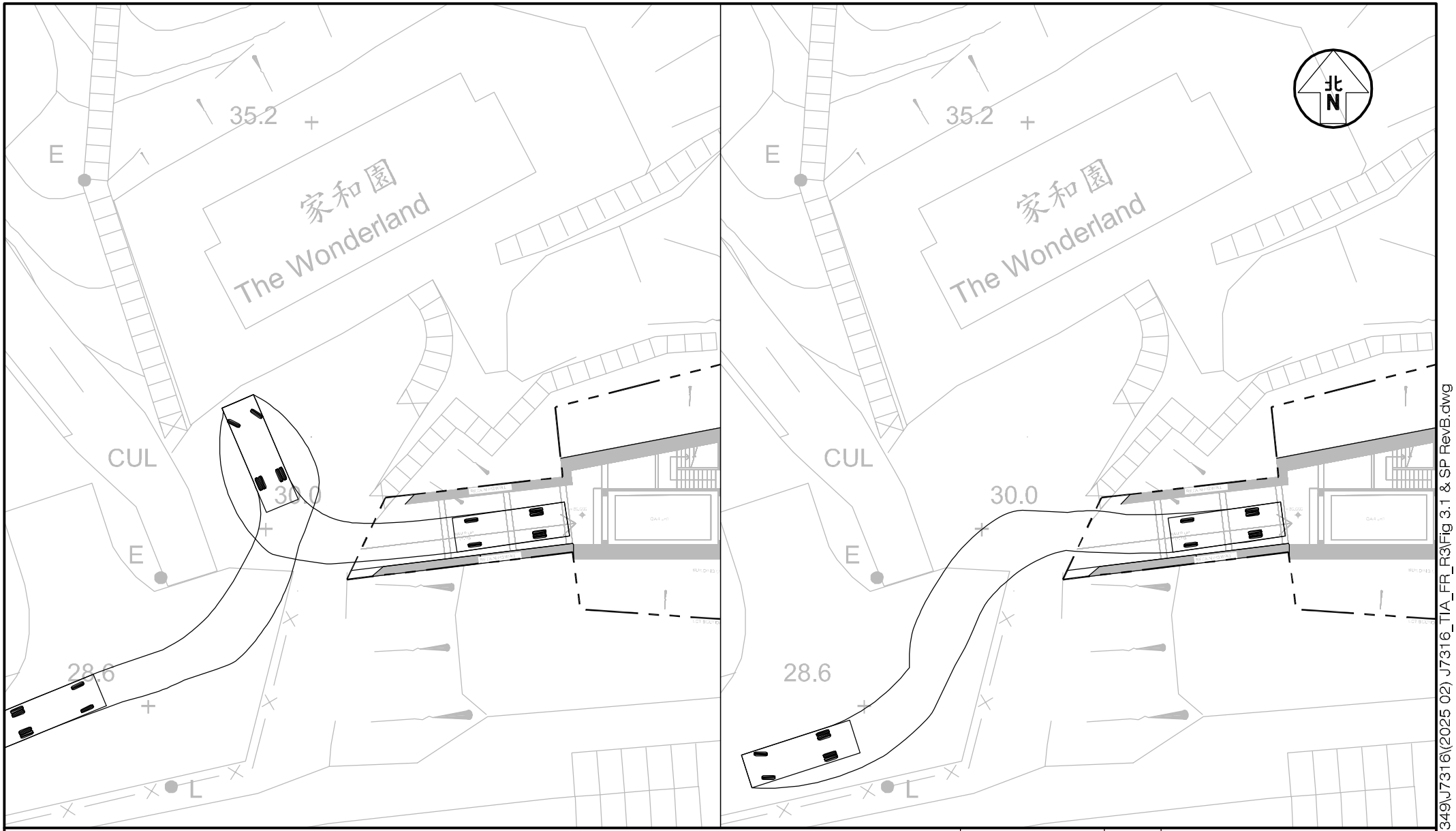

Project Title	PROPOSED DEVELOPMENT AT LOT 453 IN DD399, TING KAU, NT	J7316	Figure No. SP6 / Revision B
Figure Title	SWEPT PATH OF LIGHT GOODS VEHICLE ENTERING & LEAVING THE ACCESS RAMP AT STREET LEVEL		Designed by W C H / Drawn by S C Y / Checked by K C
			Scale in A4: 1 : 300 / Date: 14 FEB 2025

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ANNEX C
CAR LIFT ANALYSIS

Car Lift Analysis -

Based on TPDM Upper Trip Attraction Rates

Job Title Proposed Development
Lot 453 in DD 339, Ting Kau

Date 17 Sep 2024

Parameters

G/F to carport floor (m)	15.7
Average Speed (m/s)	0.5
Travel time (s)	31.0

Activity	**Time (s)**
Car lift travels from G/F to carport floor	31.0
Lift door opens	3.0
Car exits lift in forward gear on carport floor	10.0
Car enters lift in forward gear on carport floor	10.0
Door closes	3.0
Car lift travels from carport floor to G/F	31.0
Lift door opens	3.0
Car exits lift in forward gear on G/F	10.0
Car enters lift in forward gear on G/F	10.0
Door closes	3.0
Total	114.0

Number of lift servers, k	1
Peak Hour Traffic Attraction (TPDM Upper Limit)	1
Arrival rate λ (vehicles / hour)	1.0
Cycle time ω (s)	114.0
Service rate μ of one lift server (vehicles / hour)	31.6

Number of Cars N	**Probability of Exact N Cars in the Lift System**	**Probability of N Cars or Less in the Lift System**	**Probability of More Than N Cars in the Lift System**
0	96.8%	96.8%	3.2%
1	**3.1%**	**99.9%**	**0.1%**
2	0.1%	100.0%	0.0%
3	0.0%	100.0%	0.0%
4	0.0%	100.0%	0.0%
5	0.0%	100.0%	0.0%
6	0.0%	100.0%	0.0%
7	0.0%	100.0%	0.0%

Conclusion

Normal Condition:
The probability of 1 additional car arriving when 1 car lift and 0 waiting spaces being occupied is 0.1%
The provision of 0 waiting space is acceptable under normal condition.

Note:

Floor	Level (m)	Distance from G/F (m)	No. of spaces	Column C * Column D	Remarks
4/F		0.00		0	
3/F		0.00		0	
2/F		0.00		0	
1/F	44.00	15.70	5	78.5	4 PC + 1 MC
G/F	28.30	0.00		0	
B1		0.00		0	
B2		0.00		0	
		TOTAL	**5**	**15.7**	

Formula:

k is the number of lift servers.
λ is the arrival rate in vehicles per 15 minutes.
μ is the service rate of a lift server in vehicles per 15 minutes.

N	1/N!*(λ/μ)	summation from N=0 to N=k-1
0	1	1
1	0	1
2	0	1
3	0	1
4	0	1
5	0	1
6	0	1
7	0	1
8	0	1
9	0	1
10	0	1

Probability of having exactly zero cars in the lift system:

$$P(0) = \frac{1}{\left[\sum_{N=0}^{k-1} \frac{1}{N!}\left(\frac{\lambda}{\mu}\right)^N\right] + \frac{1}{k!}\left(\frac{\lambda}{\mu}\right)^k \frac{k\mu}{k\mu - \lambda}}$$

Probability of having exactly N cars in the lift system:

For N < k:

$$P(N) = \frac{1}{N!}\left(\frac{\lambda}{\mu}\right)^N P(0)$$

For N ≥ k:

$$P(N) = \frac{1}{k!k^{N-k}}\left(\frac{\lambda}{\mu}\right)^N P(0)$$

k - -number of lift servers
λ - -arrival rate
μ - -service rate

ANNEX D
PROJECT PROGRAMME

Project No.: 202327
Project Title : Proposed Residential Redevelopment at La Casetta, Lot 453 in D.D. 399, Ting Kau, Hong Kong

Date : 11/09/2024

Construction Program