Appendix 3

Traffic Impact Assessment (TIA)

Proposed Social Welfare Facilities (Residential Care Home for persons with disabilities (RCHD)) in "Village Type Development" Zone, Lots 3669 S.A RP (Part), 3669 S.B RP (Part), 3670 RP (Part) and adjoining Government Land in D.D.104, Nam Sang Wai, Yuen Long

Traffic Impact Assessment
Final Report
May 2025

Prepared by: CKM Asia Limited

Proposed Social Welfare Facilities (Residential Care Home for persons with disabilities (RCHD)) in "Village Type Development" Zone, Lots 3669 S.A RP (Part), 3669 S.B RP (Part), 3670 RP (Part) and adjoining Government Land in D.D.104, Nam Sang Wai, Yuen Long

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1.0 INTRODUCTION

Background

1.1 The Subject Site is located at lots 3669 S.A RP (Part), 3669 S.B RP (Part), 3670 RP (Part) and adjoining Government Land in D.D.104, Nam Sang Wai, Yuen Long. The location of the Subject Site is shown in Figure 1.1.

1.2 The owner has the intention to develop the Subject Site into a Residential Care Home for persons with disabilities with no more than 220 beds (the "Proposed RCHD").

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

Scope of the Assessment

1.4 The main objectives of this TIA are as follows:

- To assess the existing traffic issues in the vicinity of the Subject Site;
- To quantify the amount of traffic generated by the Proposed RCHD; and
- To examine the traffic impact on the local road network in the vicinity of the Subject Site.

Contents of the Report

1.5 After this introduction, the remaining chapters contain the following:

Chapter Two	-	describes the existing situation;
Chapter Three	-	outlines the development proposal;
Chapter Four	-	presents the traffic impact analysis; and
Chapter Five	-	summarises the overall conclusion

2.0 THE EXISTING SITUATION

The Subject Site

2.1 The Subject Site is located to the immediate north of Kam Pok Road East. At present, the Subject Site has no vehicular access.

Existing Road Network

2.2 Kam Pok Road East is a local distributor, and it is of single carriageway 2-lane standard. It connects with Kam Pok Road to the west and Castle Peak Road – Tam Mi to the east.

2.3 Castle Peak Road – Tam Mi is a rural road, and it is of single carriageway2-lane standard. It connects with The Fairview Park Roundabout to the north and Kam Pok Road East to the south.

Traffic Survey

2.4 To quantify the traffic flows at the junctions chosen for the capacity analysis, manual classified counts were conducted on Friday, 7th March 2025 during the AM and PM peak periods. The locations of the surveyed junctions are presented in Figure 2.1 and their layouts are shown in Figures 2.2 to 2.4.

2.5 The surveyed junctions include the following:

- J1: Kam Pok Road / Kam Pok Road East;
- J2: Castle Peak Road – Tam Mi / Kam Pok Road; and
- J3: The Fairview Park Roundabout

2.6 The counts were classified by vehicle type to enable traffic flows in passenger car units ("pcu") to be calculated. From the survey, the AM and PM peak hours were found to be between 0800 – 0900 and 1700 – 1800 hours respectively, and the existing AM and PM peak hour traffic flows are presented in Figure 2.5.

Operational Performance of the Surveyed Junctions

2.7 The existing operational performance of the surveyed junctions is calculated based on the observed traffic counts and the analysis is undertaken using the methods outlined in Volume 2 of Transport Planning and Design Manual ("TPDM"). The existing operational performance of the junctions are summarised in Table 2.1 and the detailed calculations are found in Appendix 1.

TABLE 2.1 EXISTING JUNCTION OPERATIONAL PERFORMANCE

Ref.	Junction	Type of Junction	Parameter(1)	AM Peak Hour	PM Peak Hour
J1	Kam Pok Road / Kam Pok Road East	Priority	RFC	0.31	0.22
J2	Castle Peak Road – Tam Mi / Kam Pok Road	Signal	RC	24%	38%
J3	The Fairview Roundabout	Roundabout	RFC	0.45	0.45

Notes: (1) RC – reserve capacity RFC – Ratio of Flow to Capacity

2.8 Table 2.1 shows that the junctions now operate with capacity.

Public Transport Facilities

2.9 The Subject Site is located close to public transport services with franchised bus and public light bus routes operating in the vicinity. Details of the franchised bus and green minibus ("GMB") routes operating in the vicinity of the Subject Site are presented in Figure 2.6 and Table 2.2.

TABLE 2.2 FRANCHISED BUS AND GMB SERVICES OPERATING CLOSE TO THE SUBJECT SITE

Route	Routing	Frequency (minutes)
KMB 76K	Long Ping Estate – Ching Ho Estate	20 – 30
KMB 268	Sham Tseng – Kwun Tong (Tsui Ping North Estate)	30 – 35
CTB 976	Sai Wan Ho – Lok Ma Chau (San Tin)	6 per day
CTB 976A	Siu Sai Wan (Island Resort) – Lok Ma Chau (San Tin)	2 per day
GMB 36	Yuen Long (Fook Hong Street) – Tai Sang Wai Rural Office	10 – 15
GMB 37	Yuen Long (Fook Hong Street) – Yau Tan Mei Village Office	12 – 15
GMB 38	Yuen Long (Fook Hong Street) – Yau Tam Mei West	10 – 15
GMB 75	Yuen Long (Fook Hong Street) – Lok Ma Chau Spur Line Public Transport Interchange	7 – 9
GMB 76	Yuen Long (Fook Hong Street) – Siu Hum Tsuen	15 – 20
GMB 78	Pat Heung Road (near Tai Lam Bus-Bus Interchange) – Lok Ma Chau (San Tin) Public Transport Interchange	20 – 25

Note: KMB – Kowloon Motor Bus CTB – Citybus GMB – Green Minibus

Trip Generation Rates for RCHD

2.10 In view that the TPDM does not have trip generation rates for RCHD, trip generation surveys were conducted at 3 RCHDs. Details of these RCHDs are found in Table 2.3, and survey results are presented in Table 2.4.

TABLE 2.3 DETAILS OF THE SURVEYED RCHDs

Ref.	RCHD	Address	No. of beds	Distance from nearest MTR Station
1	Caritas Jockey Club Lai King Rehabilitation Centre	31 Lai Chi Ling Road, Kwai Chung, New Territories	505	1.5 km (Lai King Station)
2	Salvation Army Lai King Home	200-210 Lai King Hill Road, Kwai Chung, New Territories	100	1 km (Lai King Station)
3	Tung Hoi Association for the Gifted Child Limited	Section A, B, C, D, E and F of Lot No. 2340 in DD No. 104, Yuen Long, New Territories	111	4.5 km (Yuen Long Station)

TABLE 2.4 TRIP RATES OF THE SURVEYED RCHDs

Ref.	RCHD	AM Peak Hour		PM Peak Hour	
		IN	OUT	IN	OUT
Traffic Generation (pcu/hour)					
1	Caritas Jockey Club Lai King Rehabilitation Centre	11	9	1	3
2	Salvation Army Lai King Home	5	2	2	6
3	Tung Hoi Association for the Gifted Child Limited	5	4	4	5
Trip Rates (pcu/hour/ bed)					
1	Caritas Jockey Club Lai King Rehabilitation Centre	0.0218	0.0178	0.0020	0.0059
2	Salvation Army Lai King Home	0.0500	0.0200	0.0200	0.0600
3	Tung Hoi Association for the Gifted Child Limited	0.0450	0.0360	0.0360	0.0450
	Adopted (maximum rates) =	0.0500	0.0360	0.0360	0.0600

Pedestrian Generation Rates for RCHD

2.11 In view that the TPDM does not have pedestrian generation rates for RCHD, hence, pedestrian generation surveys were also conducted at the 3 RCHDs found in Table 2.3. The survey results are presented in Tables 2.5.

TABLE 2.5 PEDESTRIAN TRIP RATES OF THE SURVEYED RCHDs

Ref.	RCHD	AM Peak Hour		PM Peak Hour	
		IN	OUT	IN	OUT
Pedestrian Generation (pedestrian/15 min)					
1	Caritas Jockey Club Lai King Rehabilitation Centre	22	2	4	9
2	Salvation Army Lai King Home	5	1	1	4
3	Tung Hoi Association for the Gifted Child Limited	1	1	1	2
Pedestrian Generation Rates (pedestrian/15 min/bed)					
1	Caritas Jockey Club Lai King Rehabilitation Centre	0.0436	0.0040	0.0079	0.0178
2	Salvation Army Lai King Home	0.0500	0.0100	0.0100	0.0400
3	Tung Hoi Association for the Gifted Child Limited	0.0090	0.0090	0.0090	0.0180
	Adopted (maximum rates) =	0.0500	0.0100	0.0100	0.0400

Utilisation of Surveyed Bus Stops

2.12 An utilisation survey was conducted during the AM and PM peak periods at Tai Sang Wai (towards San Tin) and Long Ha (towards Yuen Long) bus stops and the results are presented in Tables 2.6 and 2.7 respectively.

TABLE 2.6 RESULTS OF THE UTILISATION SURVEY AT TAI SANG WAI (TOWARDS SAN TIN) BUS STOP

Route[1]	No. of Vehicle	No. of Passengers on-board[2] [a]	Capacity[3] [b]	Vacancy [b] – [a]	Occupancy [a] / [b]
AM Peak					
KMB 76K	3	146	384	238	38.0%
KMB 268	2	14	124	110	11.3%
GMB 37	5	65	86	21	75.6%
GMB 38	6	77	102	25	75.5%
GMB 75	3	27	51	24	52.9%
GMB 76	2	15	32	17	46.9%
GMB 78	2	12	38	26	31.6%
Total	23	356	817	461	43.6%
PM Peak					
KMB 76K	3	154	384	230	40.1%
KMB 268	2	14	124	110	11.3%
GMB 37	7	93	118	25	78.8%
GMB 38	9	95	147	52	64.6%
GMB 75	3	36	48	12	75.0%
GMB 76	1	10	19	9	52.6%
GMB 78	2	12	38	26	31.6%
Total	27	414	878	464	47.2%

Note: [1] KMB – Kowloon Motor Bus GMB – Green Minibus
[2] Passengers counted the moment before the vehicles departed from the bus stop
[3] Assumed capacities: Double-decker = 128, Single-decker = 62

TABLE 2.7 RESULTS OF THE UTILISATION SURVEY AT LONG HA (TOWARDS YUEN LONG) BUS STOP

Route[1]	No. of Vehicle	No. of Passengers on-board[2] [a]	Capacity[3] [b]	Vacancy [b] – [a]	Occupancy [a] / [b]
AM Peak					
KMB 76K	3	89	384	295	23.2%
KMB 268	2	14	124	110	11.3%
GMB 37	6	71	99	28	71.7%
GMB 38	2	22	32	10	68.8%
GMB 75	2	83	102	19	81.4%
GMB 76	2	16	32	16	50.0%
Total	17	295	773	478	38.2%
PM Peak					
KMB 76K	2	70	256	186	27.3%
KMB 268	3	21	186	165	11.3%
GMB 37	5	46	86	40	53.5%
GMB 38	4	40	67	27	59.7%
GMB 75	3	38	48	10	79.2%
GMB 76	2	33	51	18	64.7%
Total	19	248	694	446	35.7%

Note: [1] KMB – Kowloon Motor Bus GMB – Green Minibus
[2] Passengers counted the moment before the vehicles departed from the bus stop
[3] Assumed capacities: Double-decker = 128, Single-decker = 62

2.13 Table 2.6 shows that the utilisation of the franchised buses at Tai Sang Wai (towards San Tin) bus stop is 43.6% during the AM Peak Hour and 47.2% during the PM Peak Hour. Whilst, Table 2.7 shows that the utilisation of the franchised buses at Long Ha (towards Yuen Long)) bus stop is 38.2% during the AM Peak Hour and 35.7% during the PM Peak Hour.

3.0 THE PROPOSED RCHD

Proposed RCHD

3.1 The Proposed RCHD consists of 1 building block with no more than 220 beds and is targeted for completion by 2030. The vehicular assess of Proposed RCHD is provided at Kam Pok Road East.

Provision of Internal Transport Facilities

3.2 The HKPSG has no recommendation on the provision of internal transport facilities for RCHD, hence, reference is made to the 3 RCHDs listed in Table 2.3. The internal transport facilities provision rate derived from the 3 RCHDs are found in Table 3.1.

TABLE 3.1 INTERNAL TRANSPORT FACILITIES PROVIDED IN SURVEYED RCHDs

Ref.	RCHD	No. of beds	Internal Transport Facilities		
			Car	Light Bus / Ambulance	LGV
Parking Provision					
1	Caritas Jockey Club Lai King Rehabilitation Centre	505	6	1	1
2	Salvation Army Lai King Home	100	5	0	0
3	Tung Hoi Association for the Gifted Child Limited	111	4	0	0
Provision rate (space / bed)					
1	Caritas Jockey Club Lai King Rehabilitation Centre	505	0.0119	0.0020	0.0020
2	Salvation Army Lai King Home	100	0.0500	0.0000	0.0000
3	Tung Hoi Association for the Gifted Child Limited	111	0.0360	0.0000	0.0000
		Adopted provision rate =	0.0500	0.0020	0.0020

3.3 Based on the adopted provision rate in Table 3.1, the calculated internal transport facilities for the Proposed RCHD are presented in Table 3.2.

TABLE 3.2 PROVISION OF INTERNAL TRANSPORT FACILITIES FOR THE PROPOSED RCHD

Use	No. of beds	Internal Transport facilities	Provision	Dimensions
RCHD	220	Car Parking Space	11	10 @ 5m (L) x 2.5m (W) x 2.4m (H) 1 @ 5m (L) x 3.5m (W) x 2.4m (H) for persons with disabilities
		LGV loading / unloading bay	1	1 @ 7m (L) x 3.5m (W) x 3.6m (H)
		Light Bus / Ambulance Parking Space	1	1 @ 9m (L) x 3.0m (W) x 3.3m (H)

3.4 The carpark layout plans for G/F and B/F are shown in Figures 3.1 – 3.2.

Swept Path Analysis

3.5 The CAD-based swept path analysis program, Autodesk Vehicle Tracking, was used to check the ease of vehicle manoeuvring. Vehicles are found to have no

manoeuvring problems and all vehicles could enter and leave the spaces with ease. The swept path analysis drawings for critical movements are found in Appendix 2.

Vehicle Lift Analysis

3.6 A vehicle lift is provided to access B/F from G/F. A vehicle lift analysis was conducted to check on the operation of the vehicle lift system, and it was found that the vehicle lift system is acceptable and can serve the Proposed RCHD. The vehicle lift analysis is attached in Appendix 3.

4.0 TRAFFIC IMPACT

Design Year

4.1 The Proposed RCHD is expected to be completed by 2030, and the design year adopted for the capacity analysis is 2033, i.e. 3 years after the completion of the Proposed RCHD.

Traffic Forecasting

4.2 The 2033 traffic flows used for the junction analysis are produced with reference to the following:

(i) 2031 traffic flows derived based on the NTW1 Base District Traffic Model ("BDTM");

(ii) estimated traffic growth from 2031 to 2033 based on the higher of: (a) Hong Kong Population Projections 2022 – 2046, published by Census and Statistics Department, or (b) historic Annual Average Daily Traffic ("AADT") produced by Transport Department;

(iii) the other developments in the vicinity of the Proposed RCHD; and

(iv) Traffic generated by the Proposed RCHD.

4.3 The (ii) estimated traffic growth from 2031 to 2033, (iii) the other development in the vicinity of the Proposed RCHD and (iv) traffic generated by the Proposed RCHD are presented in the paragraphs below.

Estimated Growth Rate from 2031 to 2033

4.4 The (a) Hong Kong Population Projections 2022 – 2046, and (b) historic AADT are summarised in Tables 4.1 – 4.2 respectively.

TABLE 4.1 HONG KONG POPULATION PROJECTIONS 2022 – 2046

Whole Territory Population		Annual Growth Rate
Year 2031	Year 2033	2031 to 2033
7,820,200	7,903,600	0.53%

TABLE 4.2 AADT OF THE STATION IN THE VICINITY OF THE SUBJECT SITE

Year \ Station	5016	5019	5257	5297	5505	5508	5496	Overall
2013	90,610	34,530	12,620	8,220	9,030	68,040	35,980	259,030
2014	88,800	36,490	10,600	6,200	11,990	72,580	30,750	257,410
2015	86,180	34,380	10,510	6,140	12,090	85,910	27,750	262,960
2016	92,230	31,990	10,940	6,400	12,590	90,760	28,900	273,810
2017	90,650	30,040	10,770	6,300	12,390	90,110	28,450	268,710
2018	86,230	29,300	11,980	8,540	12,700	92,980	29,150	270,880
2019	90,860	30,160	11,910	7,530	13,330	80,460	26,970	261,220
2020	81,870	27,640	11,420	7,220	13,420	82,010	13,100	236,680
2021	86,620	29,600	11,880	7,510	13,960	86,000	13,630	249,200
2022	82,820	28,180	11,520	7,280	13,540	82,190	13,210	238,740
2023	88,760	55,700	10,740	10,960	13,860	87,340	13,520	280,880
Average Annual Growth								0.81%

Note: 5016 – San Tin Highway, Castle Peak Road & San Tam Road (From Kam Tin Road to Fairview Park Boulevard)
5019 – Castle Peak Road – Yuen Long (From Yuen Long On Lok Road to Kam Tin Road)
5257 – Castle Peak Road – Tam Mi, Mai Po & San Tin (From Fairview Park Boulevard to Lok Ma Chau Road)
5297 – San Tam Road (From Castle Peak Road – Mai Po to Fairview Park Boulevard Roundabout)
5505 – Sam Tam Road (From Fairview Park Boulevard RA to End)
5508 – San Tin Highway (From Fairview Park Boulevard to Lok Ma Chau Road)
5496 – San Sham Road (From San Tin Interchange to End of San Sham Road)

4.5 Table 4.1 shows that the annual growth rate from 2031 to 2033 is +0.53%. Table 4.2 shows that in the historic AADT of the stations between 2013 and 2023 in the vicinity has average annual growth rate of +0.81% per annum. To be conservative, the growth rate of +1.00% per annum is adopted for the traffic growth between 2031 and 2033.

Other Developments in the Vicinity of the Proposed RCHD

4.6 The major planned developments in the vicinity of the Proposed RCHD are summarized in Table 4.3, and are included in the traffic forecast.

TABLE 4.3 DETAILS OF MAJOR PLANNED DEVELOPMENTS

Site	Address	Use	Development Parameter (Approx.)
1	TPB ref.: A/YL-KTN/663-1: Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long	Residential	Around 1,154 flats
2	TPB ref.: A/YL-MP/205-1: Lots 3054 S.A RP, 3098 RP (Part), 3108 (Part), 3109 (Part), 3100 (Part), 3110, 3111, 3112, 3113, 3114, 3115 RP, 3119 RP, 3122 RP, 3123, 3124, 3126, 3131 S.A, 3131 S.B, 3131 S.C, 3131 S.D, 3131 RP, 3132, 3138, 3146, 3147 RP (Part), 3148, 3150 RP, 3156 RP, 3158 RP, 3162, 3163, 3164 S.A, 3164 RP, 3167, 3168, 3171, 3173, 3176, 3177, 3178, 3179, 3180 RP, 3181 RP, 3182 RP, 3189 RP, 3190, 3191, 3192 RP, 3193RP and 3194 RP in D.D. 104 and Adjoining Government Land, Mai Po, Yuen Long, New Territories	Residential	Around 71 flats
3	TPB ref.: A/YL-MP/344: Lots 50 S.A and 77 in D.D.101, Wo Shang Wai, Mai	Residential	Around 789 flats

Site	Address	Use	Development Parameter (Approx.)
	Po, Yuen Long		
4	TPB ref.: A/YL-NTM/178: Lots 435(Part), 436(Part), 438, 439, 442-444, 445(Part), 446-454, 456(Part), 457(Part), 459, 460, 461(Part), 462(Part), 463(Part), 464(Part), 465-474, 476, 478-483, 484(Part), 485, 486(Part), 492495(Part), 516-518, 520, 521(Part), 522(Part), 541(Part), 542(Part), 543-545, 547-552, 555, 556, 559, 560, 562, 563(Part), 564(Part), 572(Part), 573, 574, 575(Part), 576(Part) and Adjoining Government Land in DD 105, Shek Wu Wai, Ngau Tam Mei, Yuen Long	Residential	Around 322 flats
5	TPB ref.: A/YL-MP/341: Various Lots in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long	Residential	Around 2150 flats
6	TPB ref.: A/YL-MP/247: Lots 3054 S.B RP and 3055 in D.D.104, near Yau Mei San Tsuen, Yuen Long	Residential	Around 105 flats
7	TPB ref.: A/YL-MP/287: Lots 3207 RP, 3209 RP, 3220 RP, 3221 RP, 3224 RP, 3225 S.A RP, 3225 S.C RP, 3225 RP, 3226 S.A RP, 3226 RP, 3228, 3229, 3230 RP, 3250 S.B ss.21 RP, 3250 S.B ss.33 S.B, 3250 S.B ss.40 S.A RP, 3250 S.B ss.40 RP and 4658 RP in D.D. 104 and Adjoining Government Land, Mai Po, Yuen Long, New Territories	Residential	Around 65 flats
8	TPB ref.: Y/YL-NSW/4: Lots 594, 595 (Part), 600 (Part) , 1288 S.B RP (Part), 1289 S.B RP (Part) and 1292 S.B RP (Part) in D.D. 115, Nam Sang Wai, Yuen Long	Residential	Around 57 flats
9	TPB ref.: A/YL-NSW/274: Lots 592 S.C ss.1 S.A, 592 S.C ss.4 and 1252 S.C in D.D. 115, Tung Shing Lei, Yuen Long	Residential, Office and RCHE	Around 1518 flats, office with 1800m^2 GFA and RCHE with no more than 10 beds
10	TPB ref.: A/YL-NSW/314: Various lots in D.D.104, North of Kam Pok Road East, Pok Wai, Yuen Long, New Territories	Residential	Around 90 flats

Traffic Generated by the Proposed RCHD

4.7 Traffic generation associated with the Proposed RCHD is calculated based on results presented in Table 2.4, and the calculation is presented in Table 4.4.

TABLE 4.4 TRAFFIC GENERATION OF THE PROPOSED RCHD

Item	AM Peak Hour			PM Peak Hour		
	In	Out	2-way	In	Out	2-way
Trip Generation Rates for RCHD (pcu/hour/bed) in Table 2.4						
RCHD	0.0500	0.0360	NA	0.0360	0.0600	NA
Traffic Generation of Proposed RCHD (pcu/hour)						
RCHD: 220 beds	11	8	19	8	14	22

4.8 Table 4.4 shows that the total 2-way traffic generated by the Proposed Development is only 18 and 20 pcu/hour (2-way) during the AM and PM peak hours respectively.

2033 Traffic Flows

4.9 Year 2033 traffic flows for the following cases are derived:

2033 without the Proposed RCHD [A]	= (i) 2031 traffic flows derived with reference to BDTM + (ii) estimated total growth from 2031 to 2033 + (iii) Other Developments in the Vicinity of the Proposed RCHD
2033 with the Proposed RCHD [B]	= [A] + (iv) traffic generated by the Proposed RCHD (Table 4.4)

4.10 The 2033 peak hour traffic flows for the cases without and with the Proposed RCHD, are shown in Figures 4.1 - 4.2, respectively.

2033 Junction Operational Performance

4.11 Year 2033 capacity analysis for the cases without and with the Proposed RCHD are summarised in Table 4.5 and detailed calculations are found in the Appendix 1.

TABLE 4.5 2033 JUNCTION OPERATIONAL PERFORMANCE

Ref.	Junction	Type of Junction / Parameter[1]	Without the Proposed RCHD		With the Proposed RCHD	
			AM Peak	PM Peak	AM Peak	PM Peak
J1	Kam Pok Road / Kam Pok Road East	Priority / RFC	0.34	0.24	0.34	0.24
J2[2]	Castle Peak Road – Tam Mi / Kam Pok Road	Signal / RC	26%	34%	25%	32%
J3	The Fairview Roundabout	Roundabout / RFC	0.66	0.71	0.66	0.72

Notes: [1] RC – reserve capacity RFC – Ratio of Flow to Capacity
[2] Cycle time increased from 94s to 120s as proposed by the approved A/YL-NSW/314

4.12 Table 4.5 shows that the junctions operate with capacities during the AM and PM peak hours for the cases without and with the Proposed RCHD.

Impact on Utilisation of Surveyed bus stops

4.13 To be conservative, it is assumed that all pedestrians generated by the Proposed RCHD will use public transport services. The number of public transport passengers generated by the Proposed RCHD is calculated based on the pedestrian generation of the Proposed RCHD, as presented in Table 2.5, and the calculation is found in Table 4.6.

TABLE 4.6 PUBLIC TRANSPORT PASSENGERS GENERATED BY THE PROPOSED RCHD

Item	AM Peak Hour			PM Peak Hour		
	In	Out	2-way	In	Out	2-way
Pedestrian Generation Rates for RCHD (pedestrian/15 min/bed) in Table 2.5						
RCHD	0.0500	0.0100	NA	0.0100	0.0400	NA
Pedestrian Generation of Proposed RCHD (pedestrian/15 min)						
RCHD: 220 beds	11	3	14	3	9	12
Pedestrian Generation of Proposed RCHD (pedestrian/1 hour)						
RCHD: 220 beds	44	12	56	12	36	48

4.14 The public transport utilisation analysis is presented in Table 4.7.

TABLE 4.7 THE UTILISATION OF THE PUBLIC TRANSPORT SERVICES FOR THE CASE WITH THE PROPOSED RCHD

No.	Location	Occupancy of Public Transport Service	
		AM Peak	PM Peak
1	Tai Sang Wai (towards San Tin) Bus Stop	47.0%	49.9%
2	Long Ha (towards Yuen Long) Bus Stop	41.8%	39.2%

4.15 Table 4.7 shows that the public transport service have capacity to accommodate the passenger demand generated by the Proposed RCHD.

5.0 CONCLUSION

5.1 The Subject Site is located at lots 3669 S.A RP (Part), 3669 S.B RP (Part), 3670 RP (Part) and adjoining Government Land in D.D. 104, Nam Sang Wai, Yuen Long. The owner has the intention to develop the Subject Site into a RCHD with no more than 220 beds.

5.2 Manual classified counts were conducted at junctions located in the vicinity of the Proposed RCHD in order to establish the peak hour traffic flows. Currently, these junctions operate with capacities during the AM and PM peak hours.

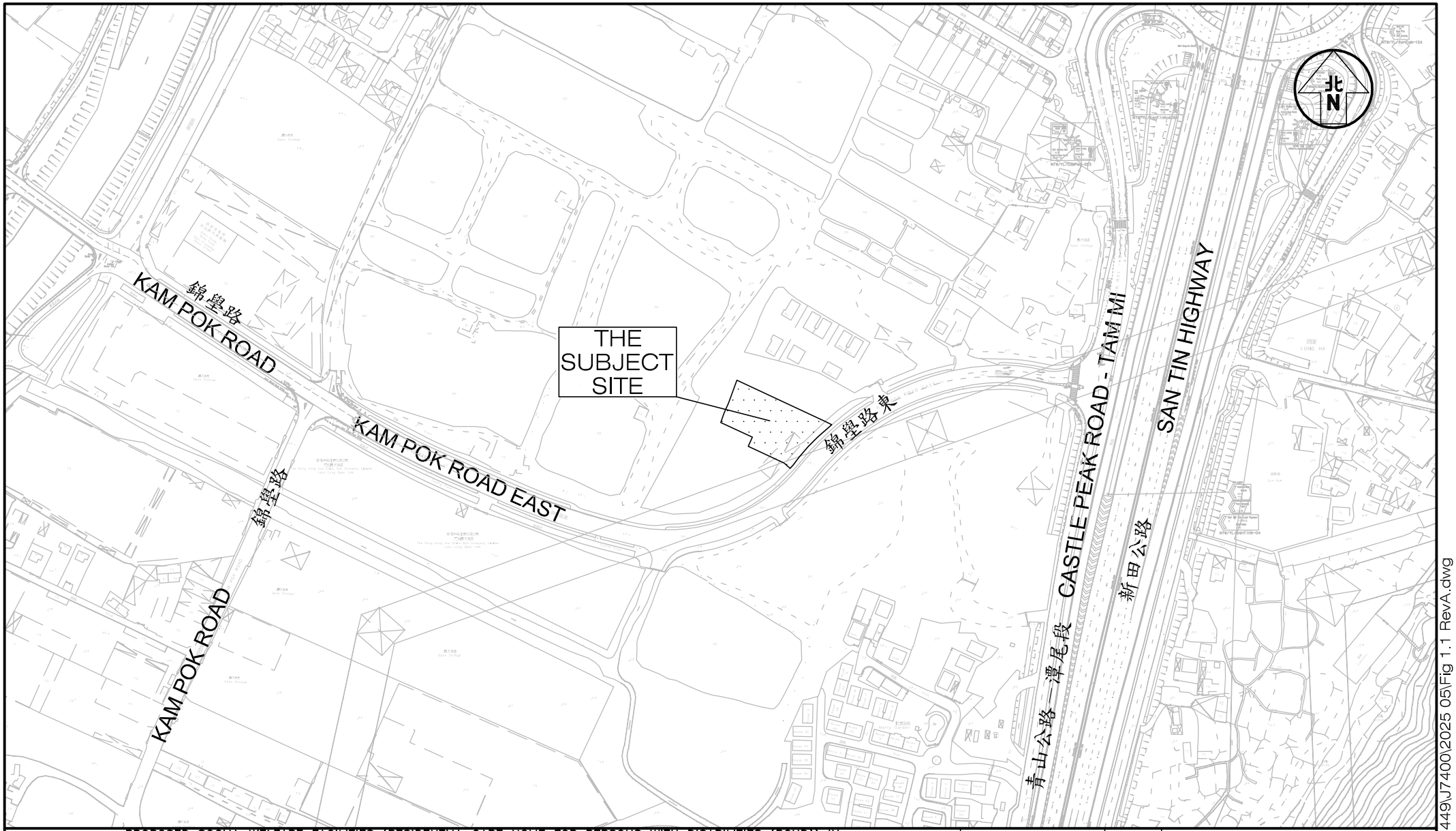
5.3 The internal transport facilities for the Proposed RCHD are provided based on the operational needs with the reference to 3 surveyed RCHDs.

5.4 The Proposed RCHD is expected to be completed by 2030, and the junction capacity analysis is undertaken for year 2033. For the design year 2033, the junctions analysed are expected to operate with capacities during the peak hours for the case without and with the Proposed RCHD.

5.5 The public transport services at 2 surveyed bus stops have capacity to accommodate the passenger demand generated by the Proposed RCHD.

5.6 It is concluded that the Proposed RCHD will result in no adverse traffic impact to the surrounding road network. From traffic engineering grounds, the Proposed RCHD is acceptable.

Figures



Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 1.1 / Revision A
Figure Title	LOCATION OF SUBJECT SITE	Designed by L C H / Drawn by N C M / Checked by K C	Scale in A4 1 : 3000 / Date 26 MAY 2025

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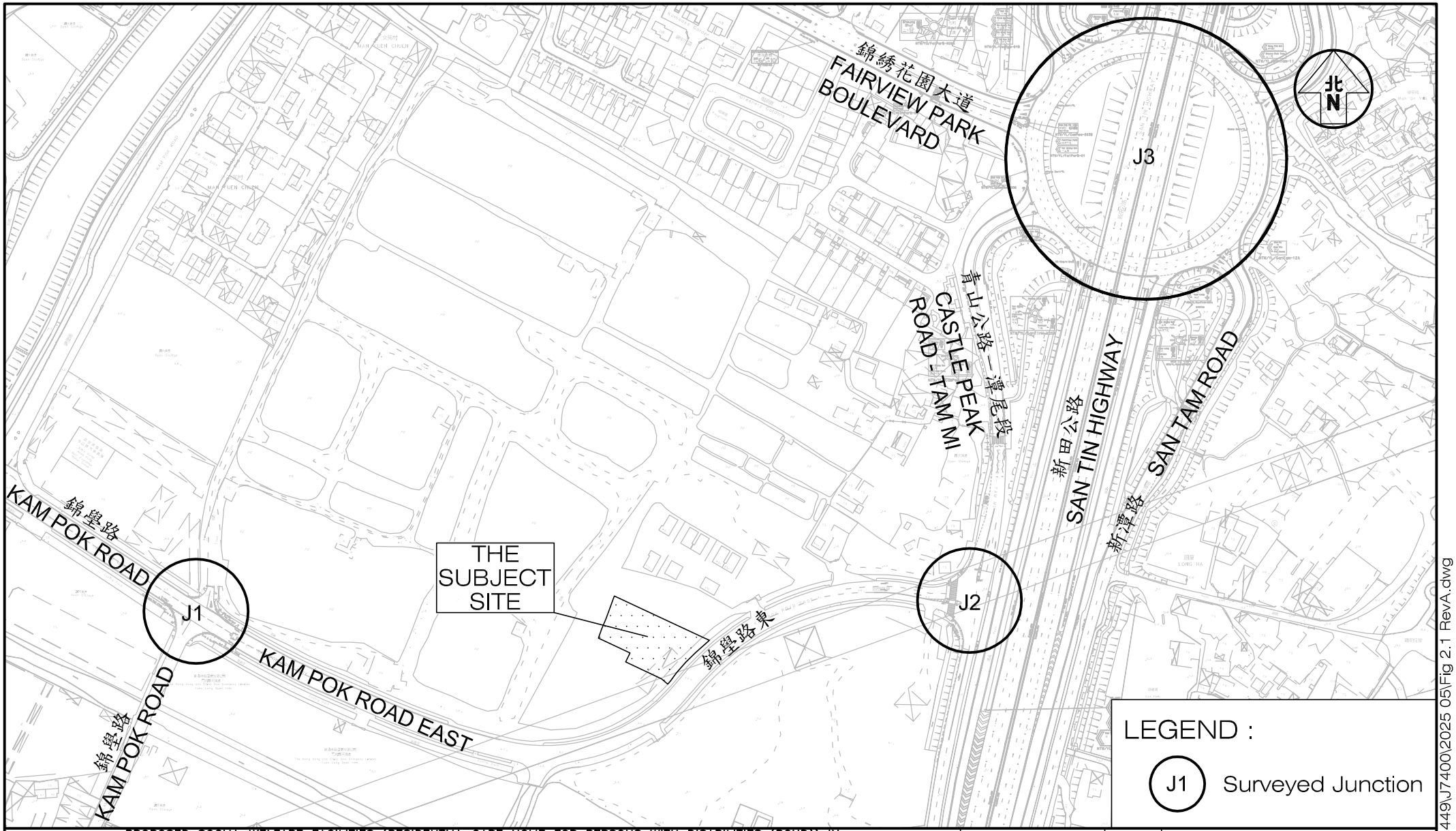

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 2.1 / Revision A
Figure Title	LOCATION OF SURVEYED JUNCTIONS	Designed by L C H / Drawn by N C M / Checked by K C	Scale in A4 1 : 3000 / Date 26 MAY 2025

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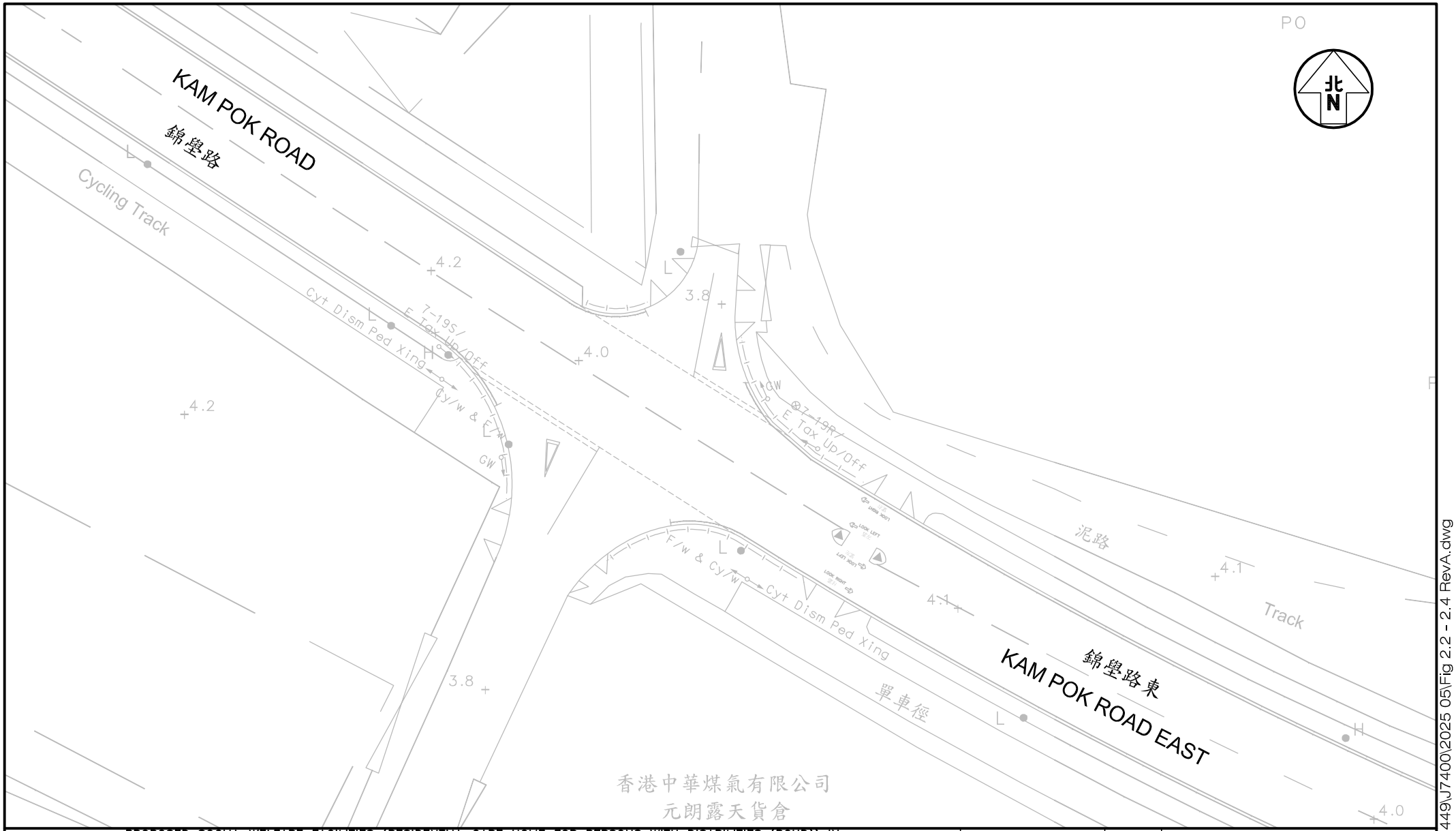

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 2.2 / Revision A
Figure Title	EXISTING JUNCTION LAYOUT OF KAM POK ROAD / KAM POK ROAD EAST		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 500 / Date 26 MAY 2025

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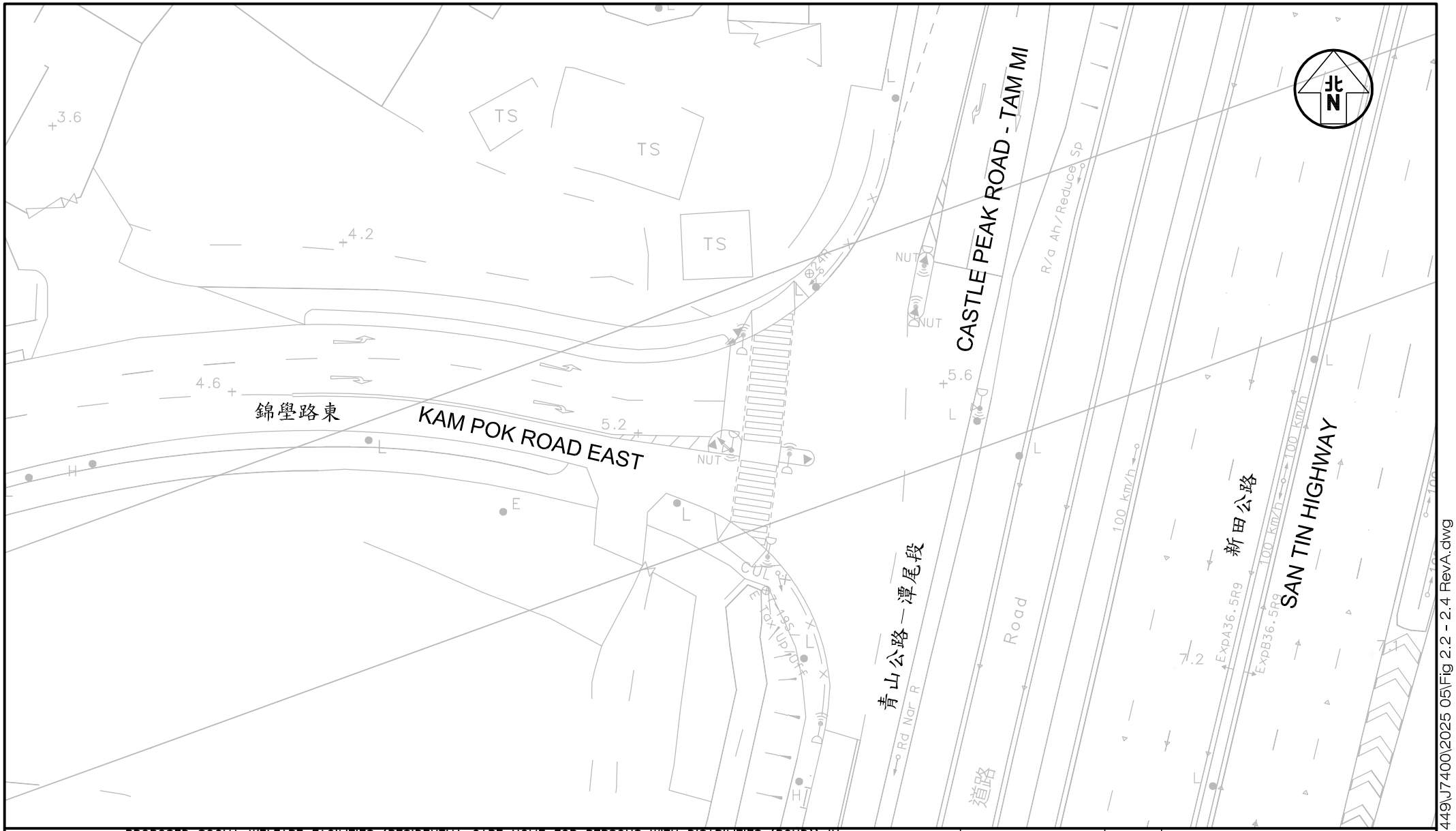

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 2.3 / Revision A
Figure Title	EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD – TAM MI / KAM POK ROAD	Designed by L C H / Drawn by N C M / Checked by K C	Scale in A4 1 : 500 / Date 26 MAY 2025

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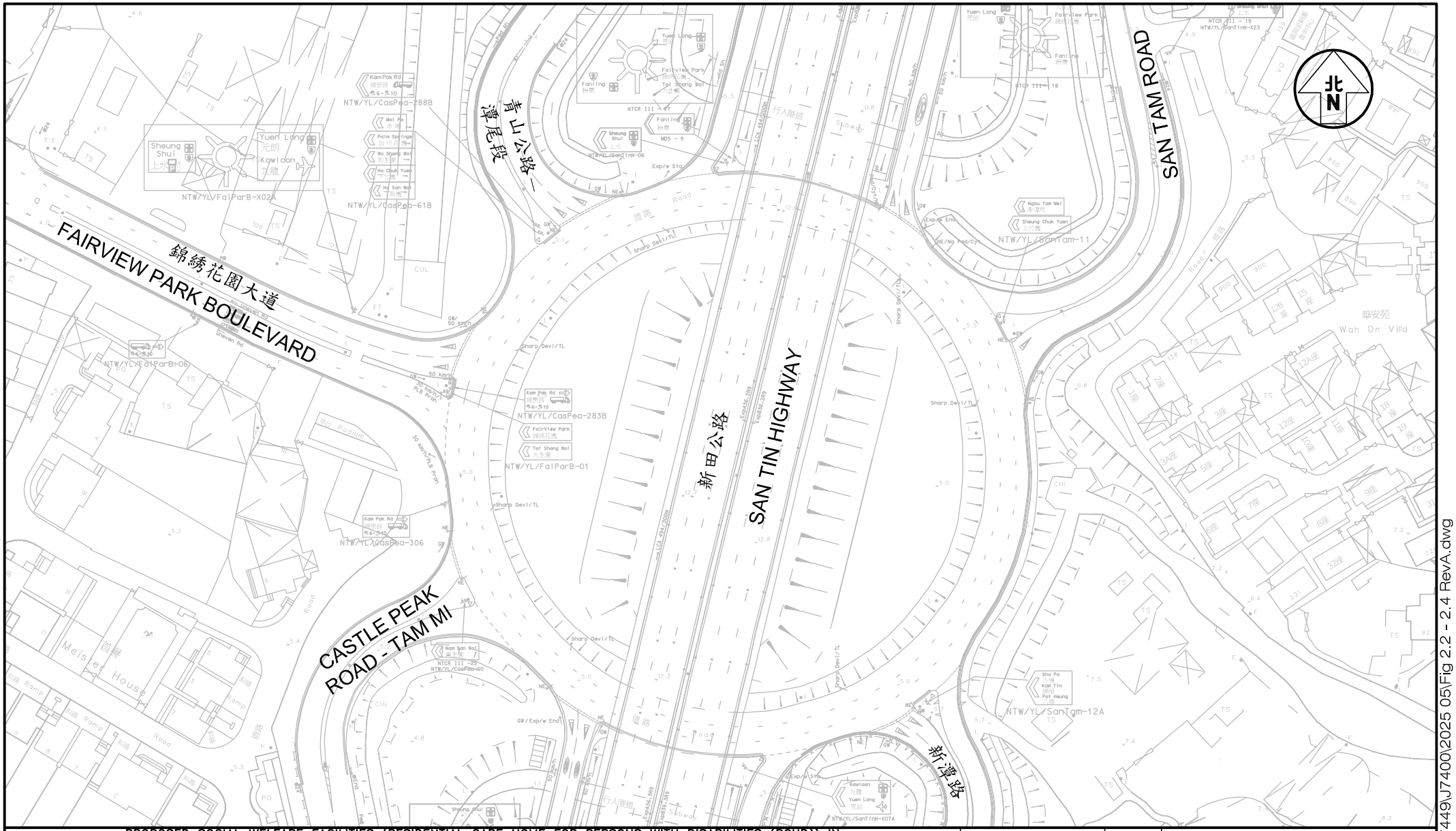

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 2.4 / Revision A
Figure Title	EXISTING JUNCTION LAYOUT OF THE FAIRVIEW PARK ROUNDABOUT		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 1250 / Date 26 MAY 2025

CKM Asia Limited
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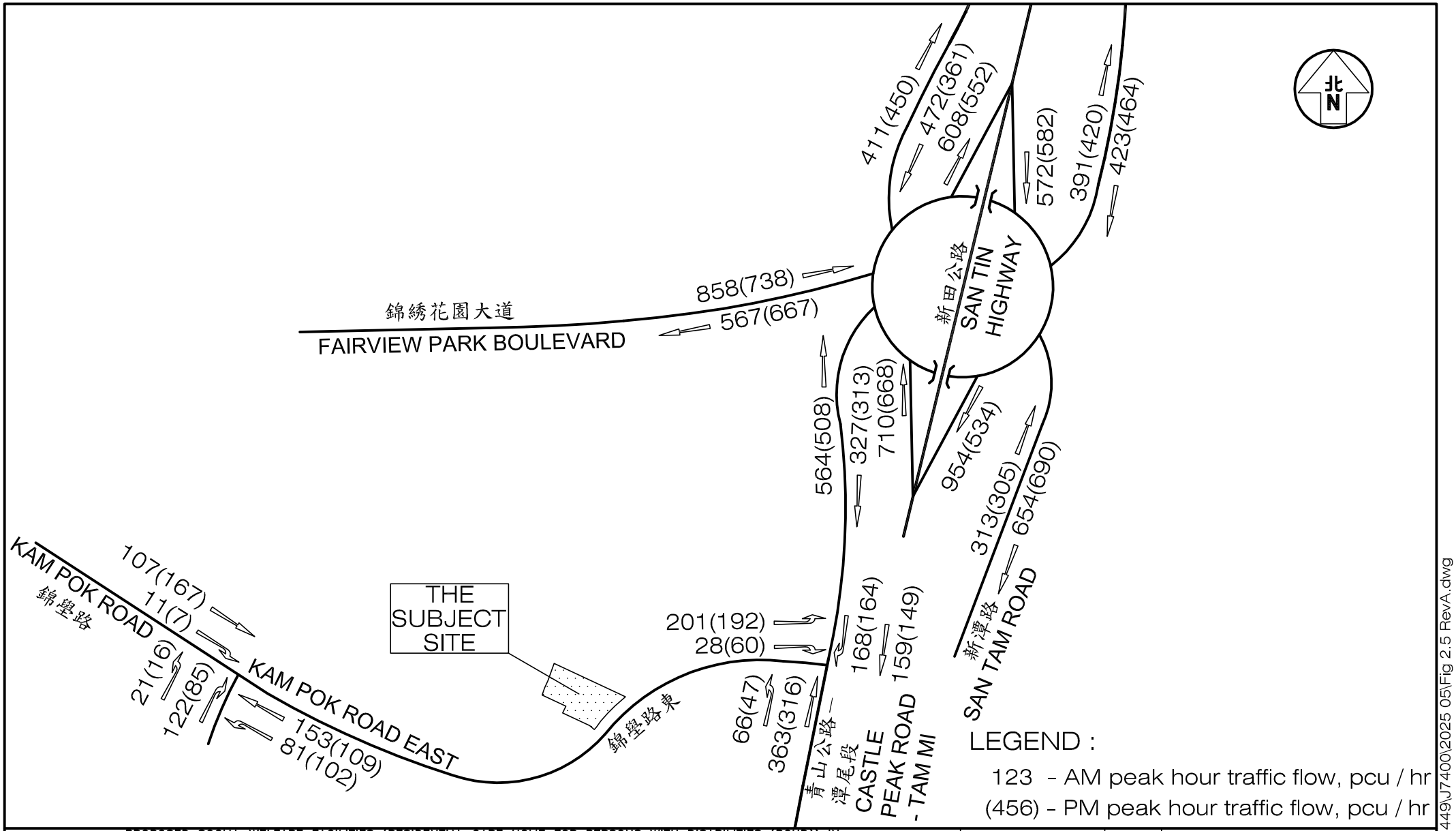

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 2.5 / Revision A
Figure Title	EXISTING PEAK HOUR TRAFFIC FLOWS	Designed by L C H / Drawn by N C M / Checked by K C	Scale in A4 N.T.S. / Date 26 MAY 2025

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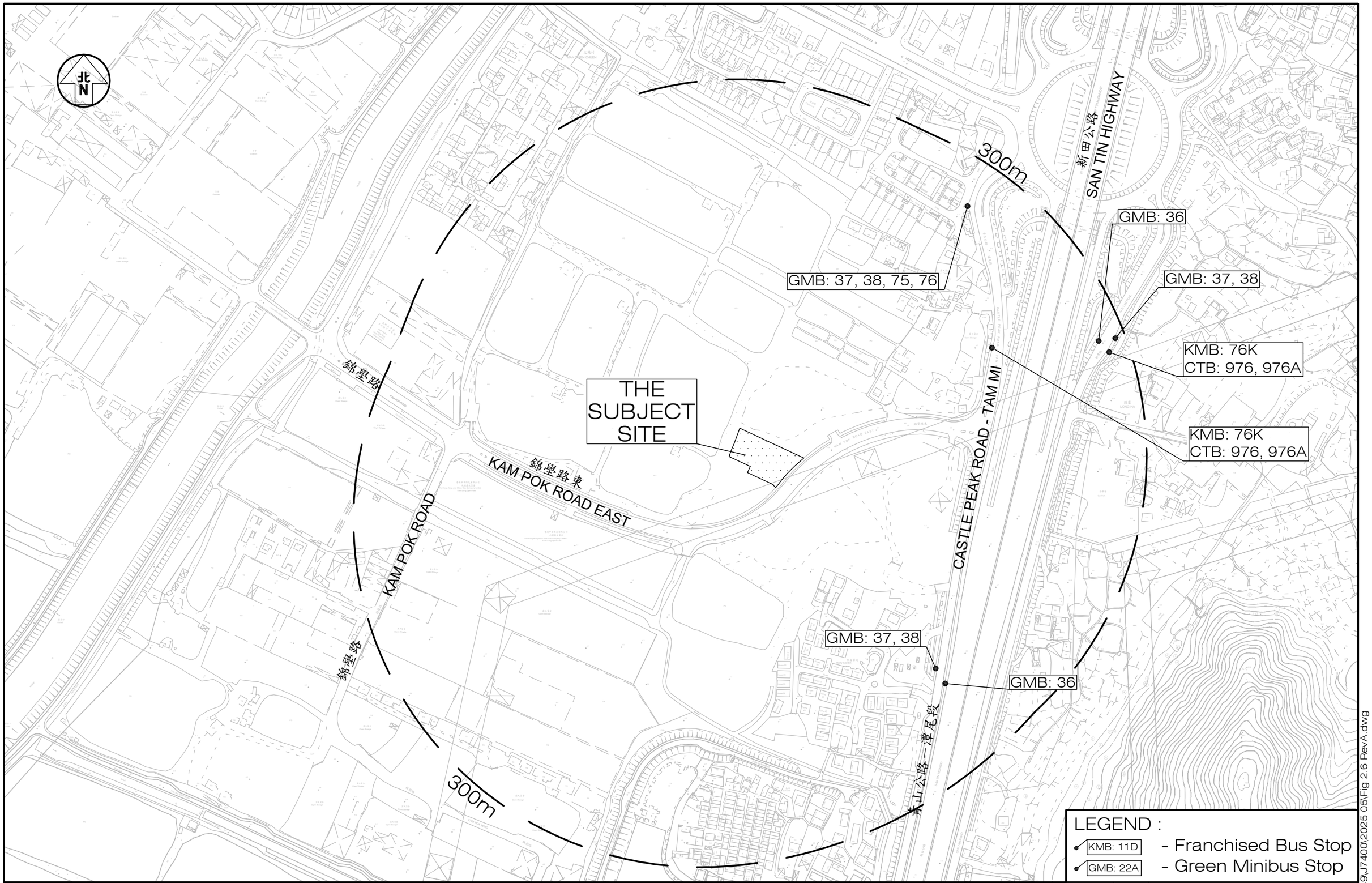

Project Title: PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG — J7400

Figure Title: THE PUBLIC TRANSPORT SERVICES PROVIDED IN THE VICINITY OF THE SUBJECT SITE

Figure No.	Revision
2.6	A

Designed by	Drawn by	Checked by
L C H	N C M	K C

Scale in A3	Date
1 : 3,000	26 MAY 2025

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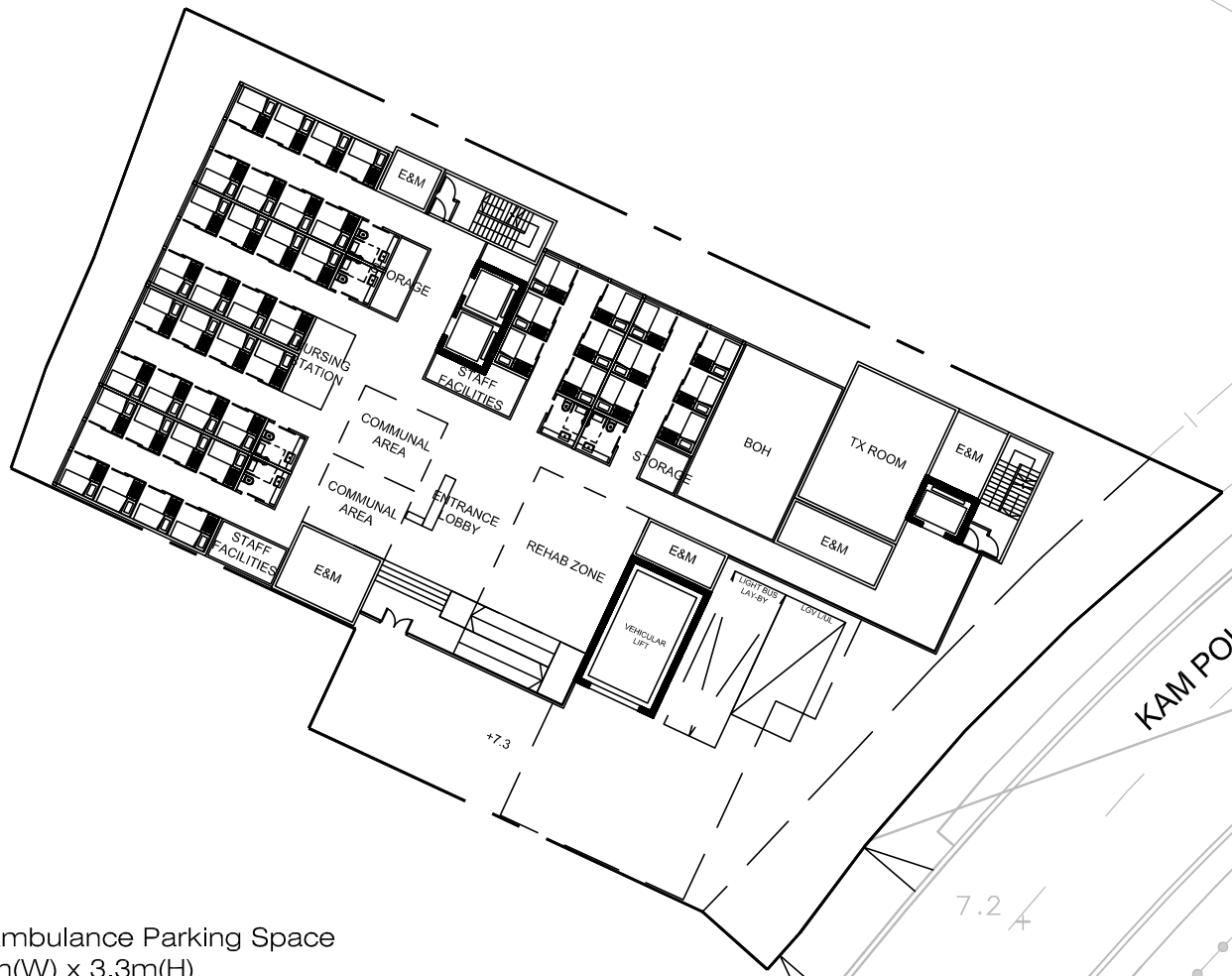

LEGEND :

Light Bus / Ambulance Parking Space
@9m(L) x 3m(W) x 3.3m(H)

LGV loading / unloading bay
@7m(L) X 3.5m(W) X 3.6m(H)

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 3.1	Revision A
Figure Title	G/F LAYOUT PLAN		Designed by L C H / Drawn by N C M / Checked by K C	
			Scale in A4 1 : 400 / Date 26 MAY 2025	

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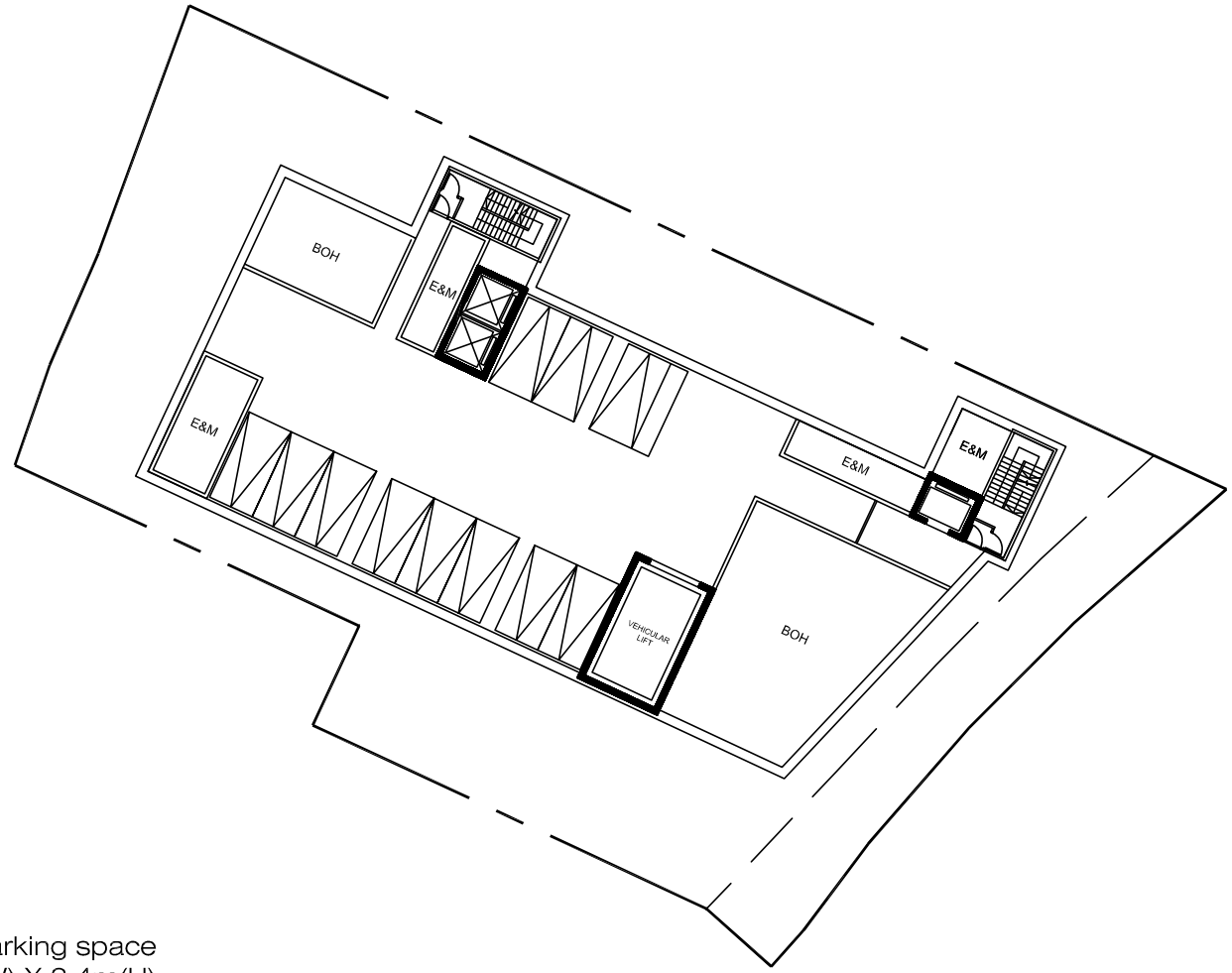

LEGEND :

Accessible car parking space
@5m(L) X 3.5m(W) X 2.4m(H)

Private car parking space
@5m(L) X 2.5m(W) X 2.4m(H)

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 3.2	Revision A
Figure Title	B/F LAYOUT PLAN		Designed by L C H / Drawn by N C M / Checked by K C	
			Scale in A4 1 : 400 / Date 26 MAY 2025	

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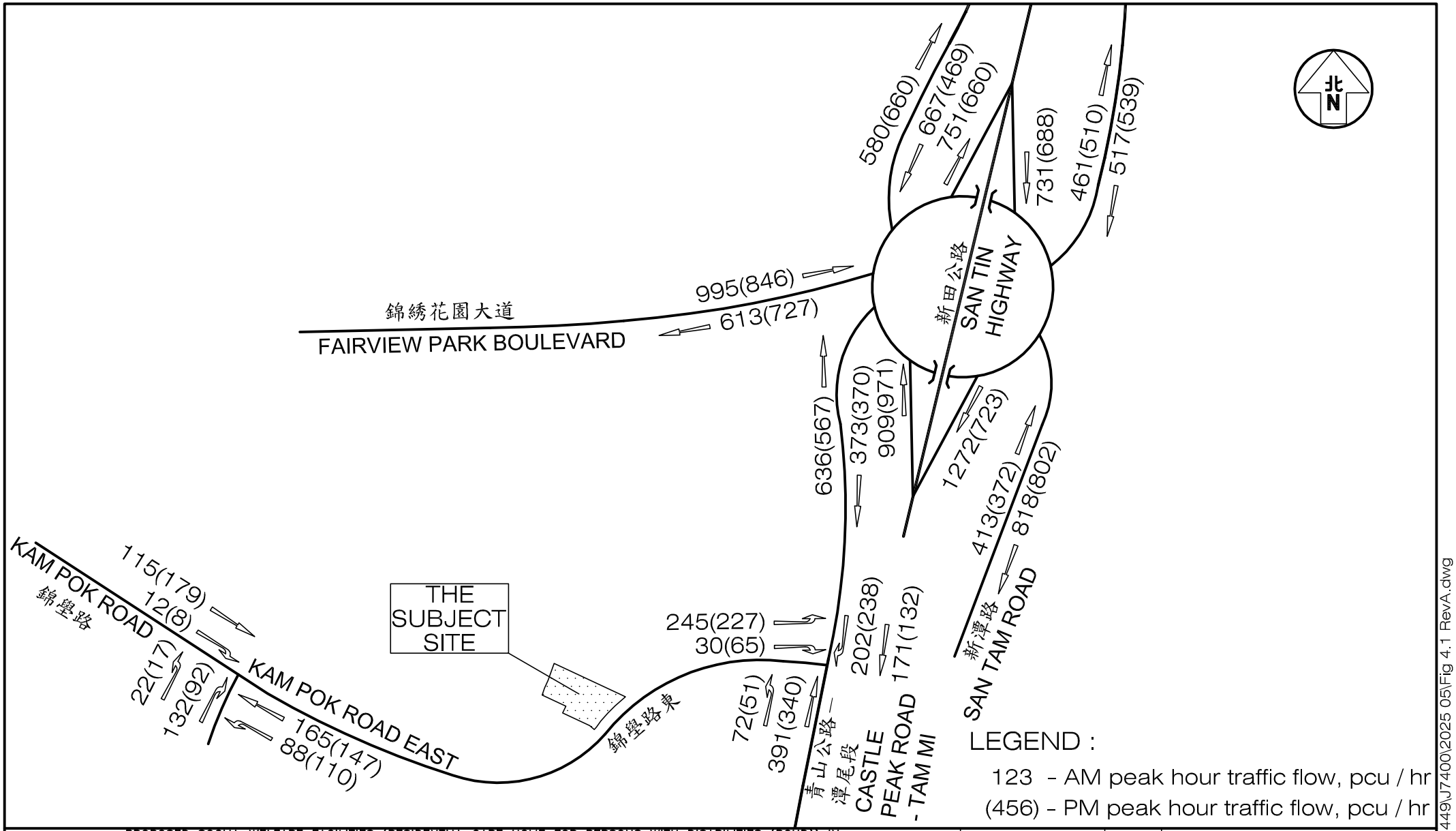

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 4.1 / Revision A
Figure Title	YEAR 2033 PEAK HOUR TRAFFIC FLOWS WITHOUT THE PROPOSED RCHD		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 N.T.S. / Date 26 MAY 2025

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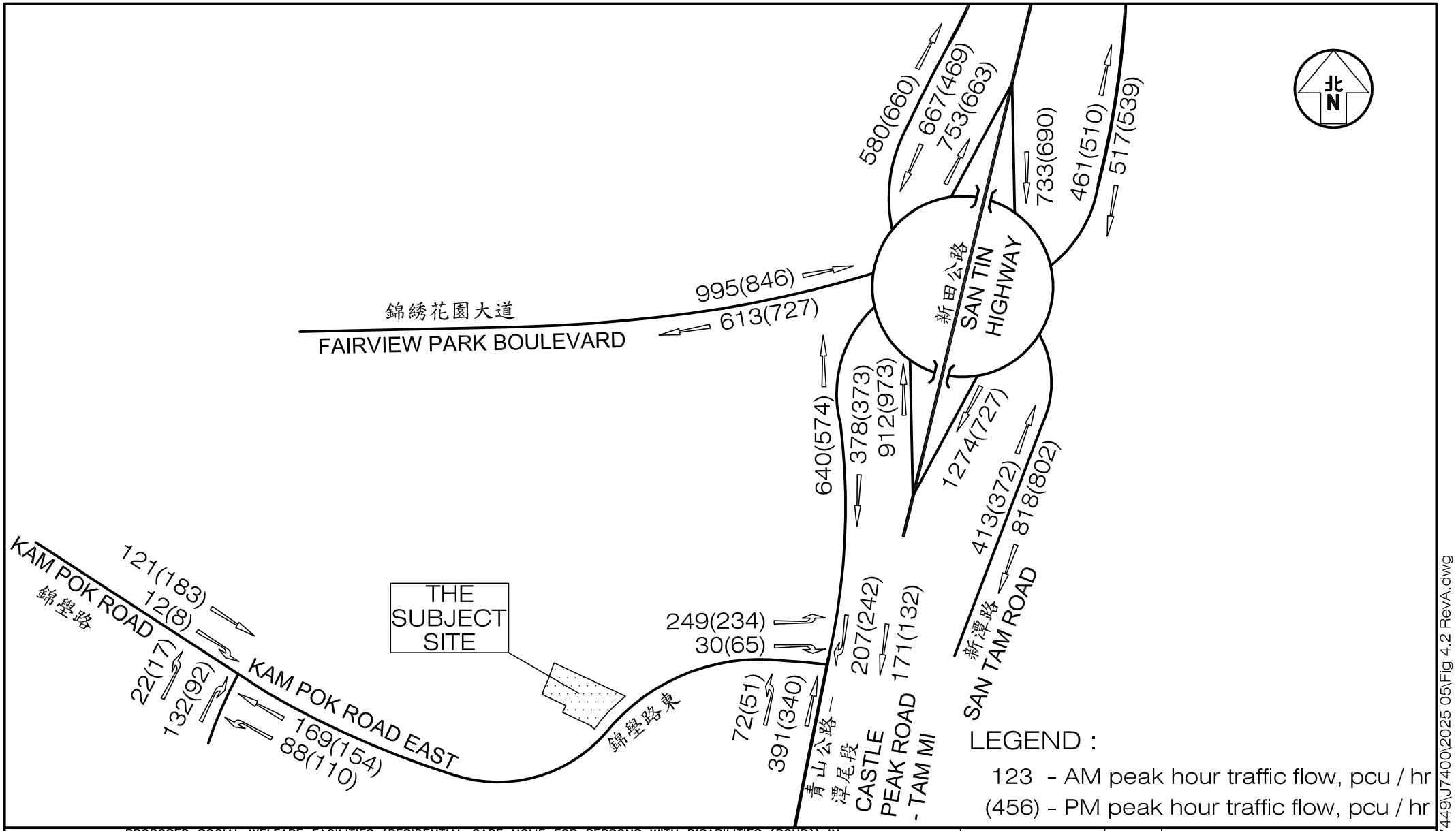

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. 4.2 / Revision A
Figure Title	YEAR 2033 PEAK HOUR TRAFFIC FLOWS WITH THE PROPOSED RCHD		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 N.T.S. / Date 26 MAY 2025

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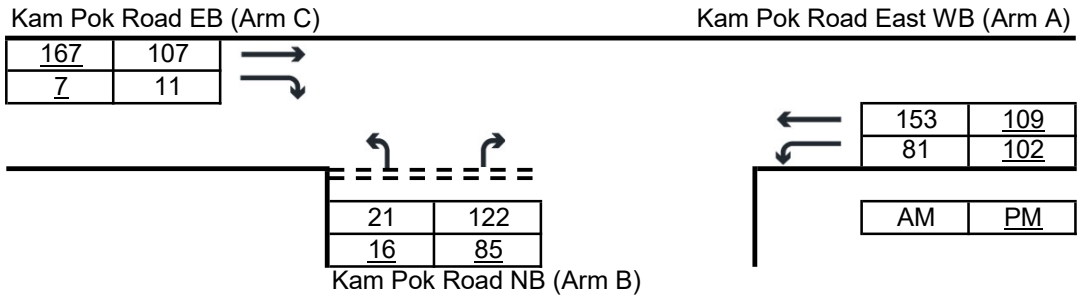
Appendix 1 – Calculation

Priority Junction Analysis

Junction:	Kam Pok Road / Kam Pok Road East				
Design Year:	2025	Job Number:	J7400	Date:	26 May 2025
Scenario:	Existing Condition				Page 1



The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	Input		Input		Input		Calculated	
	W	10.30	V-rBA	45	w-BA	2.70	D	0.7881
	W-CR	0.00	V-lBA	30	w-BC	2.70	E	0.8492
			V-rBC	45	w-CB	5.00	F	1.0356
			V-rCB	30			Y	0.6447

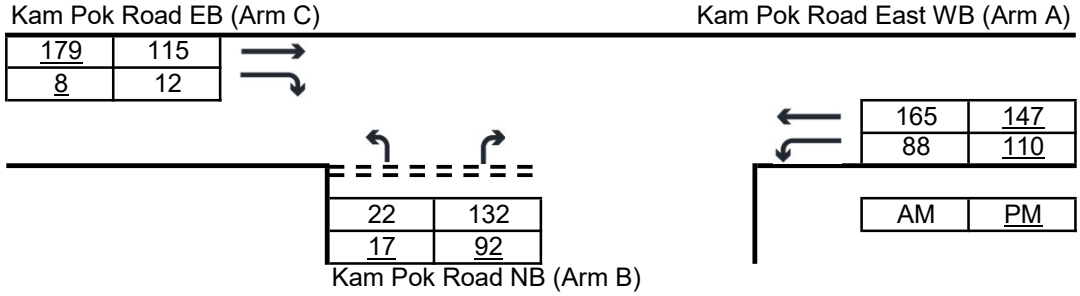
Analysis :

Traffic Flows, pcu/hr	AM	PM	Capacity, pcu/hr	AM	PM
q-CA	107	167	Q-BA	445	445
q-CB	11	7	Q-BC	596	603
q-AB	81	102	Q-CB	715	720
q-AC	153	109	Q-BAC	462	464
q-BA	122	85			
q-BC	21	16			
f	0.147	0.158			

Ratio-of-flow to Capacity	AM	PM
B-A	0.274	0.191
B-C	0.035	0.027
C-B	0.015	0.010
B-AC	0.310	0.217

Priority Junction Analysis

Junction:	Kam Pok Road / Kam Pok Road East				
Design Year:	2033	Job Number:	J7400	Date:	26 May 2025
Scenario:	Future Condition (Without Proposed RCHD)			Page	2



The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	Input		Input		Input		Calculated	
	W	10.30	V-rBA	45	w-BA	2.70	D	0.7881
	W-CR	0.00	V-lBA	30	w-BC	2.70	E	0.8492
			V-rBC	45	w-CB	5.00	F	1.0356
			V-rCB	30			Y	0.6447

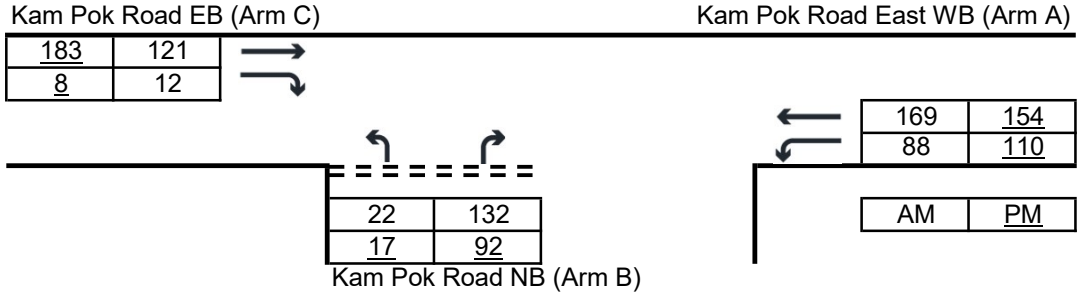
Analysis :

Traffic Flows, pcu/hr	AM	PM	Capacity, pcu/hr	AM	PM
q-CA	115	179	Q-BA	441	436
q-CB	12	8	Q-BC	593	595
q-AB	88	110	Q-CB	710	709
q-AC	165	147	Q-BAC	457	455
q-BA	132	92			
q-BC	22	17			
f	0.143	0.156			

Ratio-of-flow to Capacity	AM	PM
B-A	0.300	0.211
B-C	0.037	0.029
C-B	0.017	0.011
B-AC	0.337	0.240

Priority Junction Analysis

Junction:	Kam Pok Road / Kam Pok Road East				
Design Year:	2033	Job Number:	J7400	Date:	26 May 2025
Scenario:	Future Condition (With Proposed RCHD)			Page	3



The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	Input		Input		Input		Calculated	
	W	10.30	V-rBA	45	w-BA	2.70	D	0.7881
	W-CR	0.00	V-lBA	30	w-BC	2.70	E	0.8492
			V-rBC	45	w-CB	5.00	F	1.0356
			V-rCB	30			Y	0.6447

Analysis :

Traffic Flows, pcu/hr	AM	PM	Capacity, pcu/hr	AM	PM
q-CA	121	183	Q-BA	439	434
q-CB	12	8	Q-BC	592	593
q-AB	88	110	Q-CB	709	707
q-AC	169	154	Q-BAC	456	453
q-BA	132	92			
q-BC	22	17			
f	0.143	0.156			

Ratio-of-flow to Capacity	AM	PM
B-A	0.301	0.212
B-C	0.037	0.029
C-B	0.017	0.011
B-AC	0.338	0.241

Signal Junction Analysis

Junction: Castle Peak Road - Tam Mi / Kam Pok Road Job Number: J7400

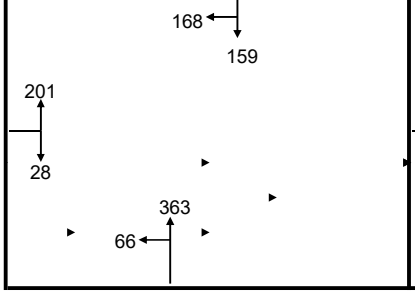
Scenario: Existing Condition P. 4

Design Year: 2025 Designed By: Checked By: Date: 26 May 2025

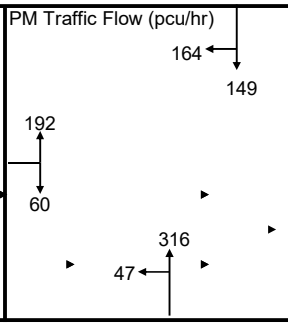
Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Castle Peak Road - LT+SA	A1	1	3.50	20.0		17	1940	429	0.221	0.221	14	1945	363	0.187	0.187
Tam Mi NB															
Castle Peak Road - Tam Mi SB SA	B1	2	3.30				2085	159	0.076			2085	149	0.071	
RT	B2	2	3.40	15.0		100	1905	168	0.088	0.088	100	1905	164	0.086	0.086
Kam Pok Road EB LT	C1	3	3.50	28.0		100	1865	201	0.108	0.108	100	1865	192	0.103	0.103
RT	C2	3	3.50	13.0		100	1887	28	0.015		100	1887	60	0.032	

pedestrian phase	D(p)	4		min crossing time =	13	sec GM +	12	sec FGM =	25	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

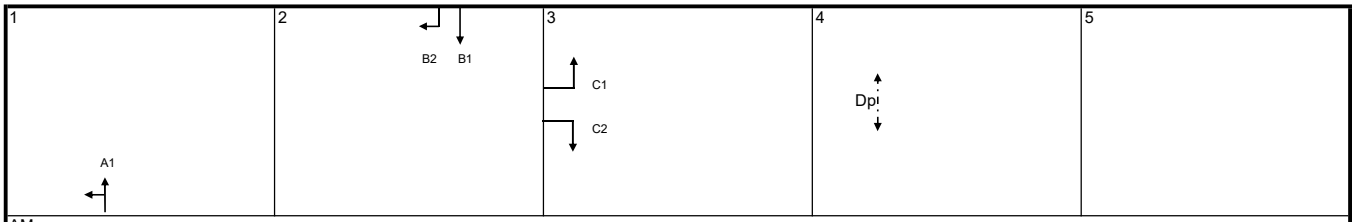


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak		PM Peak	
Group	1+2+3		1+2+3	
Sum y	0.417		0.376	
L (s)	40		40	
C (s)	94		94	
practical y	0.517		0.517	
R.C. (%)	24%		38%	



AM																		
G =	I/G =	6	G =	I/G =	5	G =	I/G =	5	G =	25	I/G =	2	G =	I/G =				
G =	I/G =		G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =				
PM																		
G =	I/G =	6	G =	I/G =	5	G =	I/G =	5	G =	25	I/G =	2	G =	I/G =				
G =	I/G =		G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =				

Signal Junction Analysis

Junction: Castle Peak Road - Tam Mi / Kam Pok Road Job Number: J7400

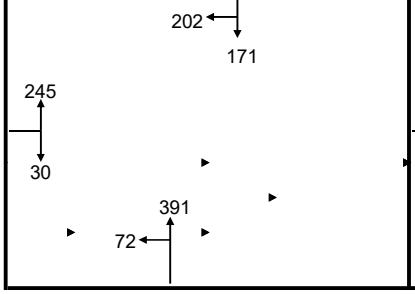
Scenario: Future Condition (Without Proposed RCHD) P. 5

Design Year: 2033 Designed By: Checked By: Date: 26 May 2025

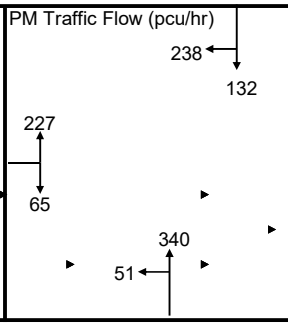
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Castle Peak Road - Tam Mi NB	LT+SA	A1	1	3.50	20.0		14	1945	463	0.238	0.238	10	1950	391	0.201	0.201
Castle Peak Road - Tam Mi SB	SA	B1	2	3.30				2085	171	0.082			2085	132	0.063	
	RT	B2	2	3.40	15.0		100	1905	202	0.106	0.106	100	1905	238	0.125	0.125
Kam Pok Road EB	LT	C1	3	3.50	28.0		100	1865	245	0.131	0.131	100	1865	227	0.122	0.122
	RT	C2	3	3.50	13.0		100	1887	30	0.016		100	1887	65	0.034	

pedestrian phase	D(p)	4		min crossing time =	13	sec GM +	12	sec FGM =	25	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

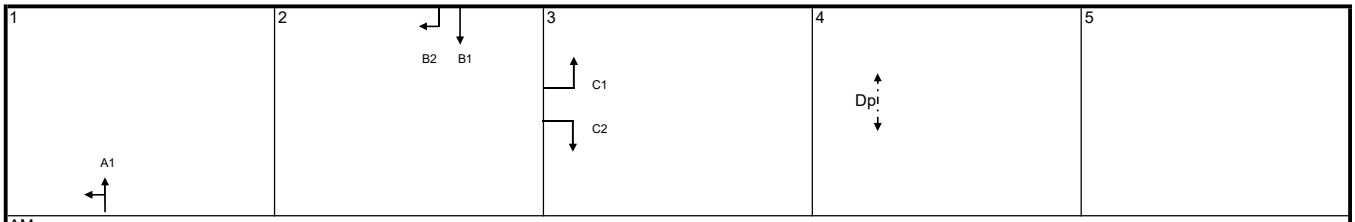


S=1940+100(W–3.25) S=2080+100(W–3.25)

S_M=S÷(1+1.5f/r) S_M=(S–230)÷(1+1.5f/r)

	AM Peak		PM Peak	
Group	1+2+3		1+2+3	
Sum y	0.475		0.447	
L (s)	40		40	
C (s)	120		120	
practical y	0.600		0.600	
R.C. (%)	26%		34%	

Note:



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =	25	I/G =	2	G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =	25	I/G =	2	G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Signal Junction Analysis

Junction: Castle Peak Road - Tam Mi / Kam Pok Road Job Number: J7400

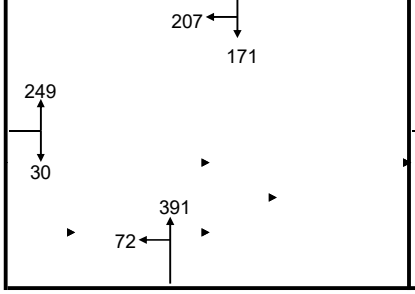
Scenario: Future Condition (With Proposed RCHD) P. 6

Design Year: 2033 Designed By: Checked By: Date: 26 May 2025

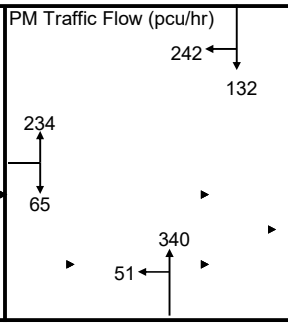
Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Castle Peak Road - LT+SA	A1	1	3.50	20.0		14	1945	463	0.238	0.238	10	1950	391	0.201	0.201
Tam Mi NB															
Castle Peak Road - Tam Mi SB SA	B1	2	3.30				2085	171	0.082			2085	132	0.063	
RT	B2	2	3.40	15.0		100	1905	207	0.109	0.109	100	1905	242	0.127	0.127
Kam Pok Road EB LT	C1	3	3.50	28.0		100	1865	249	0.134	0.134	100	1865	234	0.125	0.125
RT	C2	3	3.50	13.0		100	1887	30	0.016		100	1887	65	0.034	

pedestrian phase	D(p)	4		min crossing time =	13	sec GM +	12	sec FGM =	25	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

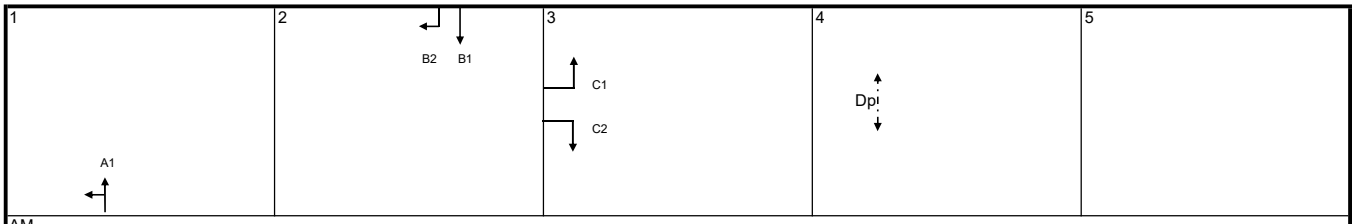


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak		PM Peak	
Group	1+2+3		1+2+3	
Sum y	0.480		0.453	
L (s)	40		40	
C (s)	120		120	
practical y	0.600		0.600	
R.C. (%)	25%		32%	

Note:



AM																				
G =	I/G =	6	G =	I/G =	5	G =	I/G =	5	G =	25	I/G =	2	G =	I/G =						
G =	I/G =		G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =						
PM																				
G =	I/G =	6	G =	I/G =	5	G =	I/G =	5	G =	25	I/G =	2	G =	I/G =						
G =	I/G =		G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =						

Roundabout Analysis

Junction: The Fairview Park Roundabout | Job Number: J7400
Scenario: Existing Condition | P. 7
Design Year: 2025 | Designed By: | Checked By: | Date: 26 May 2025

AM Peak

Arm	To A	To B	To C	To D	To E	to F	to G	Total	q_c
From A	34	53	373	138	72	120	68	858	1234
From B	30	11	137	32	52	205	97	564	1765
From C	205	41	42	128	127	68	99	710	1375
From D	29	17	72	14	51	117	13	313	1431
From E	62	34	131	108	10	46	32	423	1353
From F	155	86	110	84	25	29	83	572	1168
From G	52	85	89	150	54	23	19	472	1329
Total	567	327	954	654	391	608	411	3912	

PM Peak

Arm	To A	To B	To C	To D	To E	to F	to G	Total	q_c
From A	28	53	151	97	95	251	63	738	1147
From B	67	16	76	44	77	110	118	508	1572
From C	223	75	22	140	76	35	97	668	1546
From D	66	17	48	24	63	70	17	305	1524
From E	99	21	127	133	14	37	33	464	1409
From F	124	73	54	146	51	25	109	582	1321
From G	60	58	56	106	44	24	13	361	1453
Total	667	313	534	690	420	552	450	3626	

Legend

Arm	Road (in clockwise order)
A	Fairview Park Boulevard EB
B	Castle Peak Road NB
C	San Tin Road NB
D	San Tam Road NB
E	San Tam Road SB
F	San Tin Road SB
G	Castle Peak Road SB
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	11.0	7.0	22.0	14.0	142	35	0.5
From B	9.0	5.5	20.0	10.0	142	35	0.6
From C	8.5	6.4	23.0	7.5	142	30	0.4
From D	8.5	6.5	20.0	10.0	142	25	0.3
From E	8.0	6.0	20.0	9.5	142	35	0.3
From F	8.5	6.0	25.0	6.5	142	40	0.6
From G	6.0	5.0	22.0	7.0	142	30	0.2
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	9.09	3640.95	1.00	0.99	2754.13	0.59	1997.68	2049	858	738	0.43	0.36
From B	7.15	3640.95	1.00	0.98	2166.74	0.51	1243.90	1341	564	508	0.45	0.38
From C	7.51	3640.95	1.00	1.01	2274.80	0.53	1562.29	1472	710	668	0.45	0.45
From D	7.72	3640.95	1.00	1.02	2339.01	0.53	1601.76	1551	313	305	0.20	0.20
From E	7.19	3640.95	1.00	0.98	2180.08	0.51	1461.19	1433	423	464	0.29	0.32
From F	7.12	3640.95	1.00	0.98	2157.57	0.51	1523.95	1448	572	582	0.38	0.40
From G	5.69	3640.95	1.00	1.00	1722.94	0.45	1131.38	1075	472	361	0.42	0.34
From H												

Roundabout Analysis

Junction: The Fairview Park Roundabout | Job Number: J7400
Scenario: Future Condition (Without Proposed RCHD) | P. 8
Design Year: 2033 | Designed By: | Checked By: | Date: 26 May 2025

AM Peak

Arm	To A	To B	To C	To D	To E	to F	to G	Total	q_c
From A	36	58	444	156	79	148	74	995	1652
From B	32	12	165	37	57	229	104	636	2274
From C	222	55	55	139	167	75	196	909	1638
From D	31	20	78	15	61	180	28	413	1729
From E	67	36	194	126	11	49	34	517	1681
From F	168	100	120	161	27	32	123	731	1447
From G	57	92	216	184	59	38	21	667	1598
Total	613	373	1272	818	461	751	580	4868	

PM Peak

Arm	To A	To B	To C	To D	To E	to F	to G	Total	q_c
From A	30	58	191	110	103	286	68	846	1436
From B	73	17	94	49	83	125	126	567	1912
From C	245	106	36	155	134	42	253	971	1756
From D	72	20	52	26	71	103	28	372	1925
From E	107	22	170	150	15	40	35	539	1787
From F	134	85	60	188	56	30	135	688	1666
From G	66	62	120	124	48	34	15	469	1694
Total	727	370	723	802	510	660	660	4452	

Legend

Arm	Road (in clockwise order)
A	Fairview Park Boulevard EB
B	Castle Peak Road NB
C	San Tin Road NB
D	San Tam Road NB
E	San Tam Road SB
F	San Tin Road SB
G	Castle Peak Road SB
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	11.0	7.0	22.0	14.0	142	35	0.5
From B	9.0	5.5	20.0	10.0	142	35	0.6
From C	8.5	6.4	23.0	7.5	142	30	0.4
From D	8.5	6.5	20.0	10.0	142	25	0.3
From E	8.0	6.0	20.0	9.5	142	35	0.3
From F	8.5	6.0	25.0	6.5	142	40	0.6
From G	6.0	5.0	22.0	7.0	142	30	0.2
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	9.09	3640.95	1.00	0.99	2754.13	0.59	1753	1880	995	846	0.57	0.45
From B	7.15	3640.95	1.00	0.98	2166.74	0.51	989	1170	636	567	0.64	0.48
From C	7.51	3640.95	1.00	1.01	2274.80	0.53	1423	1361	909	971	0.64	0.71
From D	7.72	3640.95	1.00	1.02	2339.01	0.53	1440	1333	413	372	0.29	0.28
From E	7.19	3640.95	1.00	0.98	2180.08	0.51	1296	1243	517	539	0.40	0.43
From F	7.12	3640.95	1.00	0.98	2157.57	0.51	1385	1277	731	688	0.53	0.54
From G	5.69	3640.95	1.00	1.00	1722.94	0.45	1010	967	667	469	0.66	0.49
From H												

Roundabout Analysis

Junction: The Fairview Park Roundabout | Job Number: J7400
Scenario: Future Condition (With Proposed RCHD) | P. 9
Design Year: 2033 | Designed By: | Checked By: | Date: 26 May 2025

AM Peak

Arm	To A	To B	To C	To D	To E	to F	to G	Total	q_c
From A	36	58	444	156	79	148	74	995	1657
From B	32	12	167	37	57	231	104	640	2274
From C	222	58	55	139	167	75	196	912	1640
From D	31	20	78	15	61	180	28	413	1734
From E	67	36	194	126	11	49	34	517	1686
From F	168	102	120	161	27	32	123	733	1450
From G	57	92	216	184	59	38	21	667	1603
Total	613	378	1274	818	461	753	580	4877	

PM Peak

Arm	To A	To B	To C	To D	To E	to F	to G	Total	q_c
From A	30	58	191	110	103	286	68	846	1440
From B	73	17	98	49	83	128	126	574	1912
From C	245	108	36	155	134	42	253	973	1759
From D	72	20	52	26	71	103	28	372	1930
From E	107	22	170	150	15	40	35	539	1792
From F	134	87	60	188	56	30	135	690	1668
From G	66	62	120	124	48	34	15	469	1698
Total	727	374	727	802	510	663	660	4463	

Legend

Arm	Road (in clockwise order)
A	Fairview Park Boulevard EB
B	Castle Peak Road NB
C	San Tin Road NB
D	San Tam Road NB
E	San Tam Road SB
F	San Tin Road SB
G	Castle Peak Road SB
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	11.0	7.0	22.0	14.0	142	35	0.5
From B	9.0	5.5	20.0	10.0	142	35	0.6
From C	8.5	6.4	23.0	7.5	142	30	0.4
From D	8.5	6.5	20.0	10.0	142	25	0.3
From E	8.0	6.0	20.0	9.5	142	35	0.3
From F	8.5	6.0	25.0	6.5	142	40	0.6
From G	6.0	5.0	22.0	7.0	142	30	0.2
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

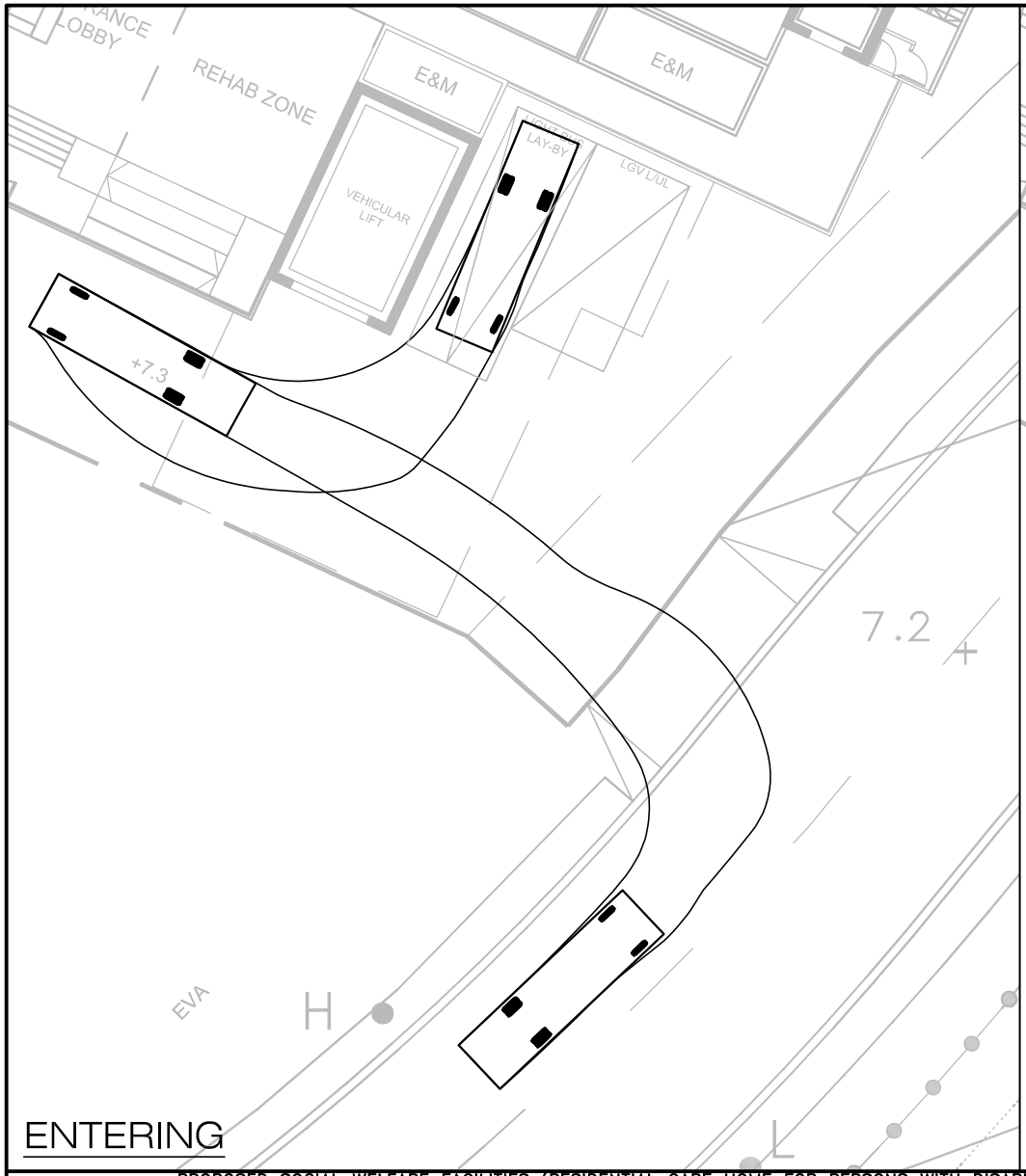
Limitation

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	9.09	3640.95	1.00	0.99	2754.13	0.59	1751	1877	995	846	0.57	0.45
From B	7.15	3640.95	1.00	0.98	2166.74	0.51	989	1170	640	574	0.65	0.49
From C	7.51	3640.95	1.00	1.01	2274.80	0.53	1422	1359	912	973	0.64	0.72
From D	7.72	3640.95	1.00	1.02	2339.01	0.53	1437	1331	413	372	0.29	0.28
From E	7.19	3640.95	1.00	0.98	2180.08	0.51	1294	1240	517	539	0.40	0.43
From F	7.12	3640.95	1.00	0.98	2157.57	0.51	1384	1276	733	690	0.53	0.54
From G	5.69	3640.95	1.00	1.00	1722.94	0.45	1008	965	667	469	0.66	0.49
From H												

Appendix 2 –
Swept Path Analysis



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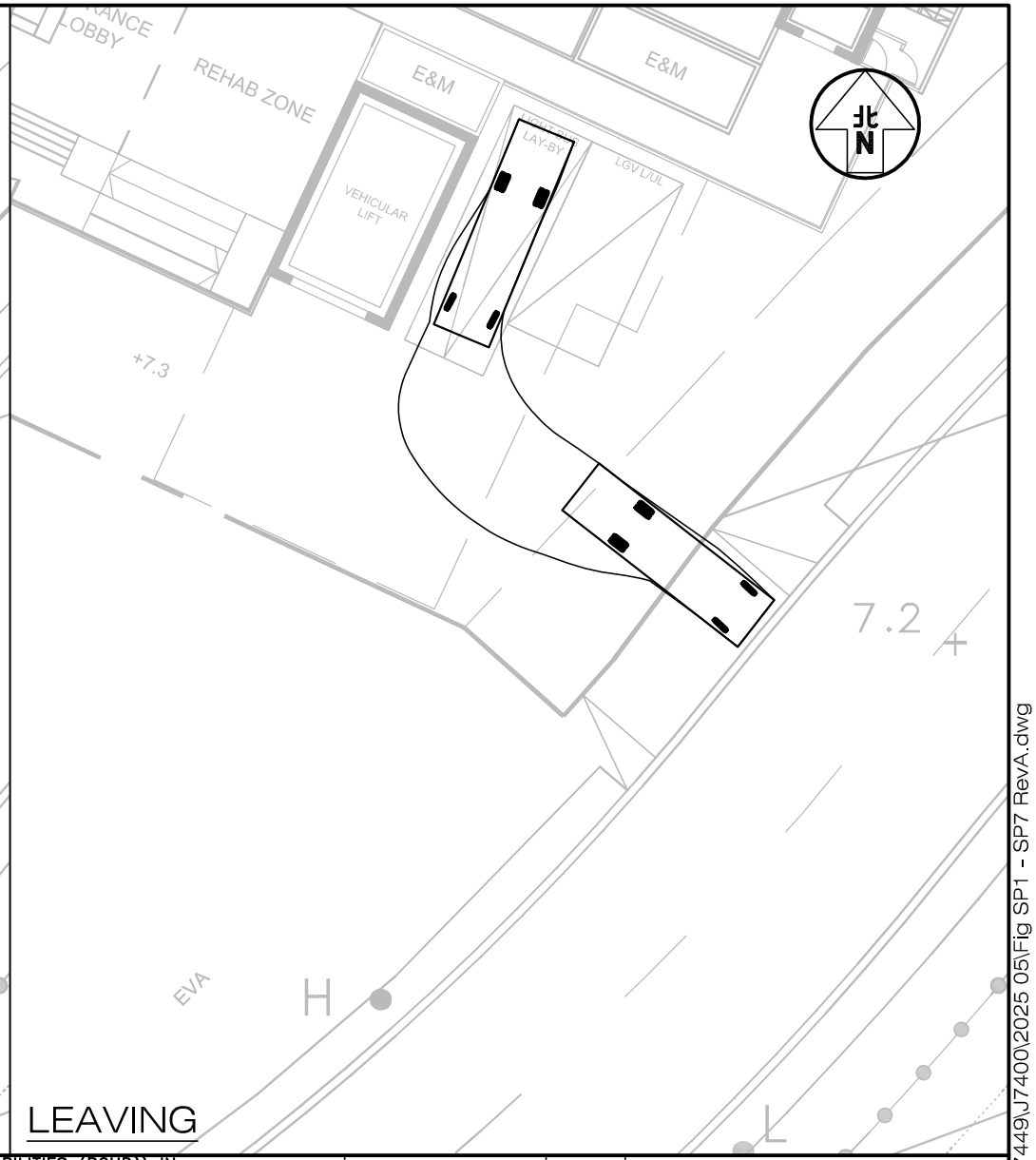

LEAVING

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. SP1 / Revision A
Figure Title	SWEPT PATH OF MINI COACH ENTERING AND LEAVING THE LIGHT BUS / AMBULANCE PARKING SPACE ON G/F		Designed by L C H / Drawn by N C M / Checked by K C; Scale in A4 1 : 250 / Date 26 MAY 2025

CKM Asia Limited
Traffic and Transportation Planning Consultants
[redacted]

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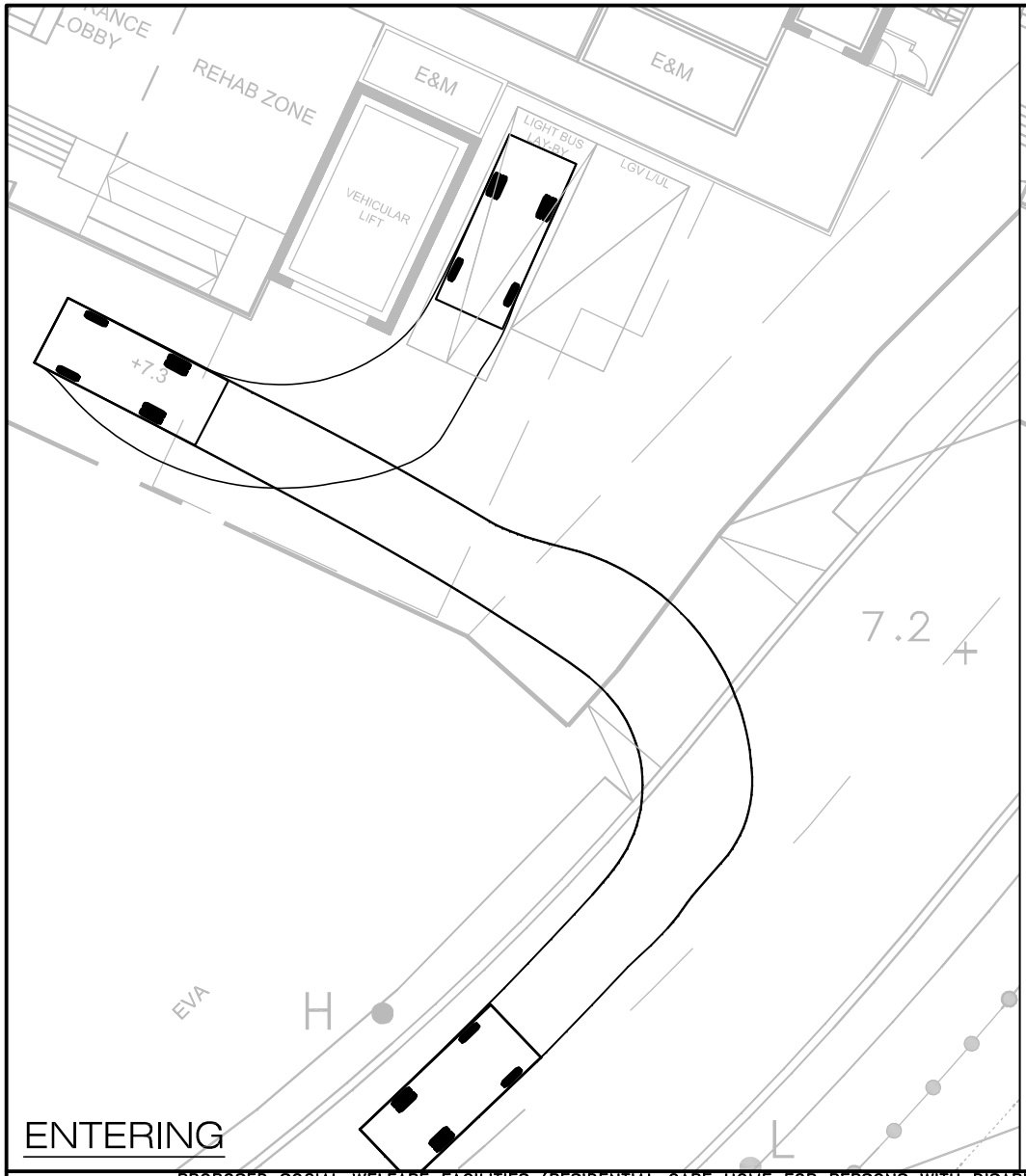

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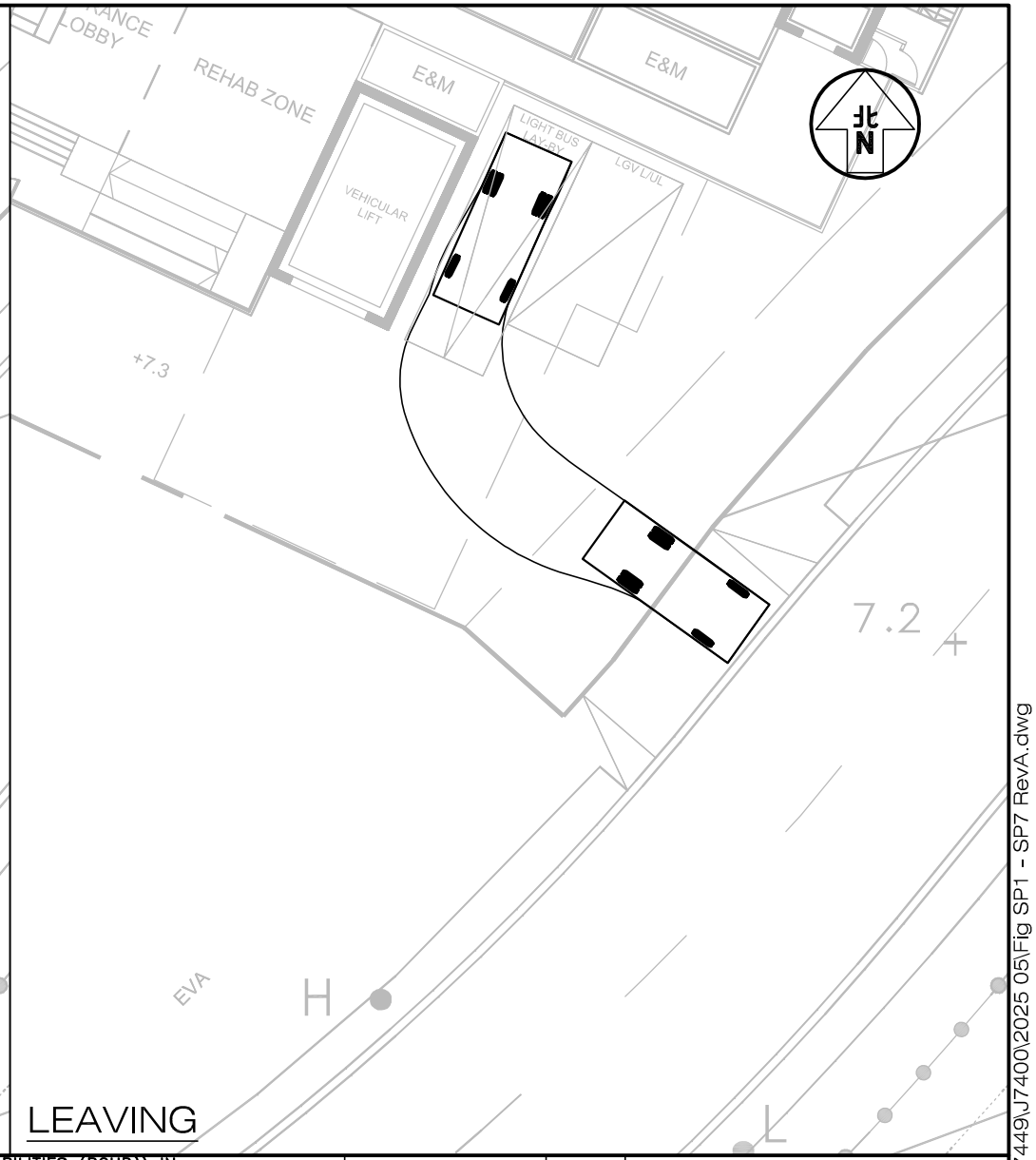

LEAVING

Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. SP2 / Revision A
Figure Title	SWEPT PATH OF AMBULANCE ENTERING AND LEAVING THE LIGHT BUS / AMBULANCE PARKING SPACE ON G/F		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 250 / Date 26 MAY 2025

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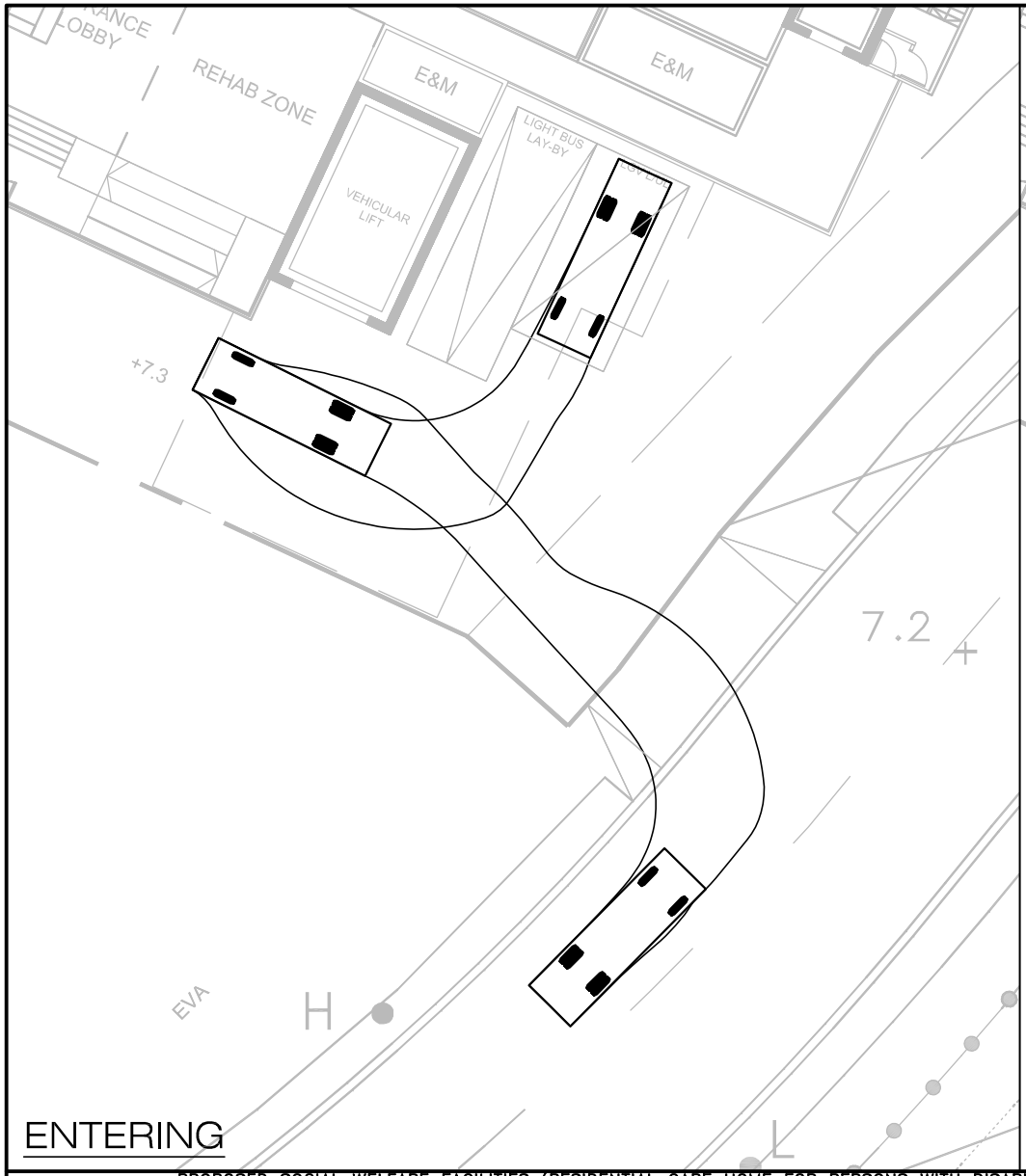

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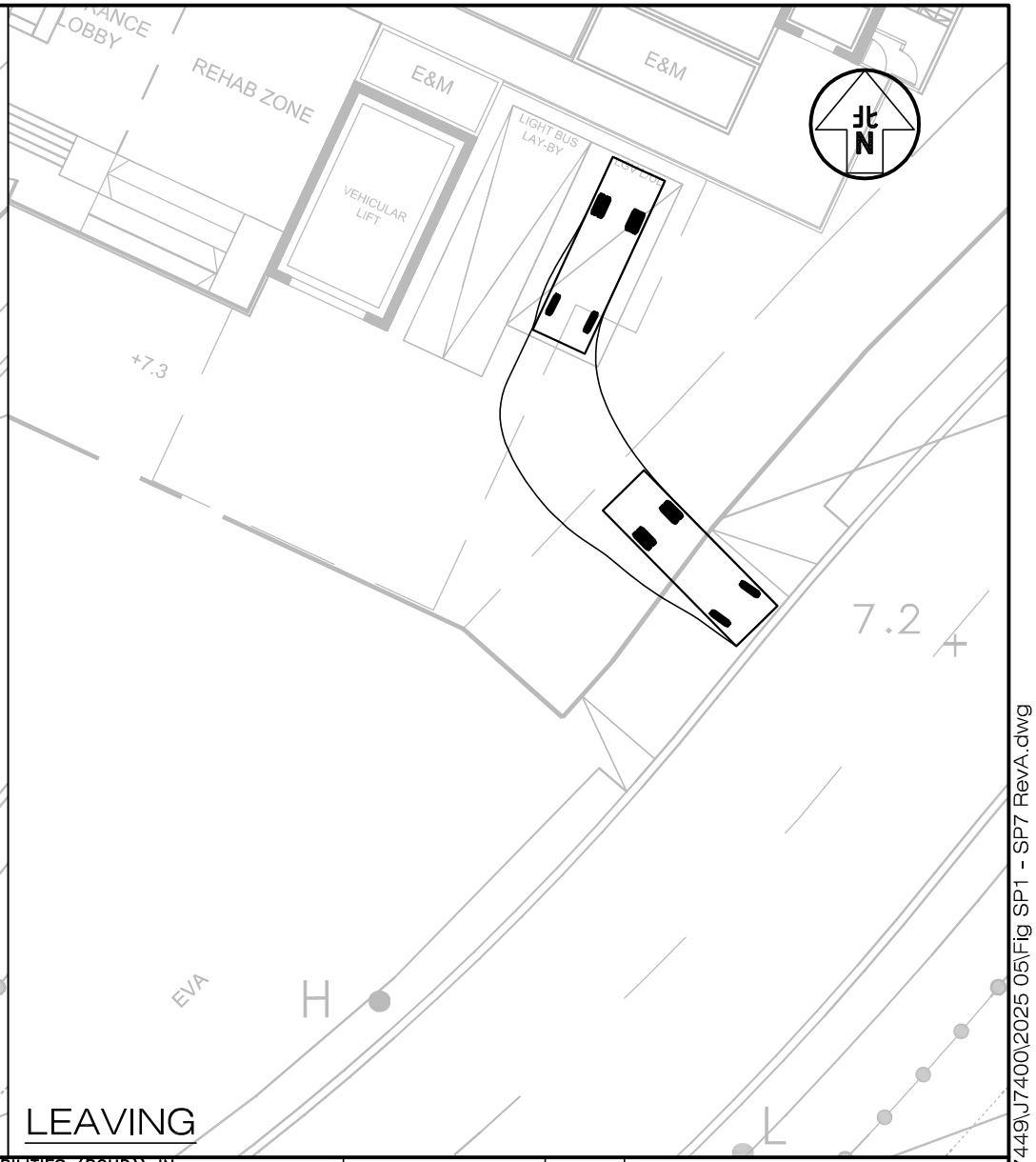

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Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. SP3 / Revision A
Figure Title	SWEPT PATH OF LGV ENTERING AND LEAVING THE LOADING / UNLOADING BAY ON G/F		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 250 / Date 26 MAY 2025

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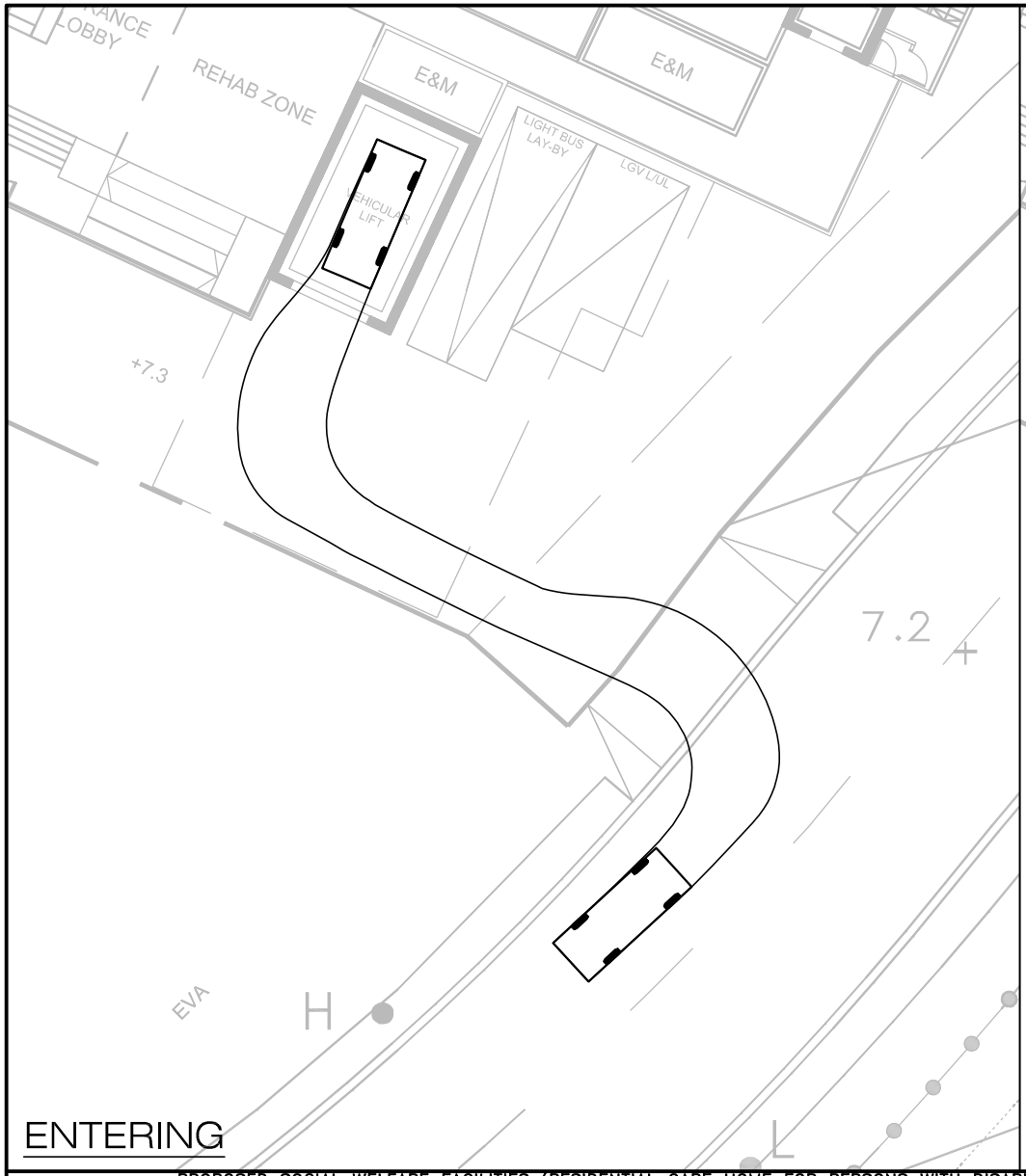

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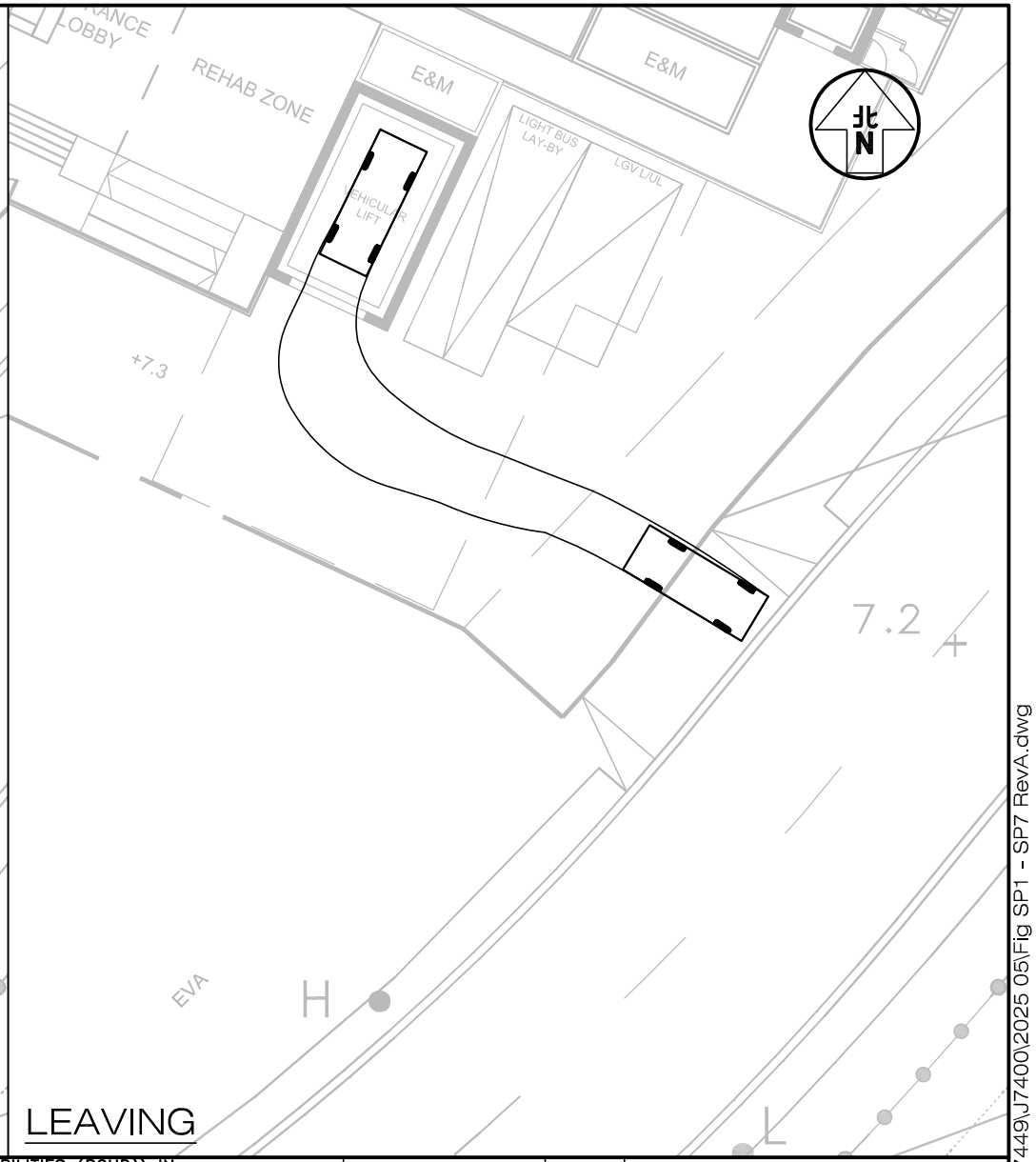

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Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. SP4 / Revision A
Figure Title	SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING THE SUBJECT SITE		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 250 / Date 26 MAY 2025

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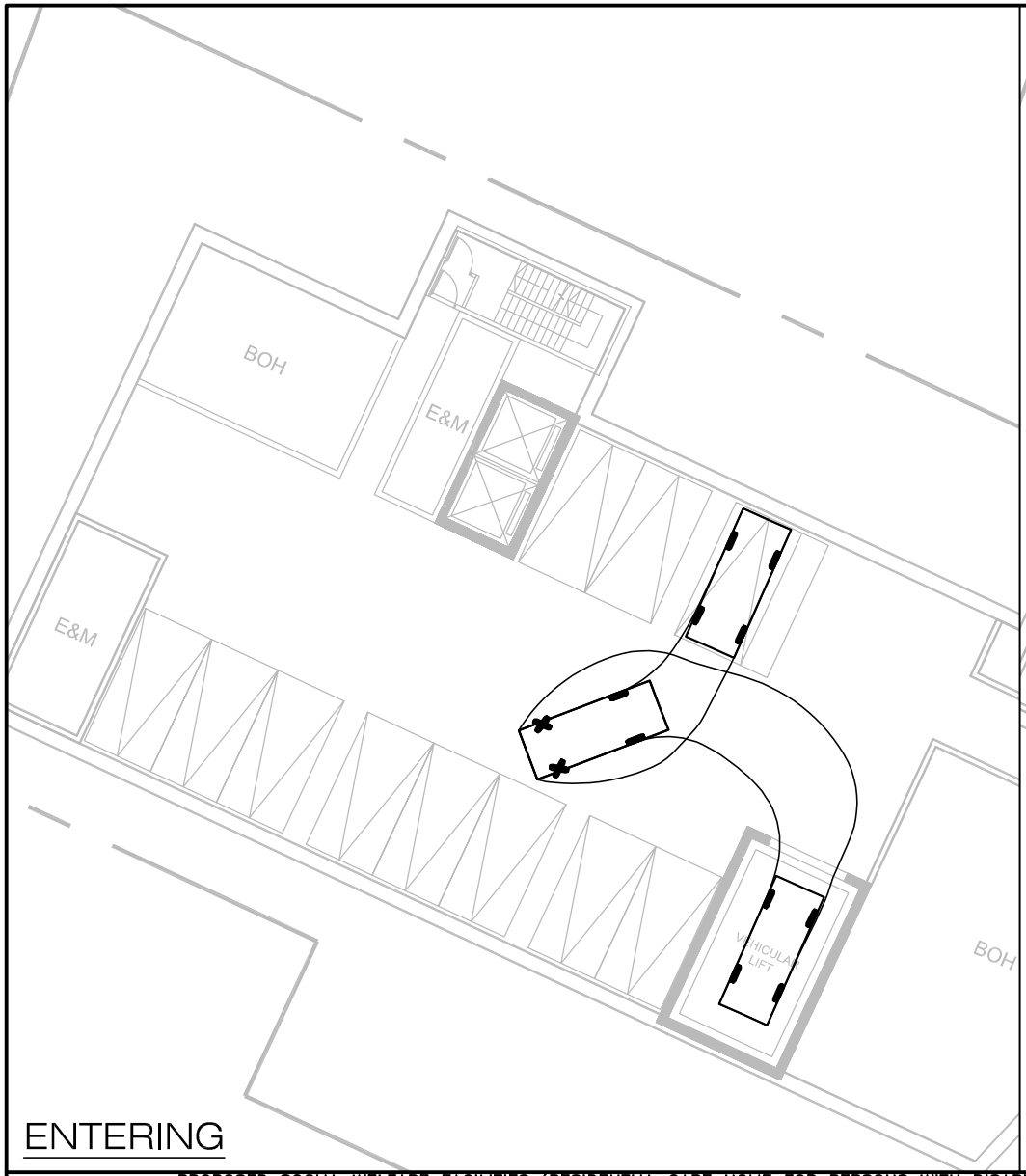

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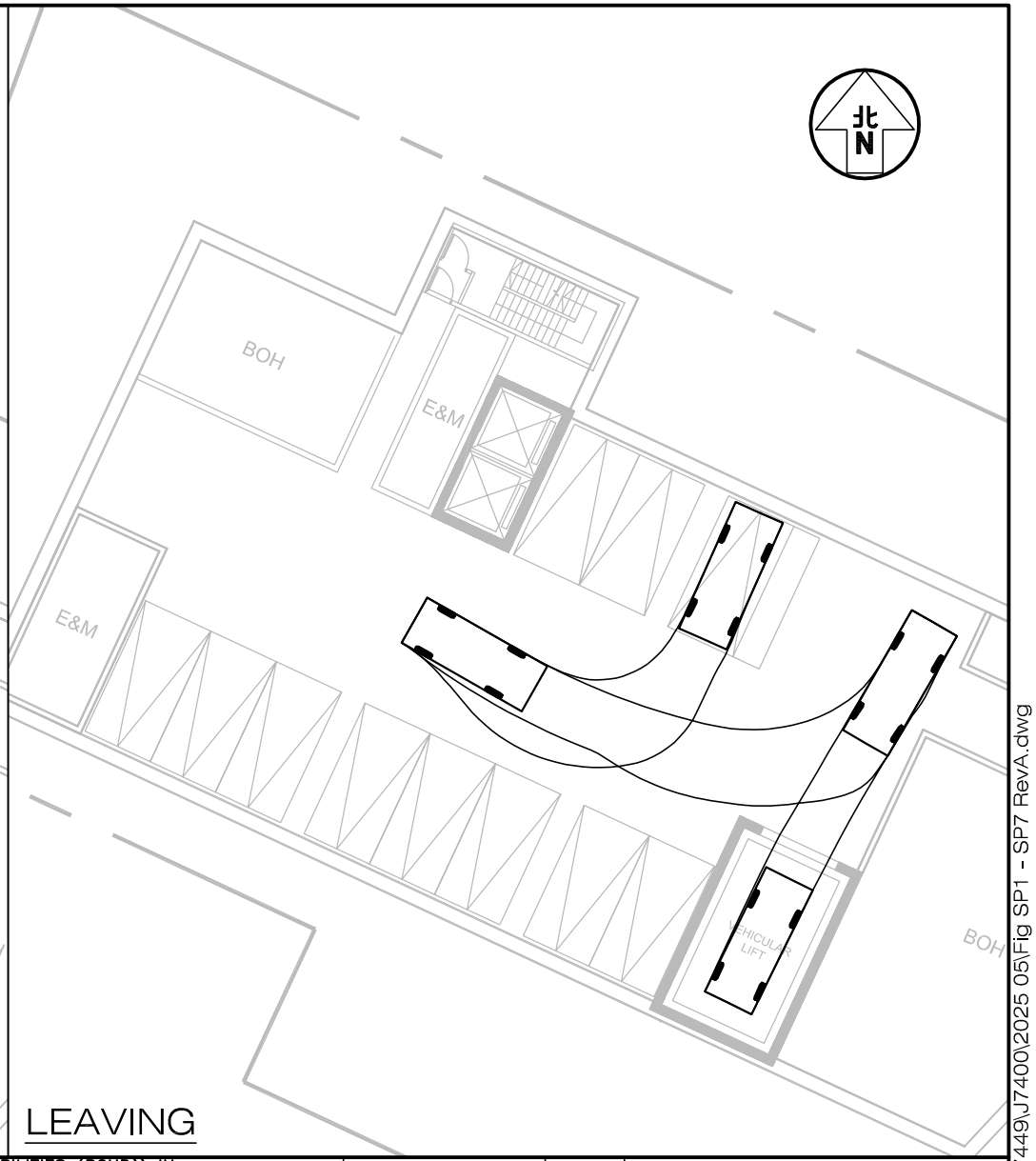

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Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. SP5 / Revision A
Figure Title	SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING THE CAR PARKING SPACE ON B/F		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 250 / Date 26 MAY 2025

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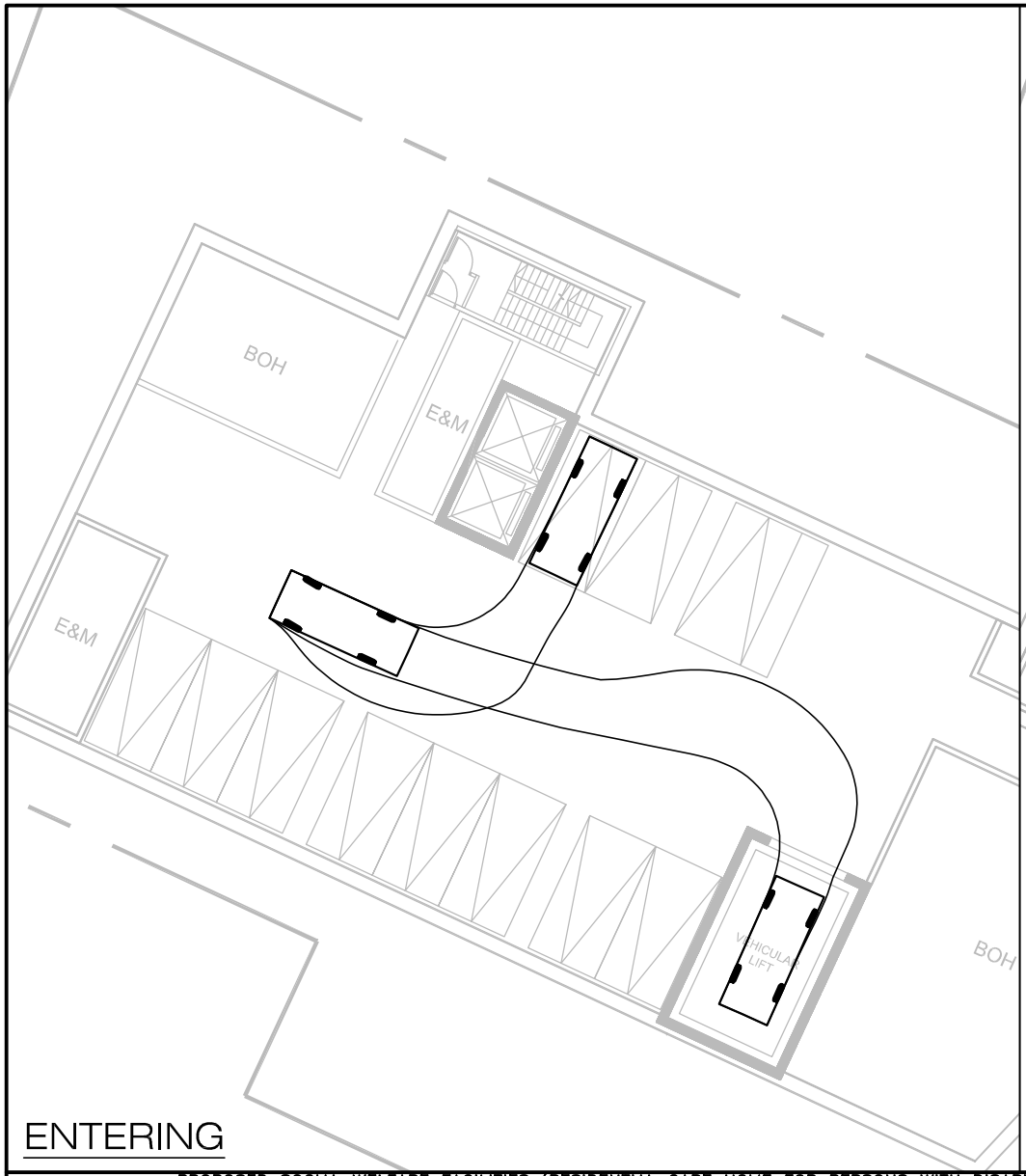

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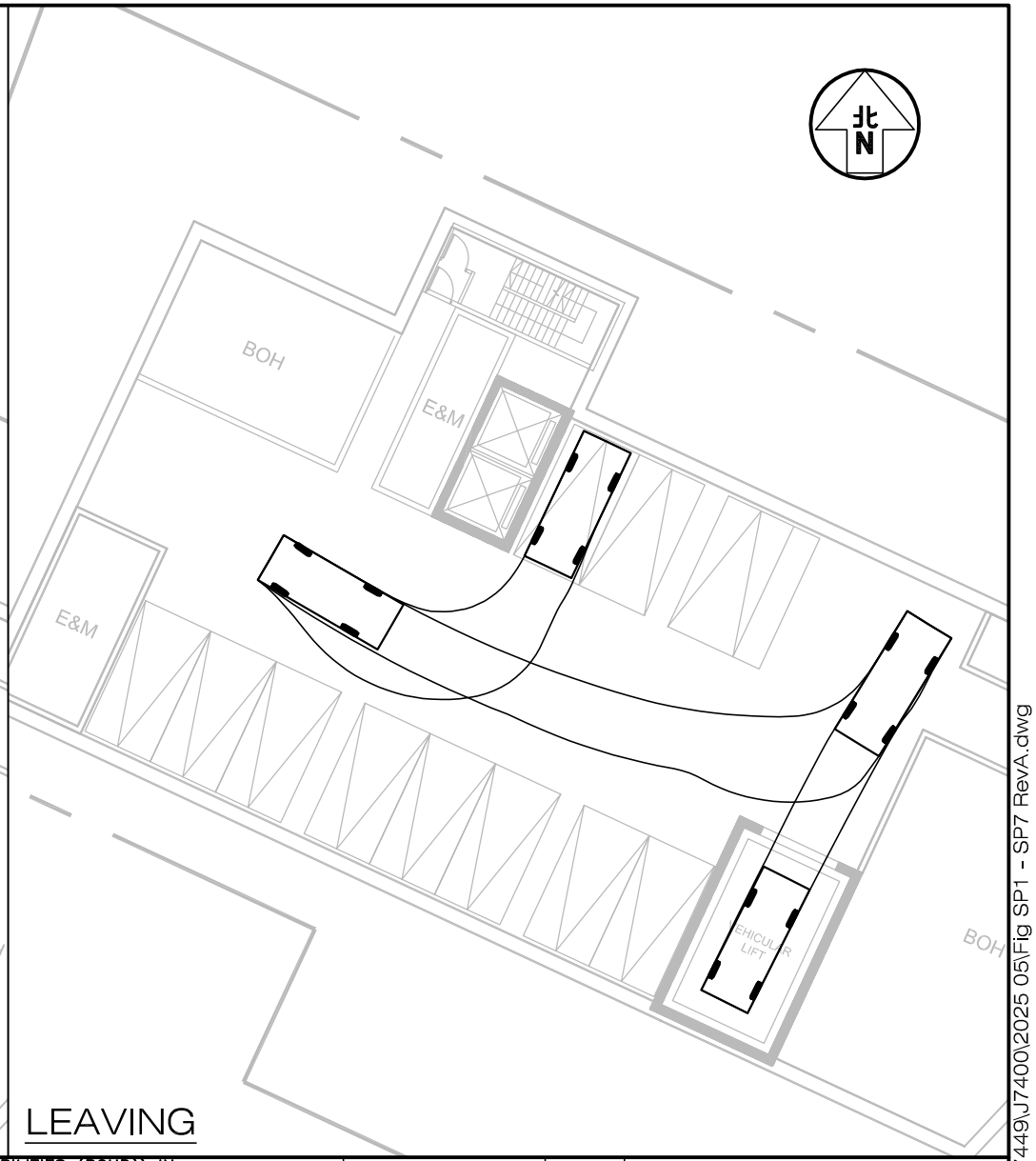

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Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. SP6 / Revision A
Figure Title	SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING THE CAR PARKING SPACE ON B/F		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 250 / Date 26 MAY 2025

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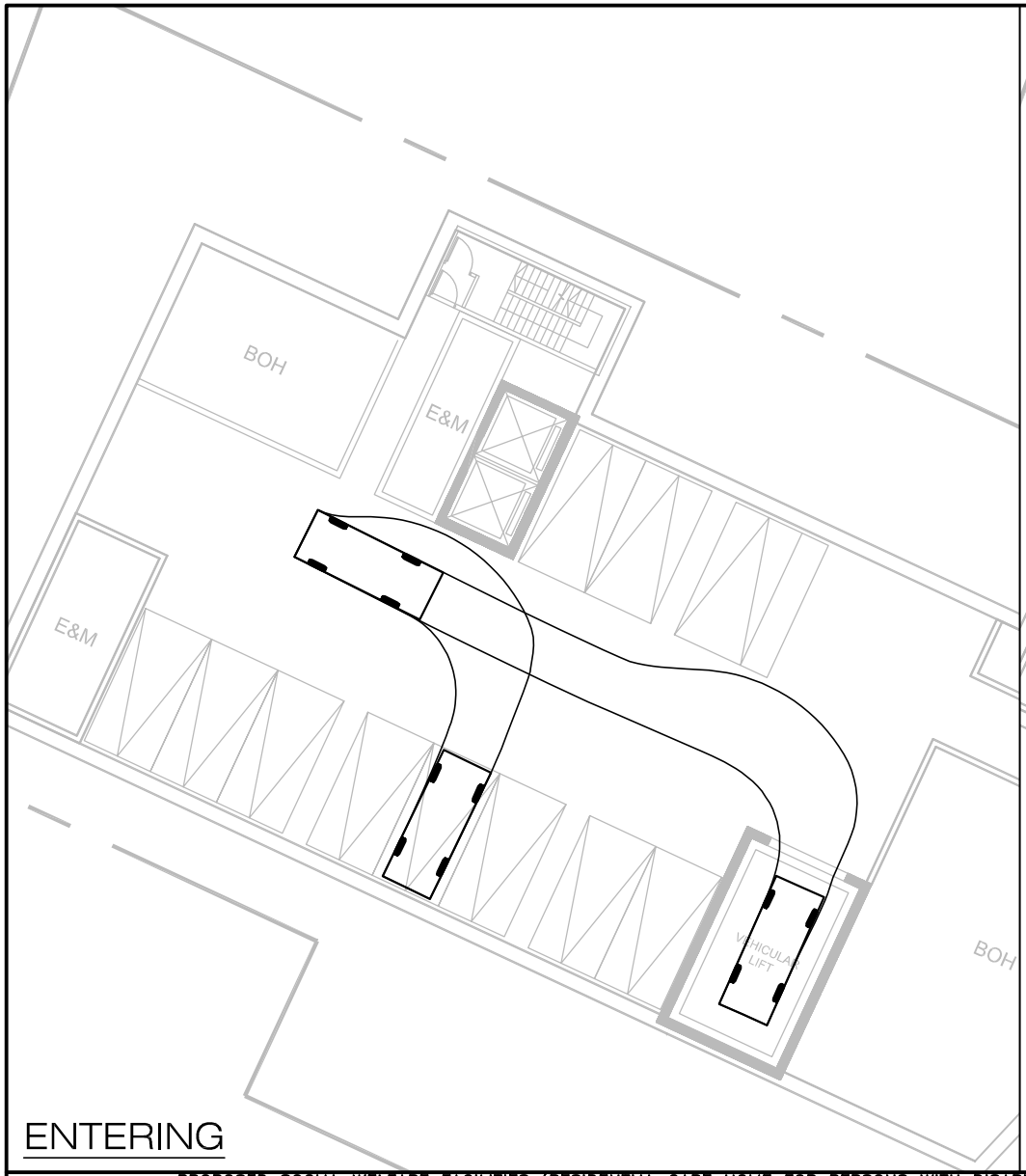

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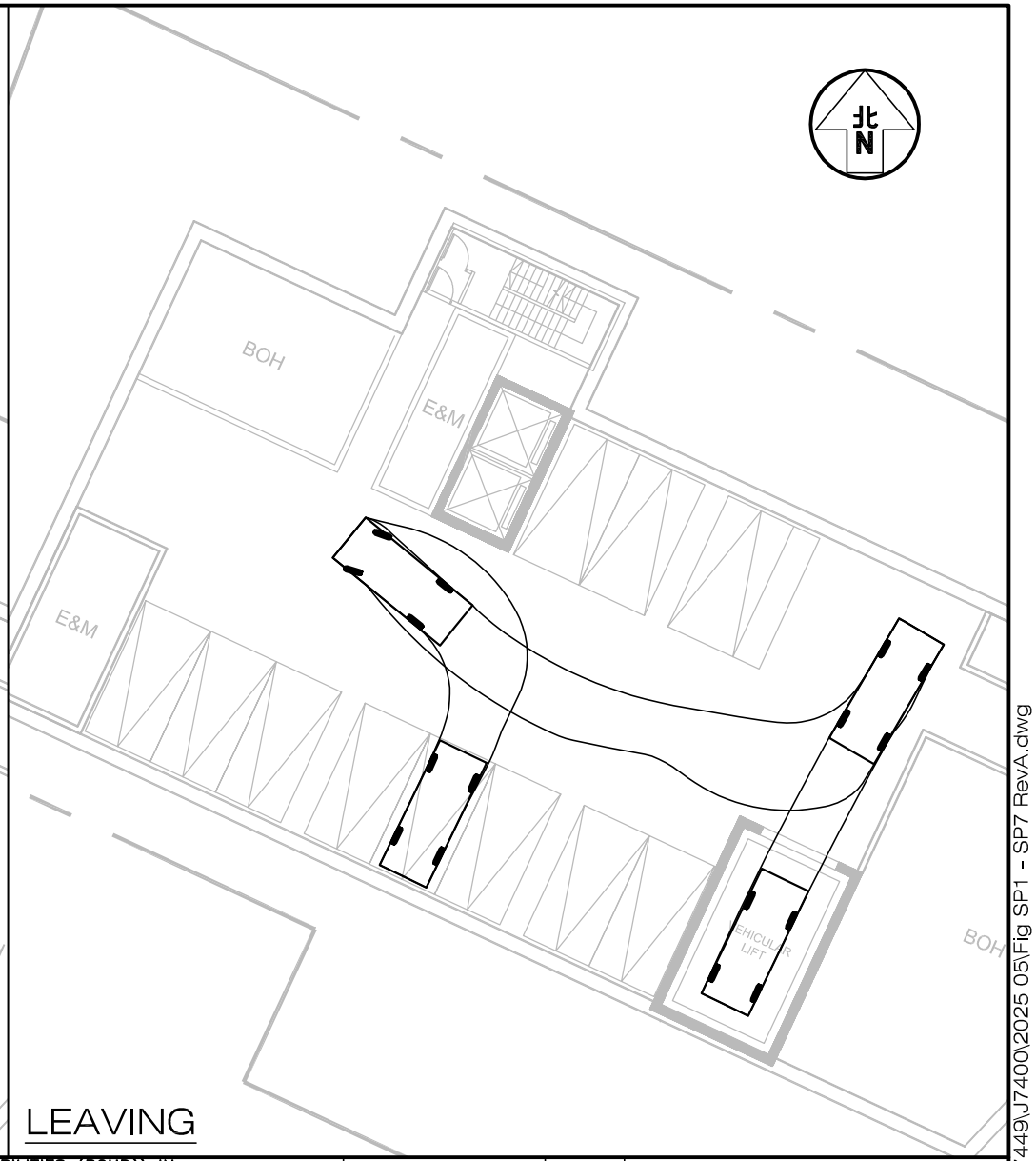

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Project Title	PROPOSED SOCIAL WELFARE FACILITIES (RESIDENTIAL CARE HOME FOR PERSONS WITH DISABILITIES (RCHD)) IN "VILLAGE TYPE DEVELOPMENT" ZONE, LOTS 3669 S.A RP (PART), 3669 S.B RP (PART), 3670 RP (PART) AND ADJOINING GOVERNMENT LAND IN D.D.104, NAM SANG WAI, YUEN LONG	J7400	Figure No. SP7 / Revision A
Figure Title	SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING THE CAR PARKING SPACE ON B/F		Designed by L C H / Drawn by N C M / Checked by K C
			Scale in A4 1 : 250 / Date 26 MAY 2025

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Appendix 3 –
Vehicle Lift Analysis

Vehicle Lift Analysis

Job Title Proposed RCHD in "Village Type Development" Zone, Lots 3669 S.A RP (Part), 3669 S.B RP (Part), 3670 RP (Part) and adjoining Government Land in D.D.104, Nam Sang Wai, Yuen Long

Ground floor to typical car park floor (m)	3.50
Average Speed (m/s)	0.75
Travel time (s)	4.67

Activity	**Time (s)**
Car lift travels from ground floor to typical car park floor	5
Lift door opens	5
Car exits lift in foward gear on typical car park floor	5
Car enters lift in reverse gear on typical car park floor	15
Door closes	5
Car lift travels from typical car park floor to ground floor	5
Lift door opens	5
Car exits lift in forward gear on ground floor	5
Car enters lift in reverse gear on ground floor	15
Door closes	5
Total	69

Number of lift servers, **k**	1
Number of waiting space(s)	0
Cycle time ω (s)	69
Arrival rate λ (veh / hr)	10
Service rate μ of one lift server (veh / hr)	52

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	80.74%	80.74%	19.26%
1	**15.55%**	**96.29%**	**3.71%**
2	2.99%	99.29%	0.71%
3	0.58%	99.86%	0.14%
4	0.11%	99.97%	0.03%
5	0.02%	99.99%	0.01%
6	0.00%	100.00%	0.00%
7	0.00%	100.00%	0.00%

Conclusion

The probability of 1 car arriving when 1 car lift being occupied is 3.71%.

Formulae:		[A]	[B]	
Floor	Level (m)	Distance from G/F	No. of parking spaces	[A] * [B]
8/F		0		0
7/F		0		0
6/F		0		0
5/F		0		0
4/F		0		0
3/F		0		0
2/F		0		0
1/F		0		0
G/F	0.00	0		0
B1	-3.50	3.5	10	35
B2		0.0		0
B3		0		0
B4		0		0
B5		0		0
B6		0		0
B7		0		0
B8		0		0
			total parking spaces	typical floor distance
			10	3.5

Note:
k is the number of lift servers.
λ is the arrival rate in vehicles per hour.
μ is the service rate of a lift server in vehicles per hour.

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

The assessment is based on the mutli-server queuing (M/M/N) theory, and the equations applied are listed below :

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 $N \geq k$:

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

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