Appendix B

Traffic Impact Assessment

ARUP

Application for Permission under Section 16 of the Town Planning Ordinance (Cap. 131) for Proposed Flat and Shop and Services and Eating Place at Non-Domestic Podium within "Government, Institution or Community (1)" Zone of Planning Area 34E of Hung Shui Kiu/ Ha Tsuen New Development Area

Traffic Impact Assessment

v.1 | September 2025

Arup Hong Kong Limited
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong,
Kowloon
Hong Kong
arup.com

Contents

Table

Figures

Appendices

1 INTRODUCTION

1.1 General

1.1.1 This Application is to seek approval from the Town Planning Board (TPB) under Section 16 of the Town Planning Ordinance (Cap. 131) for Proposed Flat and Shop and Services and Eating Place at Non-Domestic Podium ("the Proposed Development") within "Government, Institution or Community (1)" zone of Planning Area 34E of the Approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2 ("the Application Site").

1.1.2 The Application Site is on the "Government, Institution or Community (1)" ("G/IC(1)") zone of the Approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2 (the "OZP"). It falls within the Second Phase Development of Hung Shui Kiu/ Ha Tsuen New Development Area (HSK/HT NDA) and is one of the sites in the Pilot Area in HSK/HT NDA under the Large-scale Land Disposal (LSLD) announced by the Government in late 2024.

1.1.3 This Traffic Impact Assessment (TIA) is to review the two previous approved reports listed below and assess the traffic and transport impacts arising from the Proposed Development under this Planning Application.

- Approved Traffic and Transport Impact Assessment (TTIA) Report ("Approved TTIA"); and
- The Section 16 Traffic Impact Assessment Report for Planning Application Planning Application No. A/HSK/452 approved in 2023 ("Approved S16 TIA").

1.2 Development Proposal

1.2.1 The Application Site is located at the northern site in Planning Area 34E of the HSK/HT NDA, i.e., Site 4-1. This application proposes to change the land use from divisional fire station and ambulance depot cum staff quarters under the approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2 ("Original Scheme") to Flat and Shop and Services and Eating Places at a Non-domestic Podium ("Proposed Scheme"). Please refer to **Figure 1.1** for the location of the Application Site.

1.2.2 The development parameters upon the proposed amendment are summarized in **Table 1.1**. With the change in land use, the estimated increase in flat and population for the Proposed Development is estimated to be about 451 flats and 932 persons[1].

[1] For technical assessment purpose, the estimated number of residents in the Proposed Development has been updated with the average household size assumption of 2.6, referencing to the latest C&SD projection of average household size starting from 2031. Source: https://www.censtatd.gov.hk/en/web_table.html?id=150-12001.

Table 1.1 – Key Development Parameters of the Proposed Scheme

		Proposed Development		
		Original Scheme under ODP	**Proposed Scheme**	**Net Change under Original and Proposed Schemes**
Land Use		Divisional fire station and ambulance depot cum staff quarters	Flat and Shop and Services	-
Gross Floor Area (GFA) (m^2)	**Domestic GFA**	33,600m^2	46,560m^2	+12,960 m^2
	Non-domestic GFA for Divisional fire station and ambulance depot	(Subject to design)	-	-
	Retail GFA	-	3,880m^2	+3,880m^2
Average Flat Size		70m^2	50m^2	-
No. of Flat		About 480	About 931	+451
Population		About 1,488	About 2,420	+932

Note: Development parameters are estimated only and subject to detailed design.

1.3 Proposed Parking and Loading/ Unloading Facilities Provision

1.3.1 Required provision of private car, motorcycle, visitors and loading/ unloading facilities for the private housing and retail development in the Proposed Development are estimated in accordance with the Hong Kong Planning Standards and Guidelines (HKPSG). The adopted parking ratio for domestic is summarized in **Table 1.2** and the parking provisions is summarized in **Table 1.3**.

1.3.2 The estimation of the parking and loading/unloading facilities is indicative to demonstrate the overall parking provision and the development parameters adopted are for assessment purposes only. The provision for the private car and motorcycle parking should be not less than the mean value required by the HKPSG requirement, as consulted with TD. Exact provisions would be subject to agreement between the future developer and TD.

Table 1.2 – Adopted Parking and Loading/ Unloading Provision Rate

Type of Development	**Facility**	**Proposed Development**
Private Housing	Private Car Parking	**GPS x R1 x R2 x R3** Global Parking Standard (**GPS**) = 1 parking spaces per 4 - 7 flats Demand Adjustment Ratio (**R1**) = 0.5 (flat size ≤ 40m^2); **or** 1.2 (40 <flat size ≤70m^2) Accessibility Adjustment Ratio (**R2**): Outside a 500m-radius of rail station = 1 Development Intensity Adjustment Ratio (**R3**) = 0.9 (5.00 < Domestic Plot Ratio ≤ 8.00m^2)
	Visitor Parking	5 visitor spaces per residential block for developments with more than 75 units per block
	Motor Cycle Parking	1 per 100-150 flats
	Loading/ Unloading	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 or as determined by the Authority
	Private Car Parking	1 car space per 150 – 300m^2 GFA

Retail	Motorcycle Parking	5 to 10% of the total provision for private cars
	Loading / Unloading	1 loading/ unloading bay for goods vehicles for every 800 to 1,200m^2, or part thereof, GFA

Note: For estimation of parking and loading and unloading provisions for private housing, it is assumed that the development will comprise of 430 flats with a size of ≤ 40m^2 and 501 flats with a size of 40 <flat size ≤70m^2, based on the notional scheme.

Table 1.3 – Estimated Parking and Loading/ Unloading Provision For Proposed Development

No.	PV Parking Spaces			Visitor Parking Spaces			M/C Parking Spaces			L/UL (coaches / buses / MGV / HGV shared-use Bay)		
	Min.	**Mean**	**Max.**	**Min.**	**Mean**	**Max.**	**Min.**	**Mean**	**Max.**	**Min.**	**Mean**	**Max.**
Private Housing (40sqm or below: 430 flats; and 40-70sqm: 501 flats, in total 931 flats with 4 blocks)	105	145	184	20	20	20	7	9	10	4	4	4
Retail (3,880 m^2 GFA)	13	20	26	0	0	0	1	2	3	4	5	5
Total	**118**	**165**	**210**	**20**	**20**	**20**	**8**	**11**	**13**	**8**	**9**	**9**

Note:

(1) The exact numbers will be subject to future developers' proposal.

2 TRAFFIC AND TRANSPORT NETWORK

2.1 Existing Road Network

2.1.1 The HSK/HT NDA is bounded by Castle Peak Road – Hung Shui Kiu section to the south, Kong Sham Western Highway (KSWH) to the west and Hung Shiu Kiu Main Street to the east. The existing road network within the area of influence (AOI) is shown in **Figure 1.1**.

2.1.2 Currently, Yuen Long Highway and KSWH as expressways are the major strategic roads connecting HSK/HT with New Territories and urban area. Castle Peak Road – Hung Shui Kiu as a rural trunk road parallel to Yuen Long Highway serves as an alternative inter-district connection between HSK/HT area and North-West New Territories (NWNT).

2.1.3 KSWH, Hung Tin Road and Long Tin Road are three major North-South connections carrying HSK/HT area and Tin Shui Wai traffic to Yuen Long Highway and the external road network.

2.1.4 Since the Applicate Site is located in the future HSK/HT NDA, it will be well served by the future road network in the NDA and connected to existing and planned strategic highways which will be discussed in Chapter 3.

2.2 Existing Public Transport

2.2.1 HSK/HT area is currently served with light railway transit (LRT) providing inter-district transportation to neighbouring areas of Tuen Mun, Yuen Long and Tin Shui Wai. LRT passengers can interchange with Tuen Ma Line (TML) at Tuen Mun Station, Siu Hong Station, Tin Shui Wai Station and Yuen Long Existing Use and Condition

2.2.2 The alignment of Tuen Ma Line runs across HSK/HT area. However, HSK/HT area is located to the east Tuen Mun and to the west of Tin Shui Wai districts and is outside 500m railway catchment. MTR feeder buses are currently provided to serve HSK passengers to the nearest MTR Tin Shui Wai (TSW) Station.

2.2.3 The existing road-based public transport services within HSK/HT area are provided along Hung Tin Road, Ping Ha Road, Tin Ha Road and Lau Fau Shan Road. The area is mainly served with franchised buses and green mini buses.

2.2.4 Since the Applicate Site is located in the future HSK/HT NDA, it will be well served by the future public transport system in the NDA which will be discussed in Chapter 6.

2.3 Existing Junctions Performance

2.3.1 The existing traffic condition within AOI based on the approved TTIA are summarized in **Table 2.1** respectively. The assessed locations are presented in **Figure 1.1**. Existing junction layouts are shown in **Appendix A**.

Table 2.1 – Existing Key Junctions Performance from Approved TTIA

No.	Junction	Junction Type (2)	Existing Junction Performance	
			AM	PM
J1	Junction of Castle Peak Road and Fuk Hang Tsuen Road (3)	S	20%	35%
J2	Junction of Castle Peak Road and Tin Ha Road	S	>50%	>50%

Note:
(1) "R" denotes roundabout, "P" denotes priority junction and "S" denotes signalized junction
(2) Performance is assessed with "Design Flow to Capacity" (D.F.C) ratio for priority junctions and roundabout and "Reserve Capacity" (R.C) for signalised junctions
(3) Fuk Hang Tsuen Road Widening Works has been considered.

2.3.2 In general, all junctions were operating with a R.C. of not less than 15% for signalized junctions.

3 FUTURE ROAD NETWORK IN HUNG SHUI KIU/ HA TSUEN NEW DEVELOPMENT

3.1 Introduction

3.1.1 The HSK/HT NDA will provide new primary and district roads to facilitate east-west and north-south movements within the NDA to enhance the internal connectivity of the NDA. A comprehensive local road network, cycle tracks, pedestrian walkways and pedestrian streets will also be provided to facilitate internal vehicular and pedestrian movements. **Appendix B** shows the overall road layout plan of HSK/HT NDA. The general function of each road type in the proposed highway hierarchy is shown in **Table 3.1**.

Table 3.1 – Road Hierarchy Function and Characteristic

Hierarchy	Function	Characteristic	Road in HSK/HT NDA
Expressway/ Trunk Road	Connecting the main centres of population	High capacity roads; No frontage access or development, Segregation of pedestrians, Widely spaced grade-separated junctions, 24 hour stopping restrictions.	• Kong Sham Western Highway (Expressway) • Castle Peak Road – Hung Shui Kiu Section (Rural Trunk)
Primary Distributor	Forming the major network of the urban area	Having high capacity junctions, though may be at-grade; Segregated pedestrian facilities wherever possible and frontage access limited if not entirely restricted; 24 hour stopping restrictions	• Road P1
District Distributor	Linking Districts to the Primary Distributor Roads	High capacity at-grade junctions; Peak hour stopping restrictions; Parking restrictions throughout the day	• Road D1 to D8, Hung Tin Road, Tin Ying Road
Local Distributor	Linking developments to the District Distributor Roads		• Other local road network in HSK/HT NDA

3.1.2 As part of the Second Phase Development, the Application Site will be served by the planned road network of the HSK/HT NDA, including connections to the adjacent Road P1 which is a primary distributor running in north-south direction underneath KSWH, providing linkage to KSWH, Castle Peak Road and other district distributors. The future road network in the vicinity and the proposed vehicular access is shown in **Figure 3.1**.

4 TRAFFIC FORECAST AND METHODOLOGY

4.1 Methodology

4.1.1 Two-tier traffic modelling approach has been adopted in this Study. The Strategic Transport Model (STM) is at the upper level. At the lower level, it contains the Local Area Traffic Model (LATM) for road traffic. This Study adopted the traffic models developed for the study area under the approved TTIA for Hung Shui Kiu/ Ha Tsuen New Development Area Package A for Second Phase Development – Design and Construction as a basis.

4.1.2 The STM is a link-based transport model which produces transport demand forecasts at strategic and inter-district levels. It is mainly to estimate the transport demand of the district-to-district movements by different private and public transport modes with respect to the planning data and infrastructures of the whole territory. The STM would be based on Arup's Comprehensive Transport Study (CTS) compatible model. The vehicular demand from the STM would be the primary input for the LATM.

4.1.3 The LATM, on the other hand, is a junction-based assignment model which stimulates the local area traffic demand at intra-district level. With the incorporation of local area junction characteristics, the LATM is capable of estimating the junction delay and traffic queuing for route choice in assigning the traffic demand in local areas.

4.2 Assessment Scenarios

4.2.1 The tentative year of population intake for the Proposed Development will be no later than 2033. The planning horizon for the traffic forecast has been set at the time at a design year 3 years (Design year 2036) after the tentative population intake year 2033.

4.2.2 Two scenarios with two design years and road network assumption have been used in the assessment:

4.2.3 Reference Scenario:

- Year 2036 under "Approved S16 TIA" + planned and committed developments based on the AOI (Refer to **Table 4.1**)

Table 4.1 – Planned and Committed Developments

#	**Planned and Committed Developments**
1	Public housing development (9 sites) in HSK/HT NDA (Source: Tuen Mun District Council 26.6.2025 swhc_2025_015.pdf)
2	Minor Relaxation of Plot Ratio Restriction for the Public Housing Sites (Dedicated Rehousing Estate) (No. A/HSK/253 approved with conditions on 6.11.2020)
3	Intensification of 11 public and private housing sites in HSK/HT NDA (No. A/HSK/452 approved on 23.6.2023)
4	Minor Relaxation of Domestic Plot Ratio Restriction (From 4.5 to 5) for Permitted Mixed Use Development in "Other Specified Uses" annotated "Mixed Use" Zone, Government Land at Planning Areas 28A and 28B of HSK/HT NDA (No. A/HSK/573 approved on 15.8.2025)

Note:

(1) PlanD has been consulted for the list of planned and committed developments within the AOI and no comment received on 21st August 2025

4.2.4 Design Scenario:

- Year 2036 Reference Scenario + Withdraw the total traffic generation from Proposed Development (Original Scheme) + Add total traffic generation from Proposed Development (Proposed Scheme)

4.2.5 The net increase in flat and population as presented in **Section 1.2** were adopted for model development for reference (Original Scheme) and design (Proposed Scheme) scenarios. The changes of the trip generation are presented in **Section 4.3**.

4.3 Traffic Generation Assumption

4.3.1 For the Proposed Development trip generation and attraction, trip rates of the retail would be made reference to Transport Department's Transport Planning and Design Manual (TPDM) Volume 1 Chapter 3 - Transport Considerations in Town Plans. The trip rates for the proposed development are summarized in **Table 4.2**.

Table 4.2 – Adopted Vehicular Trip Rate

Development Type	Unit	AM Peak		PM Peak	
		Gen	Att	Gen	Att
Private Housing (Staff Quarter) (Average Flat Size: 70sqm) (1)	pcu/hr/flat	0.0659	0.0301	0.0258	0.0409
Private Housing (Average Flat Size: 50 sqm) (1)	pcu/hr/flat	0.0415	0.0141	0.0157	0.0276
Retail (1)	pcu/hr/100m^2	0.1285	0.1525	0.2360	0.2622

Note: (1) Trip rates adopted in the approved TTIA under Agreement No. CE1/2020 (CE) HSK/HT NDA Package A Works for Second Phase Development – Design and Construction

4.3.2 Using the trip rates in **Table 1.2**, the total additional trips induced by the Original Scheme and Proposed Scheme are estimated in **Table 4.3**.

Table 4.3 – Estimated Traffic Generation and Attraction (PCU/hr)

Schemes	Development	AM Peak		PM Peak	
		Gen	Att	Gen	Att
Original Scheme	Private Housing (Staff Quarter) (~480 flats)	-32	-14	-12	-20
	Fire Station and Ambulance Depot (2)	-10	-17	-17	-10
Proposed Scheme	Private Housing (931 flats)	39	13	15	26
	Retail (3,880 m^2 GFA)	5	6	9	10
Total (Net Increase)		**44 (+2)**	**19 (-12)**	**24 (-5)**	**36 (+6)**

Note:
(1) Figures in brackets show the changes between Proposed Scheme and Original Scheme
(2) Based on previous TTIA assumption

4.3.3 The Proposed Scheme will generate around 63 and 60 two-way pcu/hr during the AM and PM peak periods respectively. The changes of the traffic generation between the Original Scheme

and Proposed Scheme are around -10 and +1 two-way pcu/hr during the AM and PM peak periods respectively. These variations are minimal and do not indicate any significant increase in traffic demand.

4.3.4 Given the negligible difference in traffic generation between the Original and Proposed Schemes, it is reasonable to conclude that the revised development parameters will not result in any substantial impact on the surrounding road network. As such, the need for a long-term traffic forecast, such as for the year 2041, is not critical for this Proposed Development. The current assessment year sufficiently demonstrates that the Proposed Scheme can be accommodated within the existing and planned transport infrastructure without requiring further future-year analysis.

5 Traffic Impact Assessment

5.1 Reference and Design Scenario for Assessment

5.1.1 Traffic impact assessment has been conducted for design year 2036 for reference and design scenarios.

5.2 Key Road Links Performance

5.2.1 The performance of key road links within and in the vicinity of Proposed Development have been assessed and the assessment results are presented in **Table 5.1**. The assessment location for key road links is shown in **Figure 5.1**.

Table 5.1 – Key Road Links Performance at Peak Hour in 2036

No.	Link	Dir	Capacity (PCU/hr)	Period	Peak Hour Traffic (in PCU) and V/C ratio (1)	
					2036 Ref	2036 Des
L1	Tin Ha Road – Bet. Road L5 and Hung Shui Kiu Tin Sum Road	NB	1000	AM	573 (0.57)	572 (0.57)
				PM	374 (0.37)	374 (0.37)
		SB	1000	AM	253 (0.25)	253 (0.25)
				PM	245 (0.25)	245 (0.25)
L2	Road P1 – Bet. Road D7 and Road D8	NB	3600	AM	1,954 (0.54)	1,954 (0.54)
				PM	1,904 (0.53)	1,904 (0.53)
		SB	3600	AM	1,592 (0.44)	1,595 (0.44)
				PM	1,881 (0.52)	1,878 (0,52)
L3	Road D8 – Bet. Road D6 and Kong Sham Western Highway	EB	3600	AM	378 (0.11)	368 (0.10)
				PM	584 (0.16)	589 (0.16)
		WB	3600	AM	437 (0.12)	437 (0.12)
				PM	447 (0.12)	447 (0.12)

No.	Link	Dir	Capacity (PCU/hr)	Period	Peak Hour Traffic (in PCU) and V/C ratio (1)	
					2036 Ref	2036 Des
L4	Road D8 – Bet. Road D6 and Road L4	EB	3600	AM	353 (0.10)	353 (0.10)
				PM	608 (0.17)	608 (0.17)
		WB	3600	AM	630 (0.17)	630 (0.17)
				PM	550 (0.15)	550 (0.15)
L5	Road D8 – Bet. Road D6 and Road L5	NB	3600	AM	312 (0.09)	301 (0.08)
				PM	224 (0.06)	230 (0.06)
		SB	3600	AM	119 (0.03)	119 (0.03)
				PM	342 (0.10)	342 (0.10)
L6	Road D6 – Bet. Road L5 and Road P1	EB	3600	AM	446 (0.13)	445 (0.12)
				PM	833 (0.23)	831 (0.23)
		WB	3600	AM	1,037 (0.29)	1,028 (0.29)
				PM	824 (0.23)	830 (0.23)

Note:

(1) A v/c ratio equal to or less than 1.0 indicates that a road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the resultant traffic will flow smoothly. A v/c ratio above 1.0 indicates the onset of congestion. A v/c ratio above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively with further increase in traffic.

5.2.2 The assessment results reveal that the overall traffic conditions will be operated with sufficient capacity in Design Year 2036.

5.3 Key Junctions Performance

5.3.1 The performance of key junctions within and in the vicinity of the Proposed Development have been assessed and the assessment results are presented in **Table 5.2**. The assessment location for key junctions is shown in **Figure 5.1**. Detailed junction calculations for design year 2036 are shown in **Appendix C** and the future junction layouts is show in **Appendix D**.

Table 5.2 – Key Junctions Performance at Peak Hour in 2036

No.	Junction	Existing/ New Junction (1)	Junction Type (2)	Junction Performance (3)			
				2036 Ref		2036 Def	
				AM	PM	AM	PM
J1	Castle Peak Road and Road P1 and Fuk Hang Tsuen Road	E	S	25%	17%	25%	17%
J2	Castle Peak Road and Tin Ha Road	E	S	>50%	>50%	>50%	>50%
J3	Tin Ha Road and Road L18	E	S	>50%	>50%	>50%	>50%

No.	Junction	Existing/ New Junction (1)	Junction Type (2)	Junction Performance (3)			
				2036 Ref		2036 Def	
				AM	PM	AM	PM
J4	Road P1 and Road D8	N	R	0.71	0.70	0.71	0.70
J5	Road P1 and Road D7	N	R	0.73	0.72	0.73	0.72
J6	Road P1 and Road D6	N	R	0.48	0.46	0.48	0.46
J7	Road D6 and Road D8	N	S	>50%	37%	>50%	37%
J8	Road D6 and Road L18	N	R	0.46	0.42	0.45	0.42

Note:

(1) "E" denotes existing junction and "N" denotes new junction in HSK/HT NDA

(2) "R" denotes roundabout, "P" denotes priority junction and "S" denotes signalized junction

(3) Performance is assessed with "Design Flow to Capacity" (D.F.C.) ratio for priority junctions and roundabout and "Reserve Capacity" (R.C.) for signalized junctions

5.3.8 By comparing the results between reference (Original Scheme) and design (Proposed Scheme) scenarios, the impact induced by the Proposed Development is insignificant.

5.3.9 In general, all existing junctions will be operating with a R.C. of not less than 15% for signalized junctions or D.F.C. ratio of not more than 0.85 for priority junctions and roundabouts in the peak hours for all scenarios with the planned junction improvement measures. New junctions within HSK/HT NDA will be operating with a R.C. of not less than 25% or D.F.C. ratio of not more than 0.75 in the peak hours and therefore the impacts induced by this Project is negligible.

6 Public Transport Provision in HSK/HT NDA

6.1 Future Public Transport

6.1.1 Public transport strategy for HSK/HT NDA has been formulated with railway for inter-district connection. Tuen Ma Line as a heavy rail connects HSK/HT NDA to NWNT, NENT and urban areas. Light Rail Transit connects HSK/HT NDA to neighbouring districts in Tuen Mun, Yuen Long and Tin Shui Wai.

6.1.2 The Green Transit Corridor (GTC) enclosing SGMTS, pedestrian walkway and cycle track has been introduced to enhance the internal movement through the HSK/HT NDA development clusters. SGMTS is proposed as the major intra-district public transport feeder running between HSK/HT NDA and Yuen Long South Development Area (YLS DA) supporting the heavy rail services.

6.1.3 In addition to heavy rail services, long-haul bus services would be introduced as an alternative transport mode for inter-district connection. The key public transport facilities within HSK/HT NDA are illustrated in **Figure 6.1**.

6.1.4 In year 2030/2031, HSK Station, part of SGMTS and PTIs in will be commissioned to serve the major population and employment intake in NDA Town Centre. The Proposed Development is located near the SGMTS station and within 200m ideal walking distance. Passengers could use the SGMTS as local feeder services to change the transit mode at HSK Station.

6.2 Future Public Transport Demand

6.2.1 The additional daily passenger trips induced by the proposed relaxation, and transportation modal share of HSK/HT NDA by Design Year 2036 is estimated and presented in **Table 6.1**.

Table 6.1 – Additional Daily Passenger Trips and Transport Mode Share of Proposed Development

Design Year	**2036**	
Items	Values	Proposed Development
Additional Population	-	952
Average Weekday Mechanised Daily Trips (1)	1.83	1740
PT Mode Share (2)	81%	1410
Peak Hour PT Person Trips		
AM Peak Hour Factor (2)	12%	170
PM Peak Hour Factor (2)	10%	140
Peak Hour Person Trips		
AM Generation (2)	84%	140
AM Attraction (2)	16%	30
PM Generation (2)	30%	40
PM Attraction (2)	70%	100
Directional Split		
To/fr East (Urban + NENT Dir)	60%	-
To/fr West (Tuen Mun Dir)	40%	-
Transport Mode Share	**Modal Split**	
Public Transport		
[a] SGMTS (3)	41%	
[b] Rail (4)	10%	
[c] LRT (5)	16%	
[d] Non-Rail Only (6)	33%	

Note:

(1) Travel Characteristics Survey 2011

(2) Arup's in-house public transport data

(3) "SGMTS" includes SGMTS-only trips and SGMTS trips interchanging with Rail, LRT and Non-Rail

(4) "Rail" includes Rail-only trips and Rail trips interchanging with LRT and Non-Rail.

(5) "LRT" includes LRT-only trips and LRT trips interchanging with Non-Rail.

(6) "Non-Rail Only" includes Franchised & Non-Franchises Bus, PLB and cross harbour ferry

6.2.2 Based on the above table, the estimated public transport demand is summarized and presented in **Table 6.2**.

Table 6.2 – Estimated Additional Public Transport Demand (persons/hr)

Schemes	**Parameter (Population)**	**AM Peak**		**PM Peak**	
		Gen	**Att**	**Gen**	**Att**
Proposed Development	+952	140	30	40	100

6.2.3 As shown in the table above, the proposed development would generate 180 and attract 100 persons travelling via public transport (critical one-way) during the AM and PM peak hours respectively.

6.2.4 **Table 6.3** summarized the estimated bus demand based on the modal split mentioned in **Table 6.1**. Since the franchised bus constitutes a major portion of the non-rail only transit. The modal split of non-rail only (i.e. 33%) is adopted for conservative approach. The estimated additional passenger demand for bus services generated from the Proposed Scheme is presented below:

Table 6.3 - Estimated Additional Bus Passenger Demand induced by Proposed Development

Schemes	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Estimated Additional Bus Demand (pax/hr)	50	10	10	30
Required Bus Trips (1) (bus/hr)	1	1	1	1

Note:

(1) Based on an occupancy of 90 passengers per bus (75% of full bus capacity [120 passengers]

6.2.5 Based on the results, it is estimated that less than 1 bus trip (one way) is required during both AM and PM Peak periods. In fact, this additional demand induced is expected to be dispersed across multiple bus routes, resulting in a negligible impact on any single route. Given the limited scale of the projected increase in public transport usage, the additional demand generated by the Proposed Development is considered manageable and will not result in any adverse impacts.

7 PEDESTRIAN AND CYCLIST NETWORK AND STRATEGY FOR HSK/HT NDA

7.1.1 Comprehensive pedestrian and cyclist strategy for HSK/HT NDA was formulated to provide a pedestrian and bicycle-friendly environment in the area. The provision of the facilities under HSK/HT NDA have already taken into account the housing intensification scheme under Proposed Development.

7.1.2 Continuous footpath network will be provided with support of different pedestrian facilities, including subways or footbridges across roundabouts and signal-controlled crossing at the junctions and/or mid-bloc location. In general, pedestrian walkways with minimum width of 3.5m are provided in the vicinity of the Proposed Developments which would be able to serve the pedestrian.

7.1.3 Cycle track network, integrated with existing cycle track network will be provided in HSK/HT NDA to link up major development areas to the important activity nodes, such as HSK Station. Sufficient cycling supporting facilitates such as cycle parking areas would be provided along the cycle track network. All application sites under Proposed Development will be well covered by the existing and future cycling network.

7.1.4 The Proposed Development will be well served by the planned pedestrian and cyclist network in HSK/HT NDA, including the Green Transit Corridor which provides connection between the Proposed Development and HSK Station at Town Centre of the NDA.

8 CONCLUSION

8.1.1 This Traffic Impact Assessment (TIA) is to review previous approved Traffic and Transport Impact Report conducted under Hung Shui Kiu New Development Area Planning and Engineering Study (HSK NDA P&E Study) and the Section 16 Traffic Impact Assessment Report for Planning Application (Planning Application No. A/HSK/452) approved in 2023, and assess the traffic and transport impacts arising from Proposed Flat and Shop and Services and Eating Place at Non-Domestic Podium ("the Proposed Development") within "Government, Institution or Community (1)" zone of Planning Area 34E of the Approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2 ("the Application Site").

8.1.2 With the change in land use, the estimated increase in flat and population for the Proposed Development is estimated to be about 451 flats and 932 persons. The tentative population intake year for the Proposed Development will be 2033.

8.1.3 The performance of key road links and junction within and in the vicinity of HSK/HT NDA have been assessed for Design Year 2036.

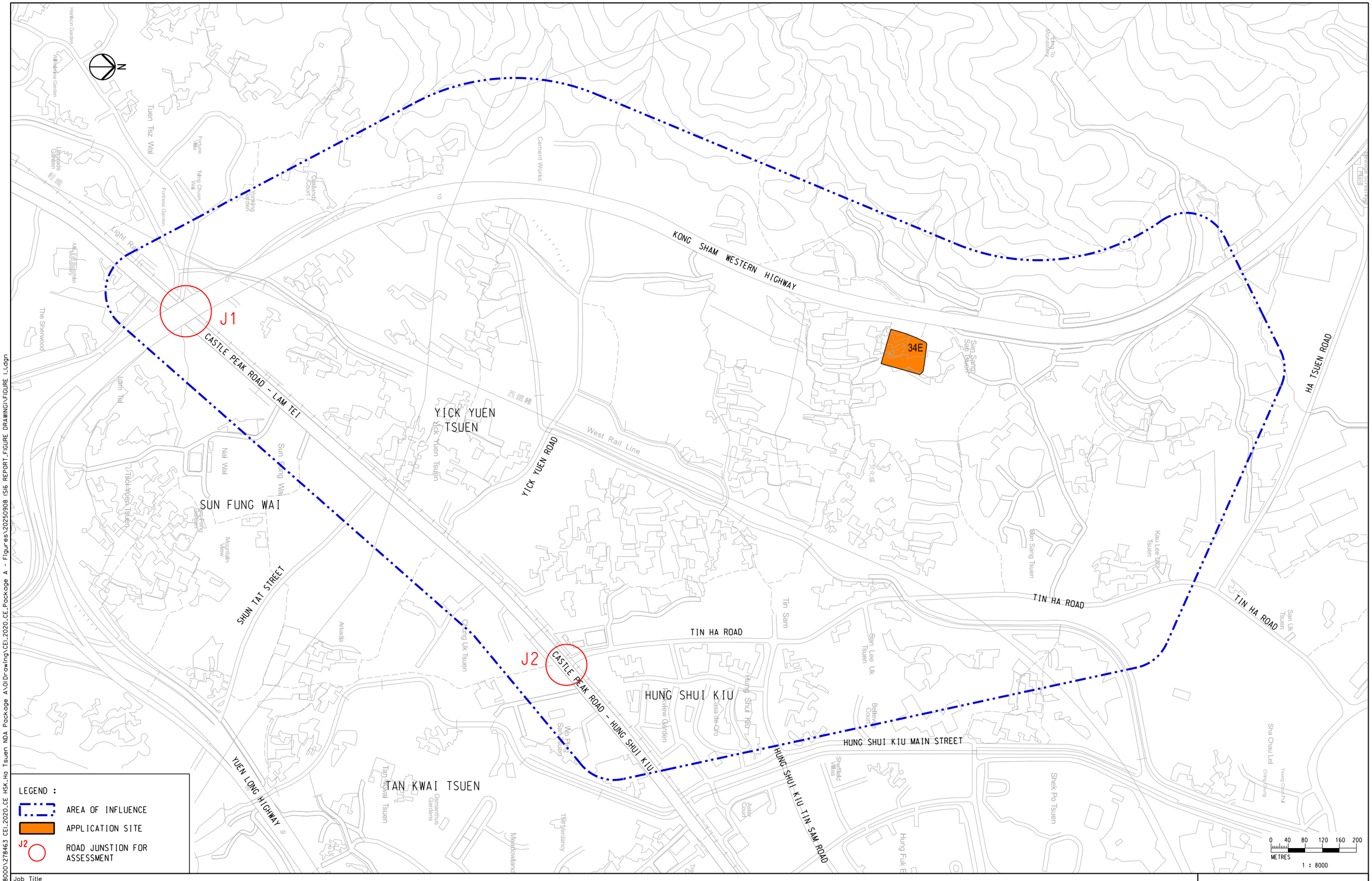
8.1.4 The assessment results reveal that the overall traffic conditions will be operated with sufficient capacity Design Year 2036.

8.1.5 Given the limited scale of the projected increase in public transport usage, the additional demand generated by the Proposed Development is considered manageable and will not result in any adverse impacts.

8.1.6 Comprehensive pedestrian and cyclist strategy for HSK/HT NDA was formulated to provide a pedestrian and bicycle-friendly environment in the area. The Proposed Development will be served by the planned pedestrian and cyclist network, including the Green Transit Corridor which provides a direct connection between the Proposed Development and HSK Station (Tuen Ma Line) at the Town Centre of the NDA.

8.1.7 Based on the assessment under this report, no insurmountable traffic and transport impact will be induced by the Proposed Flat and Shop and Services and Eating Place at Non-Domestic Podium at Planning Area 34E under this Application.

Figures



Job Title

CE01/2020 (CE) HUNG SHUI KIU/ HA TSUEN NEW DEVELOPMENT AREA PACKAGE A WORKS FOR SECOND PHASE DEVELOPMENT - DESIGN AND CONSTRUCTION

Figure 1.1

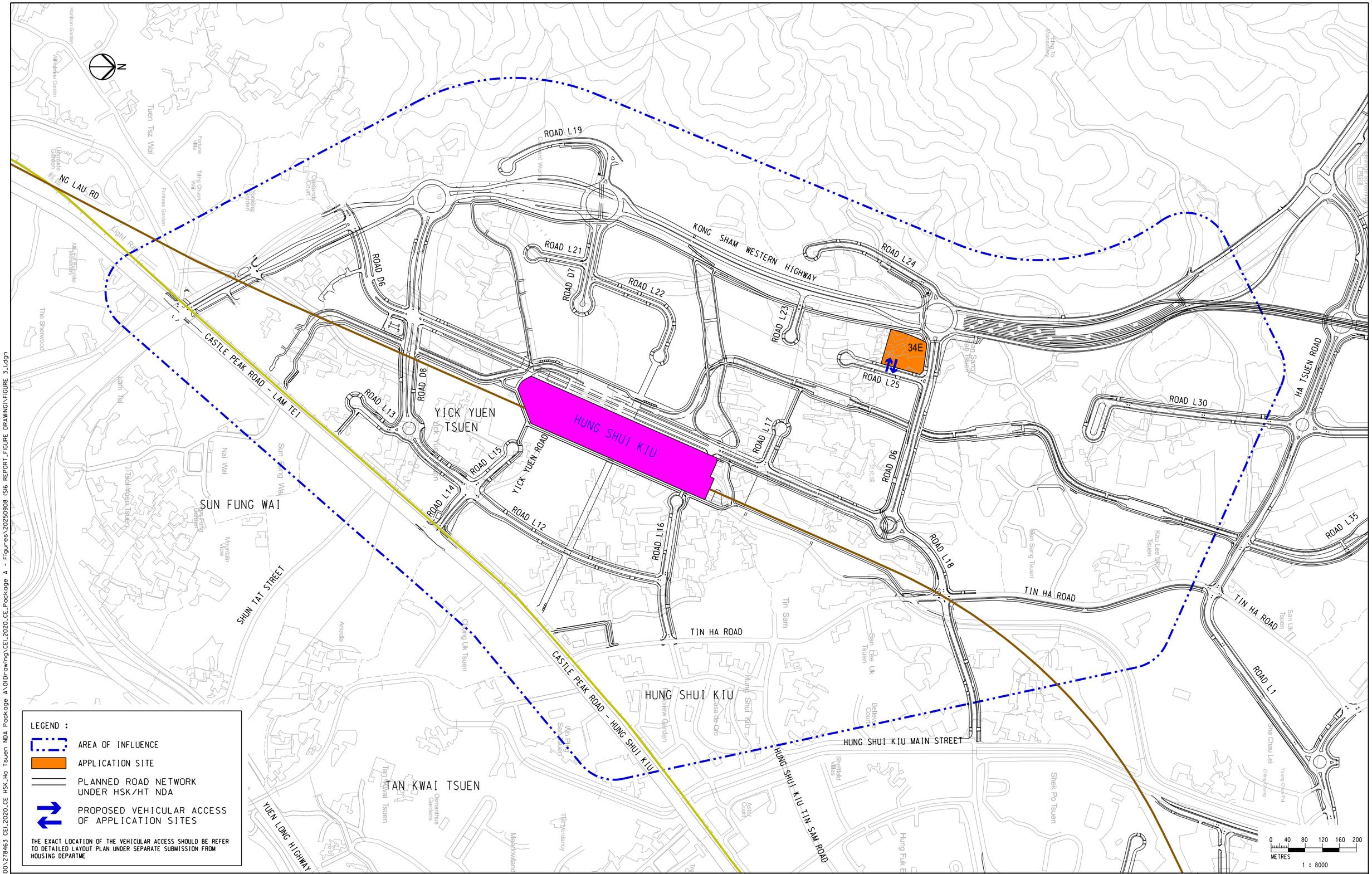
Date	Scale
09/25	1 : 8000 @ A3
Drawn	Job No.
WKKL	278463

Drawing Title

EXISTING ROAD NETWORK AND AREA OF INFLUENCE

ARUP

PRINTED BY: williamlal 15/9/2025 16:29:27
FILENAME: M:\Drawing\278000\278463 CE\2020.CE HSK_Ha Tsuen NDA Package A\01Drawing\CE\2020.CE_Package A - Figures\20250908 (SIG REPORT_FIGURE DRAWING)\FIGURE 1.1.dgn



PRINTED BY: william.lai 15/9/2025 16:27:23
FILENAME: M:\Drawing\278000\278463 CE_2020_CE HSK_Ha Tsuen NDA Package A\01Drawing\CE_2020_CE_Package A - Figures\20250908 (SIG REPORT_FIGURE DRAWING)\FIGURE 3.1.dgn

Job Title

CE01/2020 (CE) HUNG SHUI KIU/ HA TSUEN NEW DEVELOPMENT AREA PACKAGE A WORKS FOR SECOND PHASE DEVELOPMENT - DESIGN AND CONSTRUCTION

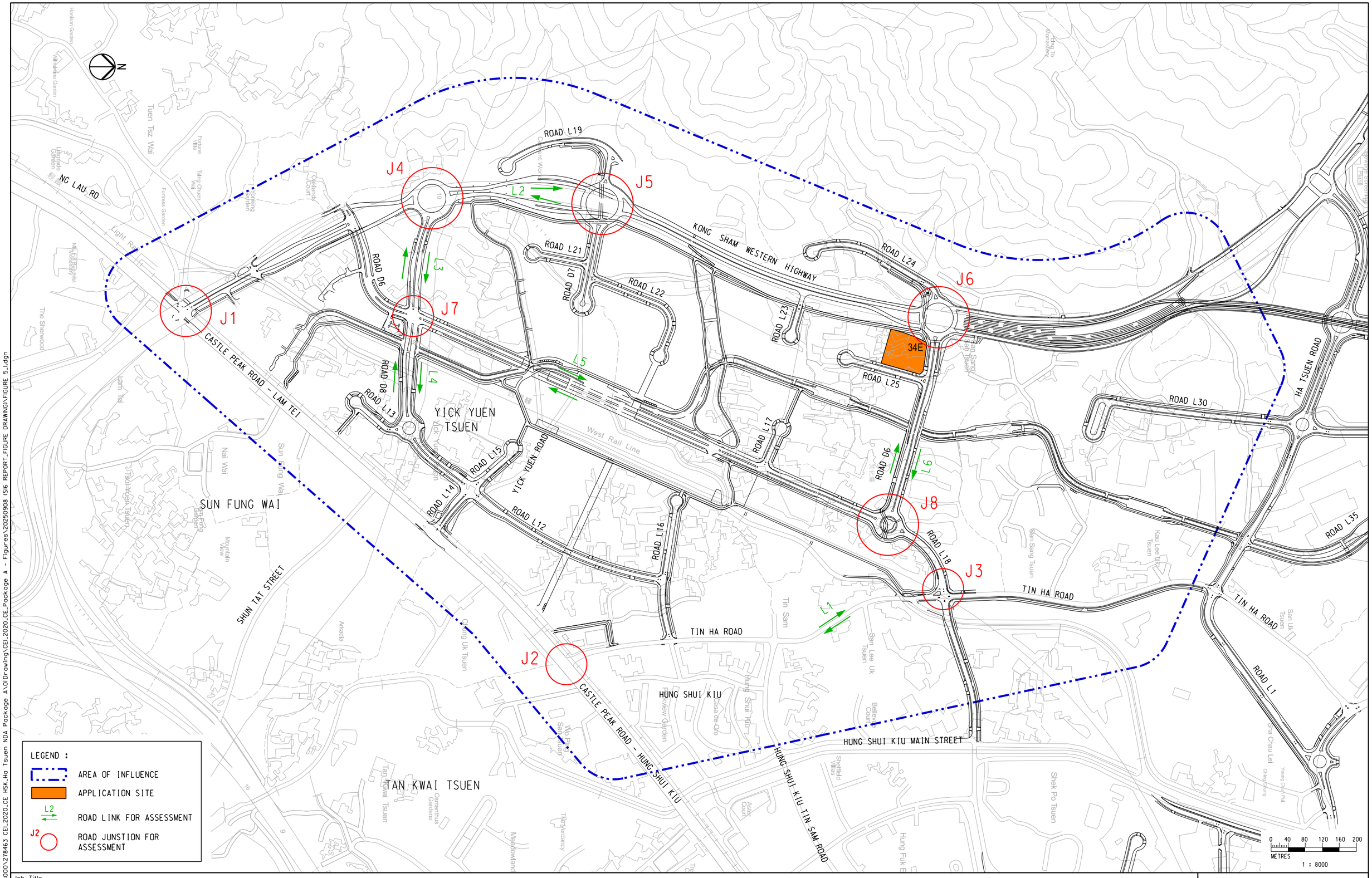
Figure 3.1

Date	Scale
09/25	1 : 8000 @ A3
Drawn	Job No.
WKKL	278463

Drawing Title

FUTURE ROAD NETWORK AND PROPOSED VEHICULAR ACCESS

ARUP



Job Title

CE01/2020 (CE) HUNG SHUI KIU/ HA TSUEN NEW DEVELOPMENT AREA PACKAGE A WORKS FOR SECOND PHASE DEVELOPMENT - DESIGN AND CONSTRUCTION

Figure 5.1

Date	Scale
09/25	1: 8000 @ A3
Drawn	Job No.
WKKL	278463

Drawing Title

KEY JUNCTIONS AND ROAD LINKS FOR ASSESSMENT

ARUP

PRINTED BY: william.lai 15/9/2025 16:25:20
FILENAME: M:\Drawing\278000\278463 CE_2020_CE HSK_Ha Tsuen NDA Package A\0\Drawing\CEI_2020_CE_Package A - Figures\20250908 ISI6 REPORT_FIGURE DRAWING\FIGURE 5.1.dgn

Legend:

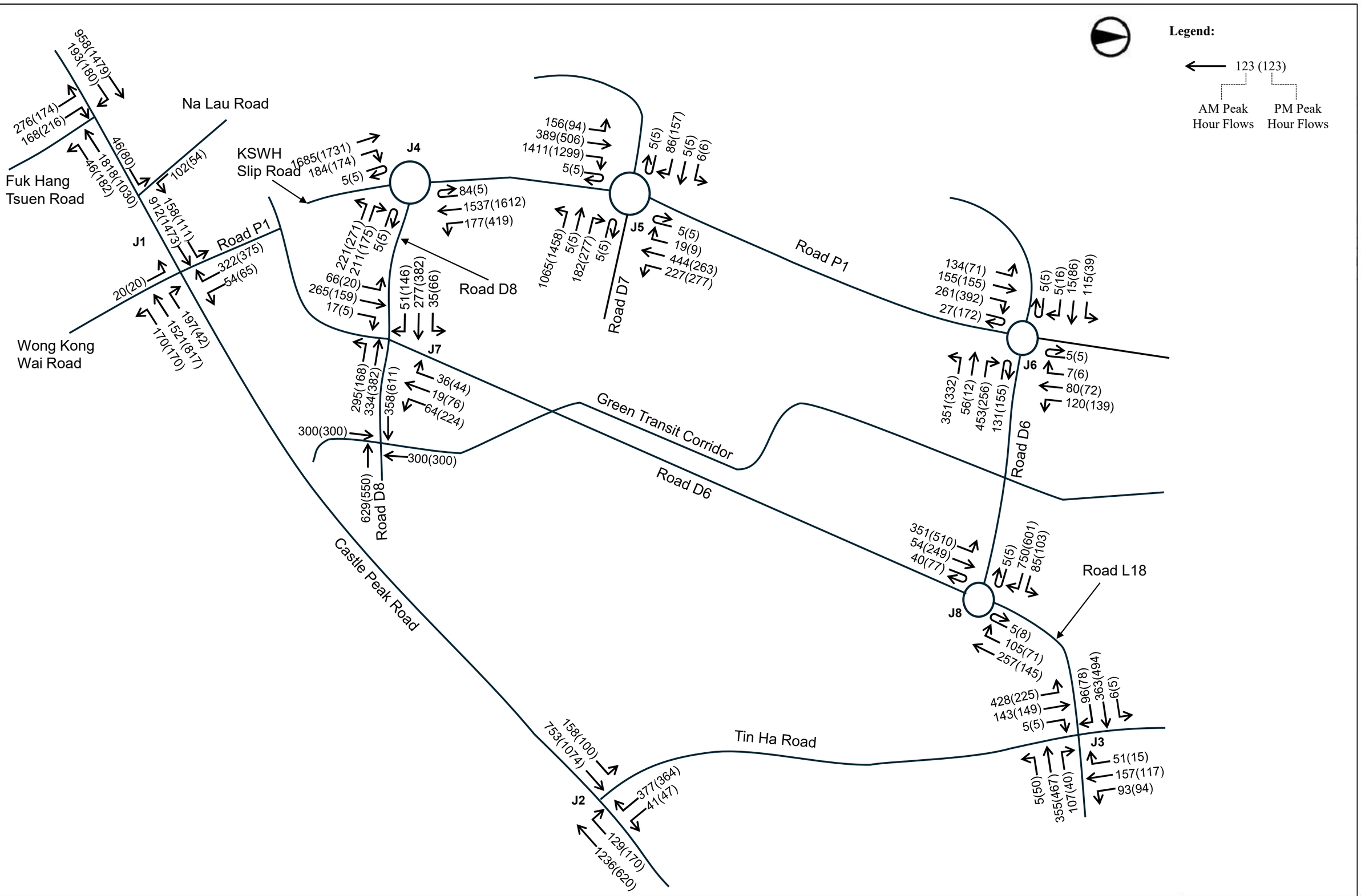
123 (123)

AM Peak Hour Flows | PM Peak Hour Flows

Na Lau Road
Fuk Hang Tsuen Road
KSWH Slip Road
Road P1
Road D8
Road D7
Road D6
Road L18
Green Transit Corridor
Castle Peak Road
Tin Ha Road
Wong Kong Wai Road
J1
J2
J3
J4
J5
J6
J7
J8
959(1478)
193(180)
276(174)
168(216)
1818(1030)
46(182)
46(80)
102(54)
912(1473)
159(110)
322(375)
54(65)
20(20)
197(42)
1521(817)
170(170)
1685(1731)
194(169)
5(5)
84(5)
1534(1615)
177(419)
221(271)
211(175)
5(5)
66(20)
266(158)
17(5)
51(146)
277(382)
45(61)
156(94)
389(506)
1411(1299)
5(5)
1065(1458)
5(5)
182(277)
5(5)
5(5)
19(9)
441(266)
227(277)
5(5)
86(157)
5(5)
6(6)
134(71)
155(155)
261(392)
27(172)
5(5)
5(16)
15(86)
115(39)
295(168)
334(382)
358(611)
36(44)
19(76)
64(224)
300(300)
300(300)
629(550)
5(5)
7(6)
80(72)
120(139)
348(335)
56(12)
453(256)
132(157)
360(504)
54(249)
40(77)
5(5)
750(601)
86(105)
5(8)
105(71)
257(145)
429(225)
143(149)
5(5)
96(78)
364(496)
6(5)
51(15)
157(117)
93(94)
5(50)
355(467)
107(40)
158(100)
753(1074)
377(364)
41(47)
130(170)
1236(620)

Job Title: CE01/2020 (CE) HUNG SHUI KIU/ HA TSUEN NEW DEVELOPMENT AREA PACKAGE A WORKS FOR SECOND PHASE DEVELOPMENT - DESIGN AND CONSTRUCTION		Figure 5.2
Date: 09/25	Scale: N.T.S	Drawing Title: 2036 PEAK HOUR REFERENCE TRAFFIC FLOW
Drawn:	Job No.: 278463	ARUP

PRINTED BY: william.lai 8/9/2025 12:11:49
FILENAME: M:\Drawing\278000\278463 CE\2020_CE HSK_Ha Tsuen NDA Package A\01Drawing\CE\2020_CE_Package A - Figures\20250908 (S16 REPORT_FIGURE DRAWING\FIGURE 5_1.dgn



Job Title

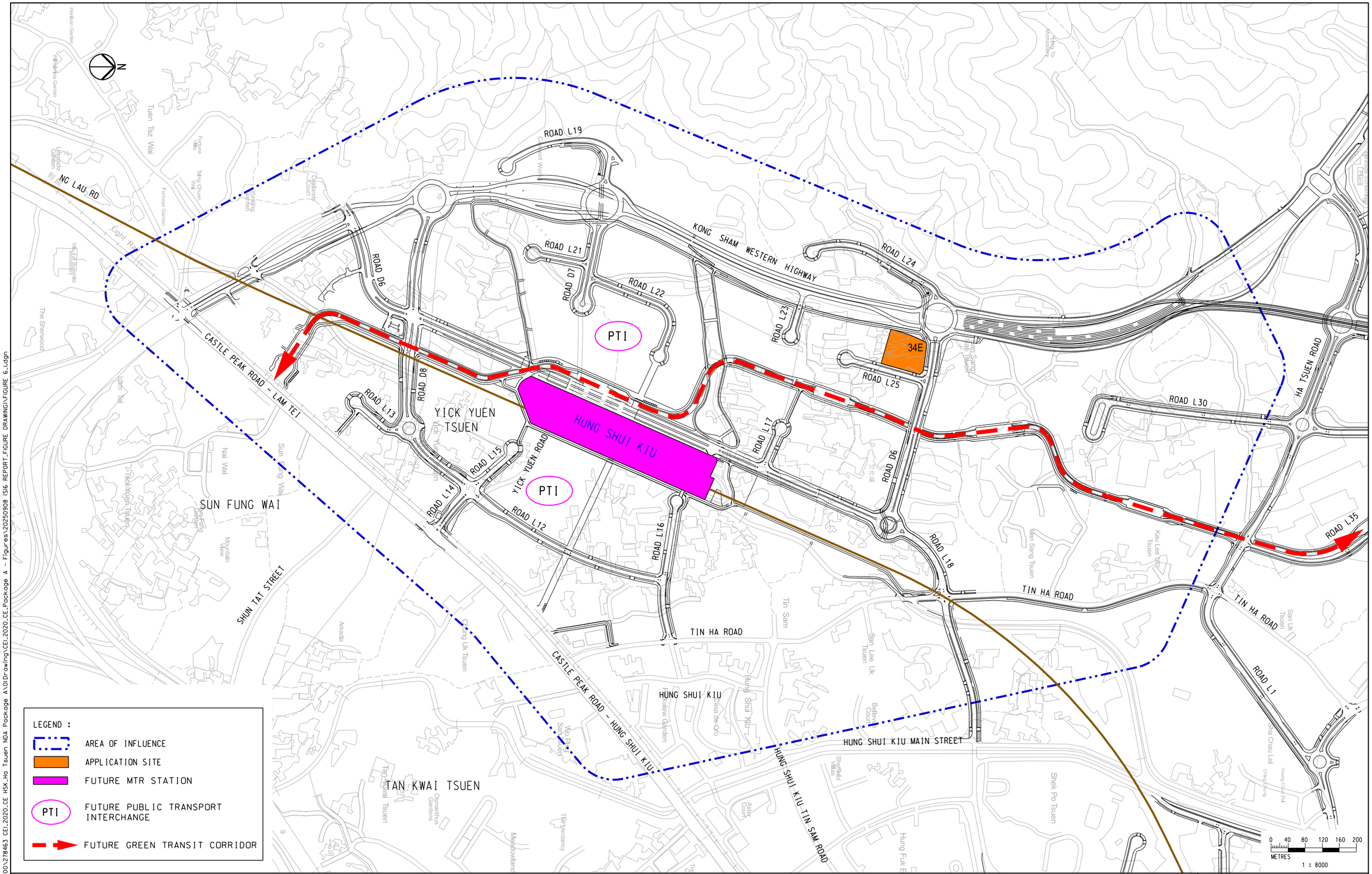
CE01/2020 (CE) HUNG SHUI KIU/ HA TSUEN NEW DEVELOPMENT AREA PACKAGE A WORKS FOR SECOND PHASE DEVELOPMENT - DESIGN AND CONSTRUCTION

Figure 5.3

Date	Scale	Drawing Title
09/25	N.T.S	2036 PEAK HOUR DESIGN TRAFFIC FLOW
Drawn	Job No.	
	278463	

ARUP

PRINTED BY: william.lai 8/9/2025 12:18:49
FILENAME: M:\Drawing\278000\278463 CE\2020_CE HSK_Ha Tsuen NDA Package A\01Drawing\CE\2020_CE_Package A - Figures\20250908 (S16 REPORT_FIGURE DRAWING\FIGURE 5_1.dgn



Job Title

CE01/2020 (CE) HUNG SHUI KIU/ HA TSUEN NEW DEVELOPMENT AREA PACKAGE A WORKS FOR SECOND PHASE DEVELOPMENT - DESIGN AND CONSTRUCTION

Figure 6.1

Date	Scale
09/25	1: 8000 @ A3
Drawn	Job No.
WKKL	278463

Drawing Title

FUTURE PUBLIC TRANSPORT FACILITIES

ARUP

Appendix A

Existing Junction Layouts

NOTES:

1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

CASTLE PEAK ROAD - LAM TEI

KONG SHAM WESTERN HIGHWAY

FUK HANG TSUEN ROAD

Kowloon (via Tai Lam Tunnel) 九龍 (經大欖隧道)

Tsing Chuen Wai 青磚圍

Tuen Tsz Wai 屯子圍

San Hing Tsuen 新慶村

Fuk Hang Tsuen Road 福亨村路

Lam Mei Main Street 藍地大街

Use Pedestrian Crossing 請使用行人過路處

Fuk Hang Playground

Cycling Track

NTW/TM/CasPea-260

NTW/TM/CasPea-155A

NTW/TM/CasPea-157

NTW/TM/CasPea-157A

NTW/TM/CasPea-130

NTW/TM/CasPea-130A

N-TS83

N-TS1004

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title

JUNCTION LAYOUT PLAN - J1
CASTLE PEAK ROAD / FUK HANG TSUEN ROAD

Drawing no.			Rev.
			–
Drawn	Date	Checked	Approved
WKKL	04/21	CFEI	DL
Scale		Status	
1:250 @ A1		PRELIMINARY	

土木工程拓展署
Civil Engineering and Development Department

Printed by : 31/8/2021
Filename : M:\Drawing\278000\278463_CE1_2020_CE_Hung_Shui_Kiu_Phase_2_D&C\01_Drawing\20210823_(278463_T_0001-0035_OPT2_TA)\278463_T_0023.dgn

N

TIN HA ROAD

CASTLE PEAK ROAD - HUNG SHUI KIU

Tin Ha Road Playground

籃球場
Basketball Court

Cycle Parking Place-Parking Advice
1. This parking place is for pedal cycles only.
2. No parking is allowed for a continuous period of more than 24 hours.
3. Pedal cycles must be parked at the parking racks.
4. This parking place may be suspended for use from time to time to clear any pedal cycles left.

單車泊車處-停泊須知
1 此泊車處僅供單車停泊。
2 單車不可連續停泊超過 24小時。
3 單車必須停放於停泊架。
4 此泊車處會不定期被中止使用，以清理存放的單車。

N-TS895

Ha Tsuen
廈村
Lau Equ Shan
流浮山

NTW/TM/CasPed-244B

Advice to Public
...parking place may be suspended for use from time to time to ...pedal cycles left.
...regarding suspension of use will be posted at least 14 days ...e suspension. The public shall not leave their pedal cycles in ...g place after the date specified in the notice.
...e of pedal cycles is allowed during the suspension period at ...g place.
...city will take possession of and remove all pedal cycles left ...ing place during the period of suspension.

...設須
...泊單車處會不定期被中止使用，以清理存放的單車。
...提前最少14天在張貼有關中止使用的通告，公眾在 ...的日期後，不要存放單車在泊單車。
...被中止後，單車不准停泊。
...使用期間存放在此泊車處的單車，當局會依例處 ...泊單車。

N-TS896

Cycling Track

Light Rail

輕鐵

50 km/h

70 km/h

Do Not cross Here
Please Use Footbridge
勿在此橫過馬路
請使用行人天橋
N-TS664

Open Storage

Cyclists dismount
Use footbridge to cross the road
騎單車者到此下車
使用天橋橫過馬路
N-TS69

BAUHINIA GARDEN

TIN TEI YAN ROAD

STOP 停

206

12

NOTES:
1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

Rev	Description	By	Date

Consultant
ARUP

Project Title
Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title
JUNCTION LAYOUT PLAN - J2
CASTLE PEAK ROAD / TIN HA ROAD

Drawing no. —
Rev. —

Drawn	Date	Checked	Approved
WKKL	04/21	CFEI	DL

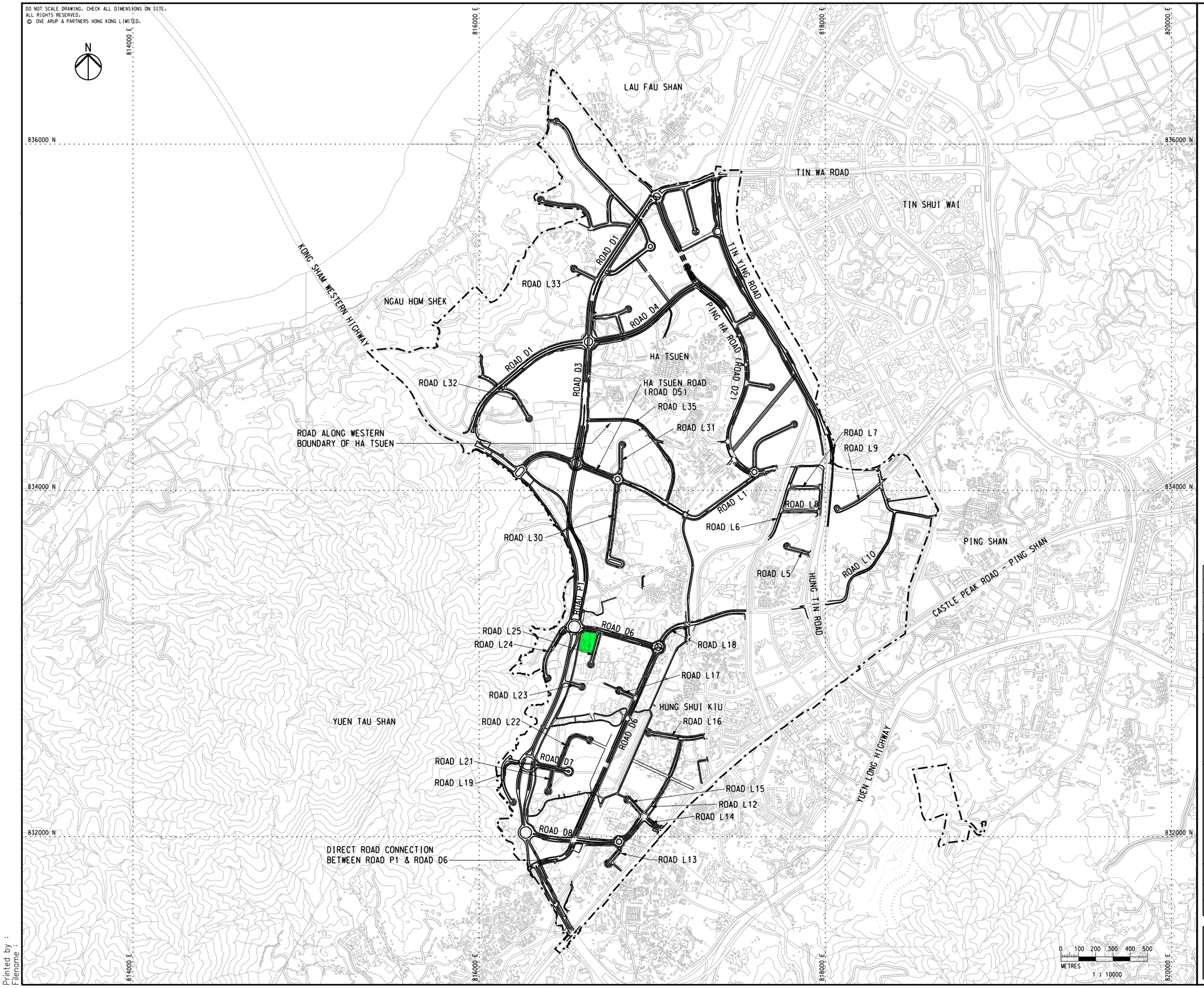
Scale 1:250 @ A1
Status PRELIMINARY

土木工程拓展署
Civil Engineering and Development Department

Printed by : 31/8/2021
Filename : M:\Drawing\278000\278463_CE1_2020_CE_Hung Shui Kiu Phase 2_D&C\01 Drawing\20210823_(278463_T_0001-00035_OPT2_TA)\278463_T_0020.dgn

Appendix B

Overall Road Layout Plan of HSK/HT NDA



LEGEND

- SITE BOUNDARY
- PROPOSED APPLICATION SITE

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title

OVERALL ROAD LAYOUT PLAN OF HSK/HT NDA

Drawing no.		Rev.
APPENDIX B		
Drawn: RY	Date: 03/21	Checked: KKC	Approved: DL
Scale: 1:10000 @ A1		Status: PRELIMINARY	

CEDD 土木工程拓展署
Civil Engineering and Development Department

Printed by :
Filename :

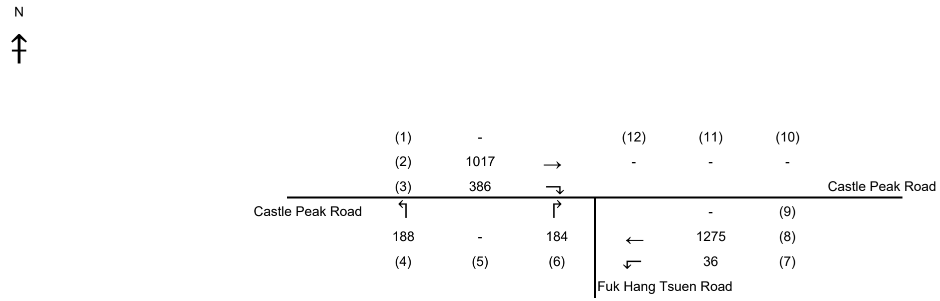
Appendix C

Junction Calculation Sheet

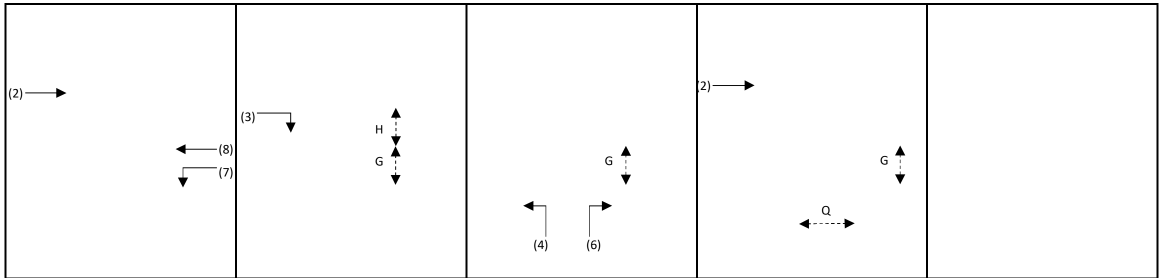
Existing Case

OVE ARUP & PARTNERS | **TRAFFIC SIGNAL CALCULATION**

Hung Shui Kiu Phase 2 D&C		SHEET: J1_AM	PROJECT NO: 278463
J1 - Junction of Castle Peak Road and Fuk Hang Tsuen Road	Year 2021 Base Case (AM Peak)	DATE: 10-Sep-25	FILENAME:



No. of Stages per Cycle		N=	4
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	120 sec
Sum(y)		Y=	0.512
Loss Time		L=	38 sec
Total Flow		=	3086 pcu
Co	=(1.5*L+5)/(1-Y)	=	127 sec
Cm	=L/(1-Y)	=	78 sec
Yult		=	0.615
R.C.ult	=(Yult-Y)/Y*100%	=	20.0 %
Cp	=0.9*L/(0.9-Y)	=	88.2 sec
Ymax	=1-L/C	=	0.683
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	20.0 %

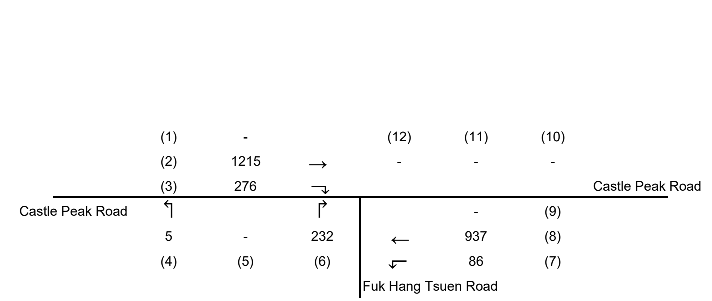


Stage 1	Int = 7	Stage 2	Int = 7	Stage 3	Int = 7	Stage 4	Int =	Stage 5	Int =

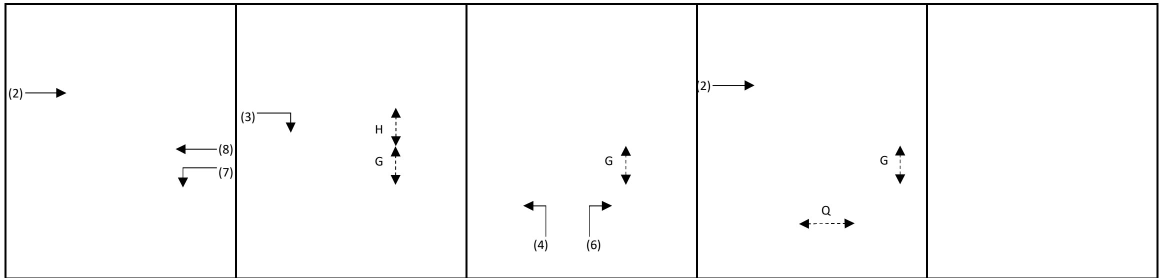
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,3,4	G	11.00	10	2	10	68	2	10	OK
2	H	10.00	10	5	10	23	5	10	OK
4	Q	15.00	6	2	12	6	2	12	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				18				
																			S4	20				
2	1	3.50	E	3			N	6175		1017		1017	0.00	6175		-	6175	0.165	0.211	0	26	34	0.585	14
7,8	1	3.50	F	1	15		N	1965	36	375		411	0.09	1948		-	1948	0.211			34	34	0.750	51
8	1	3.80	F	2				4270		900		900	0.00	4270		-	4270	0.211			34	34	0.749	27
3	2	3.50	P	1	15			2105			386	386	1.00	1914		-	1914	0.202	0.202	0	32	32	0.750	49
4	3	3.50	K	1	15		N	1965	178			178	1.00	1786		-	1786	0.100	0.100	0	16	16	0.750	29
4,6	3	3.50	K	1	20			2105	10		184	194	1.00	1958		-	1958	0.099			16	16	0.745	31
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J1_PM	PROJECT NO: 278463
J1 - Junction of Castle Peak Road and Fuk Hang Tsuen Road	Year 2021 Base Case (PM Peak)	DATE: 10-Sep-25	FILENAME:



No. of Stages per Cycle		N=	4
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	120 sec
Sum(y)		Y=	0.459
Loss Time		L=	38 sec
Total Flow		=	2751 pcu
Co	=(1.5*L+5)/(1-Y)	=	115 sec
Cm	=L/(1-Y)	=	70 sec
Yult		=	0.615
R.C.ult	=(Yult-Y)/Y*100%	=	33.9 %
Cp	=0.9*L/(0.9-Y)	=	77.6 sec
Ymax	=1-L/C	=	0.683
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	33.9 %



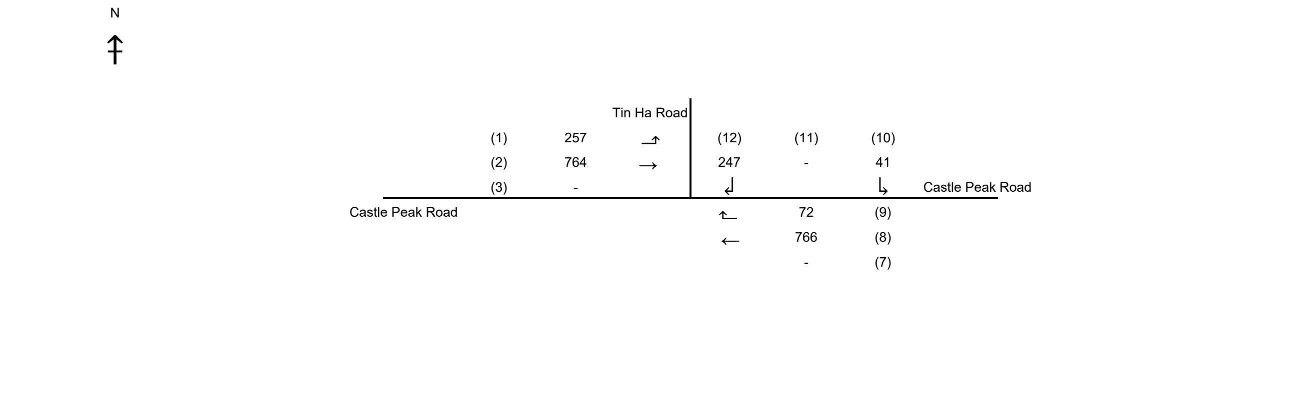
Stage 1	Int = 7	Stage 2	Int = 7	Stage 3	Int = 7	Stage 4	Int =	Stage 5	Int =

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,3,4	G	11.00	10	2	10	67	2	10	OK
2	H	10.00	10	5	10	17	5	10	OK
4	Q	15.00	6	2	12	6	2	12	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

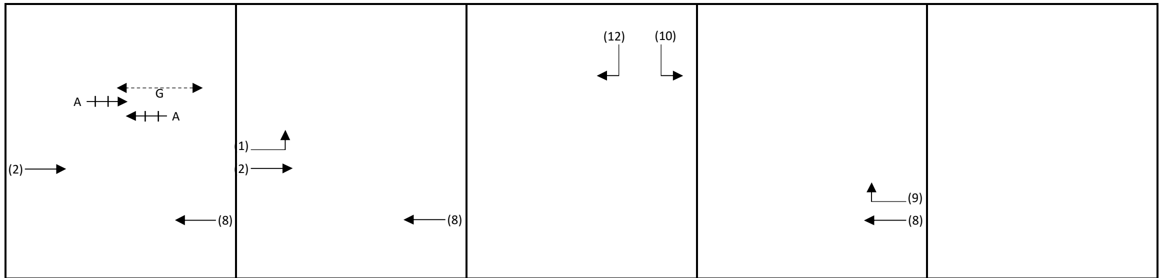
Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				18				
																			S4	20				
2	1	3.50	E	3			N	6175		1215		1215	0.00	6175		-	6175	0.197	0.197	0	35	35	0.672	16
7,8	1	3.50	F	1	15		N	1965	86	230		316	0.27	1913		-	1913	0.165			29	35	0.565	37
8	1	3.80	F	2				4270		707		707	0.00	4270		-	4270	0.166			30	35	0.566	21
3	2	3.50	P	1	15			2105			276	276	1.00	1914		-	1914	0.144	0.144	0	26	26	0.672	37
4	3	3.50	K	1	15		N	1965	5			5	1.00	1786		-	1786	0.003	0.118	0	0	21	0.016	1
4,6	3	3.50	K	1	20			2105	0		232	232	1.00	1958		-	1958	0.118			21	21	0.672	33
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS | **TRAFFIC SIGNAL CALCULATION**

Hung Shui Kiu Phase 2 D&C		SHEET: J2_AM	PROJECT NO: 278463
J2 - Junction of Castle Peak Road and Tin Ha Road	Year 2021 Base Case (AM Peak)	DATE: 10-Sep-25	FILENAME:



No. of Stages per Cycle		N=	4
No. of Stage Using for Calculation		N=	2
Cycle Time		C=	81 sec
Sum(y)		Y=	0.266
Loss Time		L=	44 sec
Total Flow		=	2147 pcu
Co	=(1.5*L+5)/(1-Y)	=	97 sec
Cm	=L/(1-Y)	=	60 sec
Yult		=	0.570
R.C.ult	=(Yult-Y)/Y*100%	=	113.9 %
Cp	=0.9*L/(0.9-Y)	=	62.5 sec
Ymax	=1-L/C	=	0.457
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	54.3 %

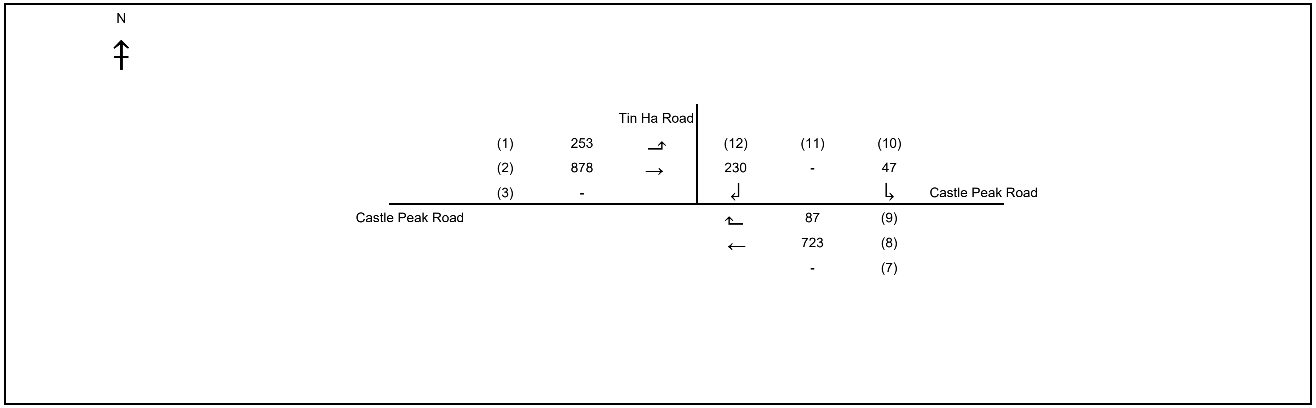


Stage 1	Int = 11	Stage 2	Int =	Stage 3	Int = 5	Stage 4	Int =	Stage 5	Int =

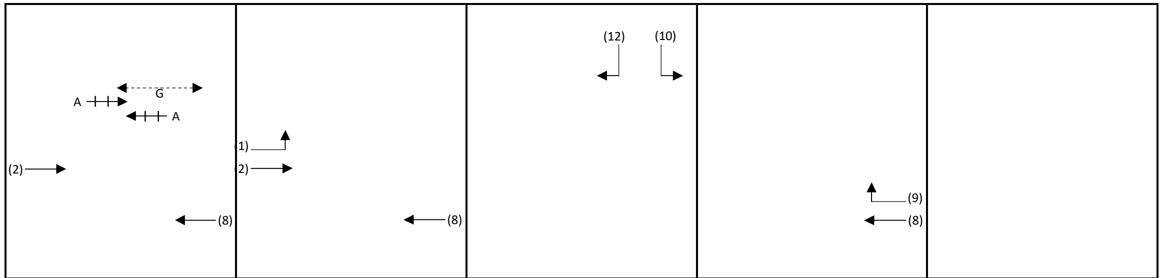
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1	G	8.00	8	7	9	9	7	9	OK
1	A (LRT)		8	9	8	8	9	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
																				0				
2	1,2	3.20	D	3				6225		764		764	0.00	6225		-	6225	0.123			17	43	0.231	4
8	1,2,4	3.65	B	2			N	4100		766		766	0.00	4100		-	4100	0.187	0.187	30	26	56	0.271	7
1	2	3.20	E	1	12		N	1935	257			257	1.00	1720		-	1720	0.149			21	21	0.576	21
10,12	3	3.20	F	1	12		N	1935	41		96	137	1.00	1720		-	1720	0.080	0.080	0	11	11	0.583	14
12	3	3.20	F	1	17			2075			151	151	1.00	1907		-	1907	0.079			11	11	0.580	15
9	4	3.20	C	1	20			2075			72	72	1.00	1930		-	1930	0.037			5	6	0.509	8
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J2_PM	PROJECT NO: 278463
J2 - Junction of Castle Peak Road and Tin Ha Road	Year 2021 Base Case (PM Peak)	DATE: 10-Sep-25	FILENAME:



No. of Stages per Cycle		N=	4
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	81 sec
Sum(y)		Y=	0.269
Loss Time		L=	43 sec
Total Flow		=	2218 pcu
Co	=(1.5*L+5)/(1-Y)	=	95 sec
Cm	=L/(1-Y)	=	59 sec
Yult		=	0.578
R.C.ult	=(Yult-Y)/Y*100%	=	114.9 %
Cp	=0.9*L/(0.9-Y)	=	61.3 sec
Ymax	=1-L/C	=	0.469
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	57.1 %



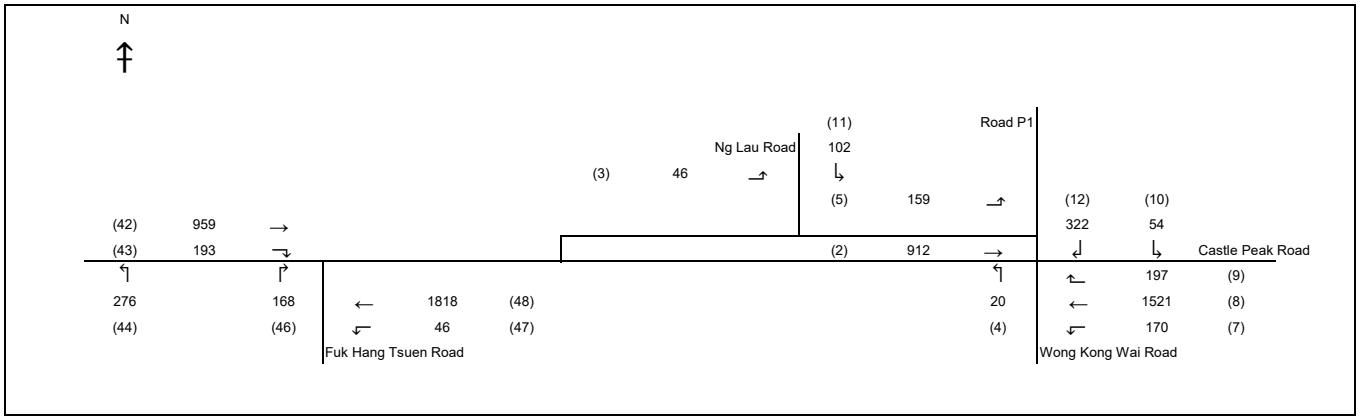
Stage 1	Int =	Stage 2	Int = 7	Stage 3	Int = 5	Stage 4	Int = 9	Stage 5	Int =

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1	G	8.00	8	7	9	9	7	9	OK
1	A (LRT)		8	9	8	8	9	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

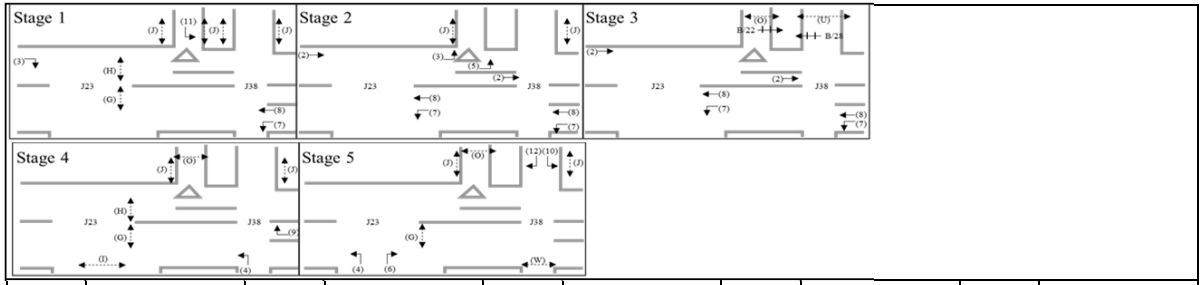
Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				18				
																			S1	25				
2	1,2	3.20	D	3				6225		878		878	0.00	6225		-	6225	0.141			20	43	0.267	5
8	1,2,4	3.65	B	2			N	4100		723		723	0.00	4100		-	4100	0.176			25	56	0.254	6
1	2	3.20	E	1	12		N	1935	253			253	1.00	1720		-	1720	0.147	0.147	0	21	21	0.573	21
10,12	3	3.20	F	1	12		N	1935	47		84	131	1.00	1720		-	1720	0.076	0.077	0	11	11	0.570	13
12	3	3.20	F	1	17			2075			146	146	1.00	1907		-	1907	0.077			11	11	0.573	15
9	4	3.20	C	1	20			2075			87	87	1.00	1930		-	1930	0.045	0.045	0	6	6	0.573	10
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

2036 Reference Case

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J1_AM	PROJECT NO: 278463
J1 - Junction of Castle Peak Road and Road P1 and Fuk Hang Tsuen Road	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle	N= 5
No. of Stage Using for Calculation	N= 3
Cycle Time	C= 120 sec
Sum(y)	Y= 0.635
Loss Time	L= 14 sec
Total Flow	= 7263 pcu
Co =(1.5*L+5)/(1-Y)	= 72 sec
Cm =L/(1-Y)	= 39 sec
Yult	= 0.793
R.C.ult =(Yult-Y)/Y*100%	= 24.9 %
Cp =0.9*L/(0.9-Y)	= 48.5 sec
Ymax =1-L/C	= 0.881
R.C.(C) =(0.9*Ymax-Y)/Y*100%	= 24.9 %

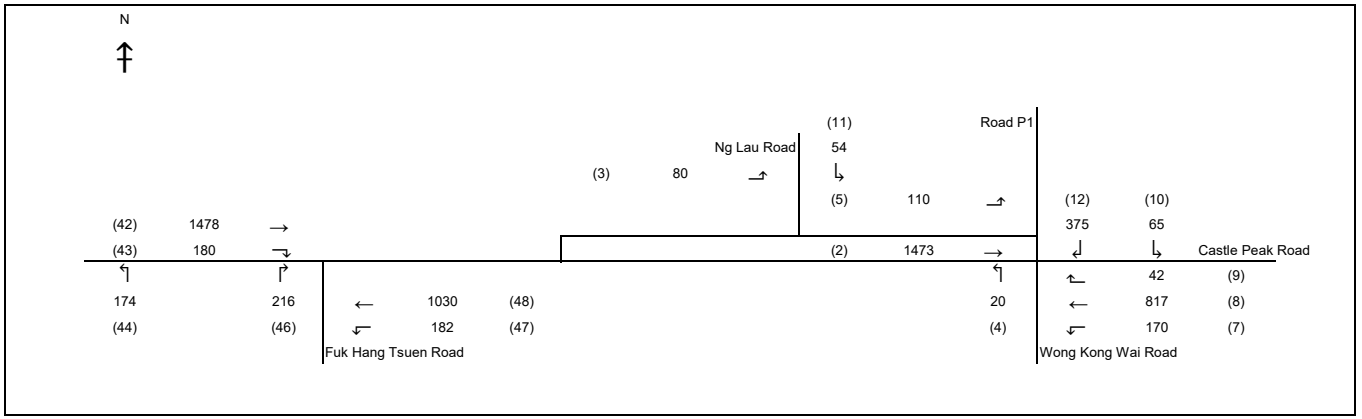


Stage 1	Int =	Stage 2	Int =	Stage 3	Int = 6	Stage 4	Int = 6	Stage 5	Int = 5

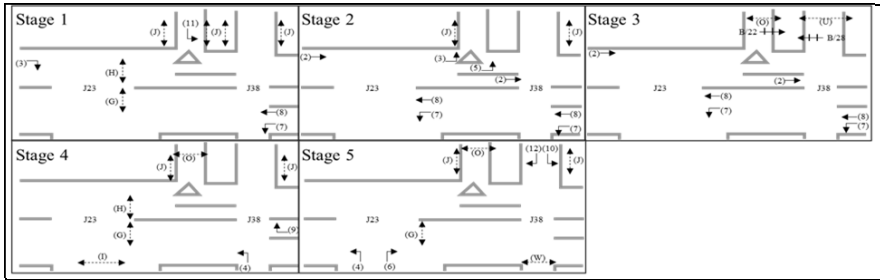
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
3	LRT-B		10	3	10	22	3	10	OK
4,5,1,2	J	8.00	5	2	7	77	2	7	OK
3,4,5	O	10.00	5	2	8	70	2	8	OK
3	U	10.00	9	3	7	25	3	7	OK
5	W	11.00	5	2	9	12	2	9	OK
4,5,1	G	11.00	10	3	10	53	3	10	OK
1,4	H	10.00	10	3	10	29	3	10	OK
4	I	13.50	5	2	10	9	2	10	OK
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14 0				
11	1	3.50	A	1	15		N	1965	102			102	1.00	1792		-	1792	0.057			9	16	0.427	15
43	1	3.50	2	1	25			2105			193	193	1.00	1988		-	1988	0.097			16	17	0.685	29
3	2	3.50	B	1	15		N	1965	46			46	1.00	1792		-	1792	0.026			4	15	0.205	7
5	2	3.50	B	1	20		N	1965	159			159	1.00	1831		-	1831	0.087			14	15	0.695	25
22	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			13	30	0.307	19
28	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			13	30	0.307	19
4	4	3.50	E	1	15		N	1965	20			20	1.00	1792		-	1792	0.011	0.098	0	2	16	0.082	3
9	4	3.50	E	1	30			2105			197	197	1.00	2006		-	2006	0.098			16	16	0.720	30
10,12	5	3.50	F	1	30		N	1965	54		128	182	1.00	1873		-	1873	0.097	0.117	0	16	18	0.632	26
12	5	3.50	F	1	30			2105			194	194	1.00	2006		-	2006	0.097			16	18	0.629	28
44	5	3.60	3	1	20		N	1975	215			215	1.00	1840		-	1840	0.117			19	19	0.720	32
44,46	5	3.50	3	1	20			2105	61		168	229	1.00	1961		-	1961	0.117			19	19	0.720	34
2	2,3	3.50	C	2				4210		912		912	0.00	4210		-	4210	0.217			36	48	0.543	23
7,8	1,2,3	3.50	D	1	15		N	1965	170	638		808	0.21	1926		-	1926	0.420	0.420	1	70	71	0.710	55
8	1,2,3	3.50	D	1				2105		883		883	0.00	2105		-	2105	0.419			70	71	0.710	60
42	2,3	3.50	1	3			N	6175		959		959	0.00	6175		-	6175	0.155			26	51	0.366	10
47,48	2,3	3.60	1	1	13		N	1975	46	544		590	0.08	1958		-	1958	0.301			50	51	0.711	57
48	2,3	3.60	1	2				4230		1274		1274	0.00	4230		-	4230	0.301			50	51	0.710	31
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J1_PM	PROJECT NO: 278463
J1 - Junction of Castle Peak Road and Road P1 and Fuk Hang Tsuen Road	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle	N=	5
No. of Stage Using for Calculation	N=	4
Cycle Time	C=	120 sec
Sum(y)	Y=	0.575
Loss Time	L=	30 sec
Total Flow	=	6766 pcu
Co =(1.5*L+5)/(1-Y)	=	119 sec
Cm =L/(1-Y)	=	71 sec
Yult	=	0.673
R.C.ult =(Yult-Y)/Y*100%	=	17.0 %
Cp =0.9*L/(0.9-Y)	=	83.9 sec
Ymax =1-L/C	=	0.748
R.C.(C) =(0.9*Ymax-Y)/Y*100%	=	17.0 %

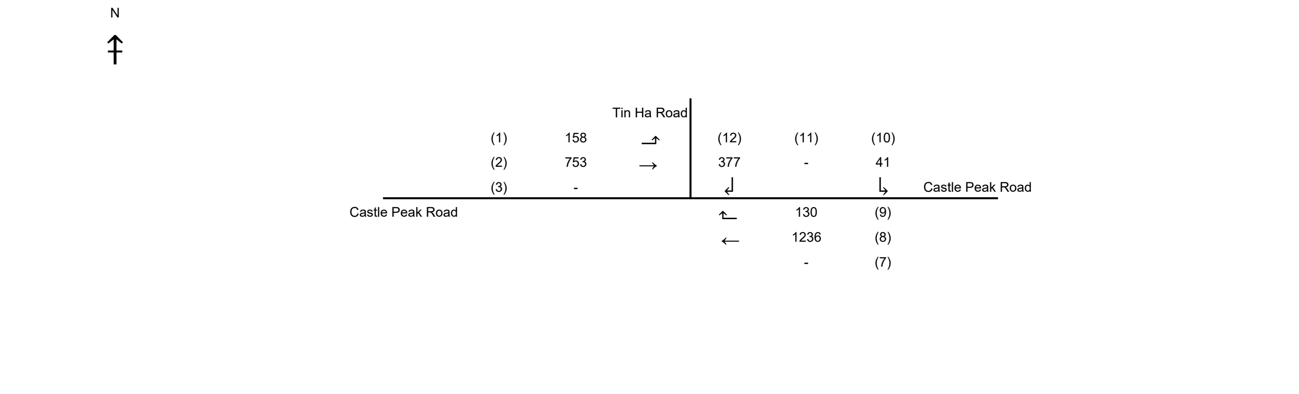


Stage 1	Int = 5	Stage 2	Int =	Stage 3	Int = 8	Stage 4	Int = 6	Stage 5	Int = 6

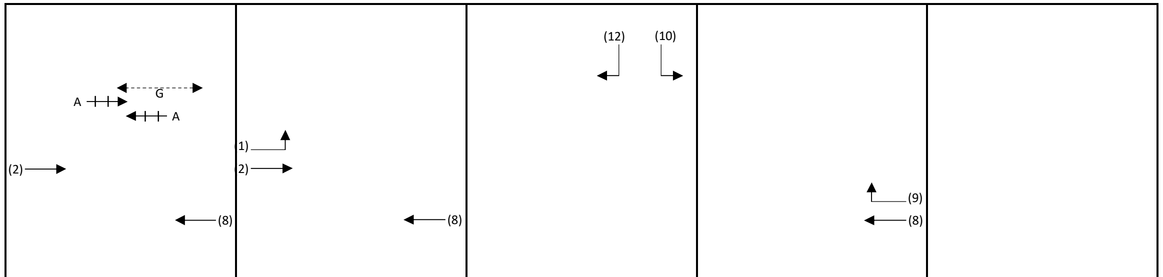
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
3	LRT-B		10	3	10	34	3	10	OK
4,5,1,2	J	8.00	5	2	7	64	2	7	OK
3,4,5	O	10.00	5	2	8	77	2	8	OK
3	U	10.00	9	3	7	37	3	7	OK
5	W	11.00	5	2	9	12	2	9	OK
4,5,1	G	11.00	10	3	10	45	3	10	OK
1,4	H	10.00	10	3	10	22	3	10	OK
4	I	13.50	5	2	10	5	2	10	OK
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				210				
11	1	3.50	A	1	15		N	1965	54			54	1.00	1792		-	1792	0.030	0.091	0	5	13	0.276	8
43	1	3.50	2	1	25			2105			180	180	1.00	1988		-	1988	0.091			14	14	0.769	30
3	2	3.50	B	1	15		N	1965	80			80	1.00	1792		-	1792	0.045			7	10	0.536	13
5	2	3.50	B	1	20		N	1965	110			110	1.00	1831		-	1831	0.060			9	10	0.721	20
22	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			12	42	0.220	16
28	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			12	42	0.220	16
4	4	3.50	E	1	15		N	1965	20			20	1.00	1792		-	1792	0.011	0.021	9	2	12	0.109	3
9	4	3.50	E	1	30			2105			42	42	1.00	2006		-	2006	0.021			3	12	0.205	6
10,12	5	3.50	F	1	30		N	1965	65		148	213	1.00	1873		-	1873	0.114	0.114	0	18	18	0.769	34
12	5	3.50	F	1	30			2105			227	227	1.00	2006		-	2006	0.113			18	18	0.765	36
44	5	3.60	3	1	20		N	1975	174			174	1.00	1840		-	1840	0.095			15	19	0.605	25
44,46	5	3.50	3	1	20			2105	0		216	216	1.00	1961		-	1961	0.110			17	19	0.705	32
2	2,3	3.50	C	2				4210		1473		1473	0.00	4210		-	4210	0.350	0.350	0	55	55	0.769	34
7,8	1,2,3	3.50	D	1	15		N	1965	170	298		468	0.36	1898		-	1898	0.247			38	75	0.396	29
8	1,2,3	3.50	D	1				2105		519		519	0.00	2105		-	2105	0.247			38	75	0.396	33
42	2,3	3.50	1	3			N	6175		1478		1478	0.00	6175		-	6175	0.239			37	58	0.499	14
47,48	2,3	3.60	1	1	13		N	1975	182	190		372	0.49	1873		-	1873	0.199			31	58	0.414	32
48	2,3	3.60	1	2				4230		840		840	0.00	4230		-	4230	0.199			31	58	0.414	18
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J2_AM	PROJECT NO: 278463
J2 - Junction of Castle Peak Road and Tin Ha Road	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle	N=	4
No. of Stage Using for Calculation	N=	2
Cycle Time	C=	81 sec
Sum(y)	Y=	0.417
Loss Time	L=	24 sec
Total Flow	=	2695 pcu
Co =(1.5*L+5)/(1-Y)	=	70 sec
Cm =L/(1-Y)	=	41 sec
Yult	=	0.720
R.C.ult =(Yult-Y)/Y*100%	=	72.7 %
Cp =0.9*L/(0.9-Y)	=	44.7 sec
Ymax =1-L/C	=	0.704
R.C.(C) =(0.9*Ymax-Y)/Y*100%	=	51.9 %

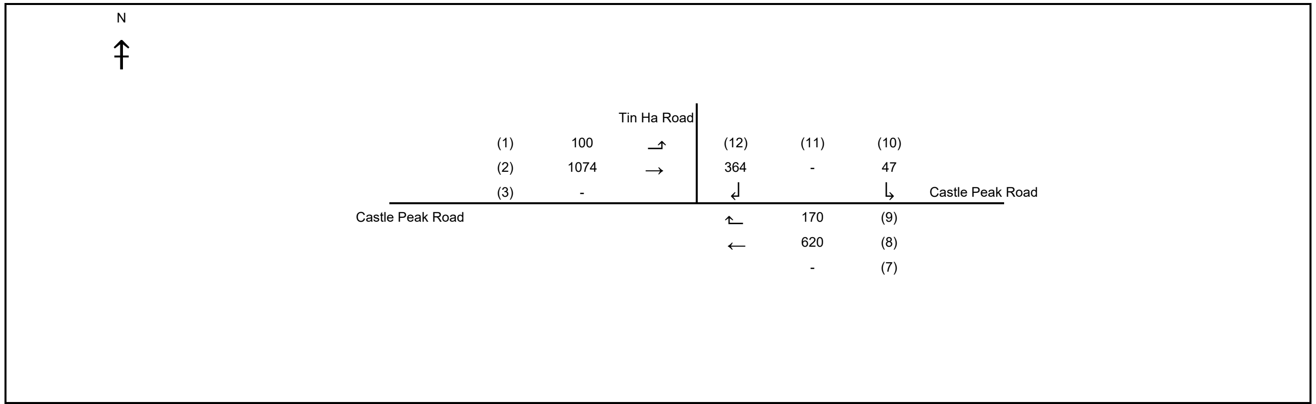


Stage 1	Int = 11	Stage 2	Int =	Stage 3	Int = 5	Stage 4	Int =	Stage 5	Int =

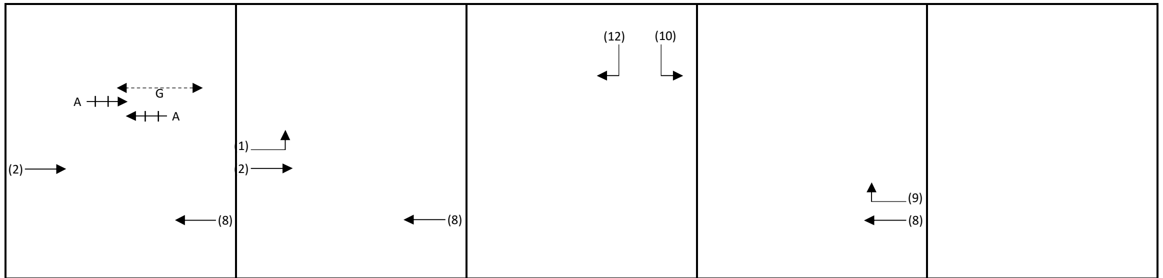
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1	G	8.00	8	7	9	9	7	9	OK
1	A (LRT)		8	9	8	8	9	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
																				0				
2	1,2	3.20	D	3				6225		753		753	0.00	6225		-	6225	0.121			17	35	0.280	5
8	1,2,4	3.65	B	2			N	4100		1236		1236	0.00	4100		-	4100	0.301	0.301	10	41	51	0.477	13
1	2	3.20	E	1	12		N	1935	158			158	1.00	1720		-	1720	0.092			13	13	0.572	15
10,12	3	3.20	F	1	12		N	1935	41		157	198	1.00	1720		-	1720	0.115	0.115	0	16	16	0.591	18
12	3	3.20	F	1	17			2075			220	220	1.00	1907		-	1907	0.115			16	16	0.592	20
9	4	3.20	C	1	20			2075			130	130	1.00	1930		-	1930	0.067			9	9	0.592	14
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J2_PM	PROJECT NO: 278463
J2 - Junction of Castle Peak Road and Tin Ha Road	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	4
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	81 sec
Sum(y)		Y=	0.374
Loss Time		L=	27 sec
Total Flow		=	2375 pcu
Co	=(1.5*L+5)/(1-Y)	=	73 sec
Cm	=L/(1-Y)	=	43 sec
Yult		=	0.698
R.C.ult	=(Yult-Y)/Y*100%	=	86.5 %
Cp	=0.9*L/(0.9-Y)	=	46.2 sec
Ymax	=1-L/C	=	0.667
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	60.4 %

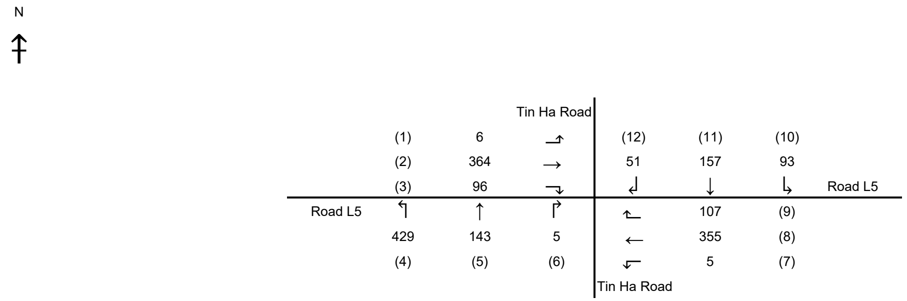


Stage 1	Int =	Stage 2	Int = 10	Stage 3	Int = 5	Stage 4	Int = 9	Stage 5	Int =

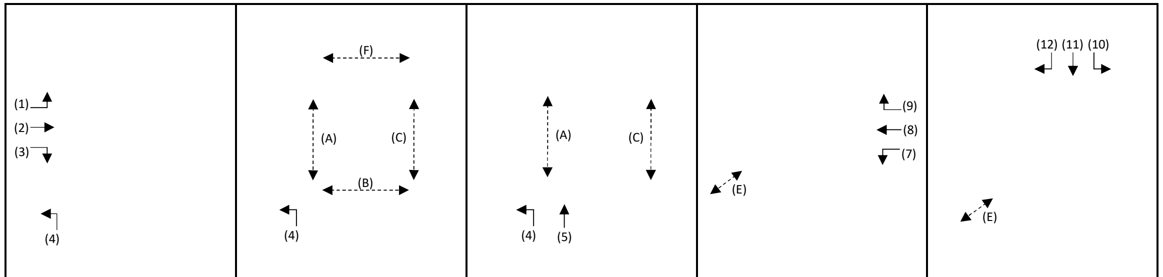
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1	G	8.00	8	7	9	9	7	9	OK
1	A (LRT)		8	9	8	8	9	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				21				
																				0				
2	1,2	3.20	D	3				6225		1074		1074	0.00	6225		-	6225	0.173	0.173	6	25	31	0.452	8
8	1,2,4	3.65	B	2			N	4100		620		620	0.00	4100		-	4100	0.151			22	51	0.242	7
1	2	3.20	E	1	12		N	1935	100			100	1.00	1720		-	1720	0.058			8	9	0.528	11
10,12	3	3.20	F	1	12		N	1935	47		148	195	1.00	1720		-	1720	0.113	0.113	0	16	16	0.561	18
12	3	3.20	F	1	17			2075			216	216	1.00	1907		-	1907	0.113			16	16	0.561	19
9	4	3.20	C	1	20			2075			170	170	1.00	1930		-	1930	0.088	0.088	0	13	13	0.561	17
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J3_AM	PROJECT NO: 278463
J3 - Junction of Tin Ha Road and Road L18	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	5
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	120 sec
Sum(y)		Y=	0.435
Loss Time		L=	24 sec
Total Flow		=	1806 pcu
Co	=(1.5*L+5)/(1-Y)	=	73 sec
Cm	=L/(1-Y)	=	43 sec
Yult		=	0.720
R.C.ult	=(Yult-Y)/Y*100%	=	65.4 %
Cp	=0.9*L/(0.9-Y)	=	46.5 sec
Ymax	=1-L/C	=	0.800
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	65.4 %

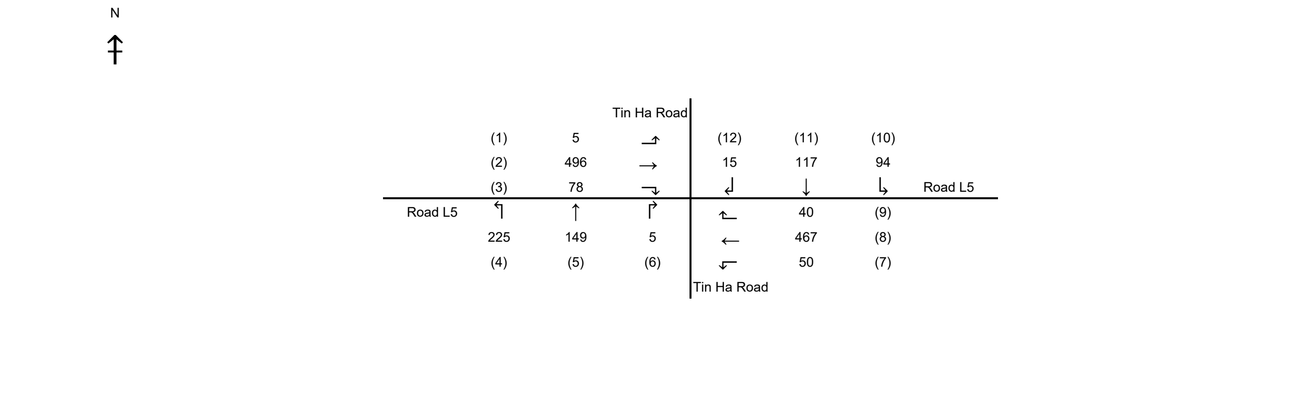


Stage 1	Int =		Stage 2	Int =		Stage 3	Int =	5	Stage 4	Int =	5	Stage 5	Int =	5

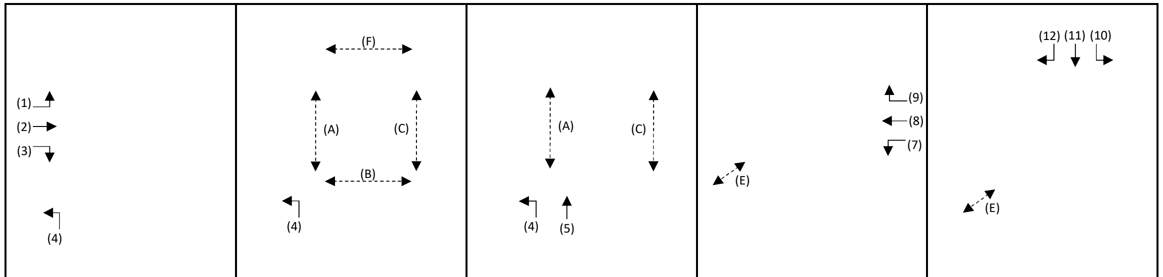
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,3	A	11.00	10	0	8	31	0	8	OK
2	B	10.00	9	0	7	11	0	7	OK
2,3	C	11.00	10	0	8	31	0	8	OK
4,5	E	5.50	5	0	5	46	0	5	OK
2	F	11.00	10	0	8	10	0	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				12				
																				0				
1,2	1	3.50	A	1	15		N	1965	6	223		229	0.03	1960		-	1960	0.117			26	26	0.539	30
2,3	1	3.50	A	1	15			2105		141	96	237	0.41	2023		-	2023	0.117			26	26	0.541	31
4	1,2,3	3.50	B	1	15		N	1965	429			429	1.00	1786		-	1786	0.240	0.240	12	53	65	0.444	33
5	3	3.50	B	1	15		N	1965		143		143	0.00	1965		-	1965	0.073			16	17	0.515	20
7,8	4	3.50	C	1	15		N	1965	5	225		230	0.02	1961		-	1961	0.117	0.118	0	26	26	0.542	30
8,9	4	3.50	C	1	15			2105		130	107	237	0.45	2014		-	2014	0.118			26	26	0.544	31
10,11	5	3.50	D	1	15		N	1965	93	50		143	0.65	1845		-	1845	0.078	0.078	0	17	17	0.544	20
11,12	5	3.50	D	1	15			2105		107	51	158	0.32	2039		-	2039	0.077			17	17	0.544	23
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J3_PM	PROJECT NO: 278463
J3 - Junction of Tin Ha Road and Road L18	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	5
No. of Stage Using for Calculation		N=	4
Cycle Time		C=	120 sec
Sum(y)		Y=	0.418
Loss Time		L=	34 sec
Total Flow		=	1736 pcu
Co	=(1.5*L+5)/(1-Y)	=	96 sec
Cm	=L/(1-Y)	=	58 sec
Yult		=	0.645
R.C.ult	=(Yult-Y)/Y*100%	=	54.5 %
Cp	=0.9*L/(0.9-Y)	=	63.4 sec
Ymax	=1-L/C	=	0.717
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	54.5 %

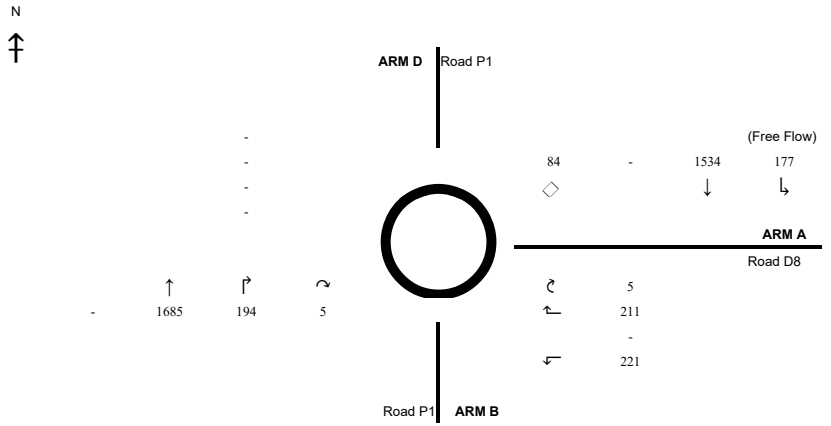


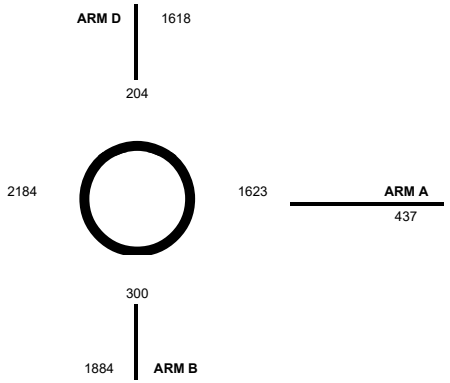
Stage 1	Int = 5	Stage 2	Int =	Stage 3	Int = 5	Stage 4	Int = 5	Stage 5	Int = 5

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,3	A	11.00	10	0	8	30	0	8	OK
2	B	10.00	9	0	7	11	0	7	OK
2,3	C	11.00	10	0	8	30	0	8	OK
4,5	E	5.50	5	0	5	44	0	5	OK
2	F	11.00	10	0	8	10	0	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				16				
																			S2	18				
1,2	1	3.50	A	1	15		N	1965	5	278		283	0.02	1962		-	1962	0.144	0.144	0	30	30	0.582	35
2,3	1	3.50	A	1	15			2105		218	78	296	0.26	2051		-	2051	0.144			30	30	0.583	37
4	1,2,3	3.50	B	1	15		N	1965	225			225	1.00	1786		-	1786	0.126			26	67	0.224	16
5	3	3.50	B	1	15		N	1965		149		149	0.00	1965		-	1965	0.076	0.076	0	16	16	0.583	22
7,8	4	3.50	C	1	15		N	1965	50	218		268	0.19	1929		-	1929	0.139	0.139	0	29	29	0.582	34
8,9	4	3.50	C	1	15			2105		249	40	289	0.14	2076		-	2076	0.139			29	29	0.583	37
10,11	5	3.50	D	1	15		N	1965	94	11		105	0.90	1804		-	1804	0.058	0.058	0	12	12	0.583	16
11,12	5	3.50	D	1	15			2105		106	15	121	0.12	2079		-	2079	0.058			12	12	0.582	19
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J4_AM	PROJECT NO: 278463
J4 - Junction of Road P1 and Road D8	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



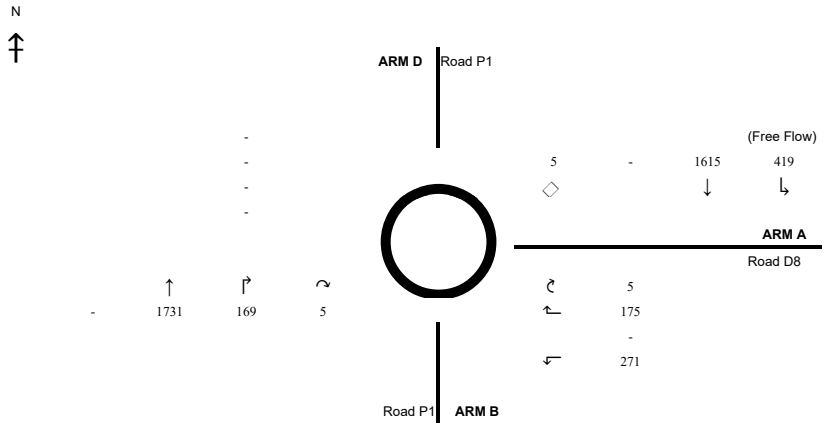


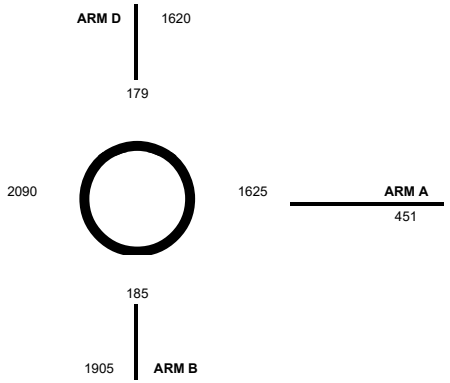
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	7.30		7.30
E	=	Entry width (m)	10.50	10.70		10.70
L	=	Effective length of flare (m)	5.5	9.2		9.2
R	=	Entry radius (m)	30	50		30
D	=	Inscribed circle diameter (m)	66	66		66
A	=	Entry angle (degree)	30	20		36
Q	=	Entry flow (pcu/h)	437	1884		1618
Qc	=	Circulating flow across entry (pcu/h)	1623	300		204
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.93	0.59		0.59
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.06		1.00
X2	=	V + ((E-V)/(1+2S))	8.42	8.86		8.86
M	=	EXP((D-60)/10)	1.82	1.82		1.82
F	=	303*X2	2551	2684		2684
Td	=	1+(0.5/(1+M))	1.18	1.18		1.18
Fc	=	0.21*Td(1+0.2*X2)	0.66	0.69		0.69
Qe	=	K(F-Fc*Qc)	1498	2637		2533
DFC	=	Design flow/Capacity = Q/Qe	0.29	0.71		0.64

Total In Sum = 3939 PCU

DFC of Critical Approach = 0.71

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J4_PM	PROJECT NO: 278463
J4 - Junction of Road P1 and Road D8	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



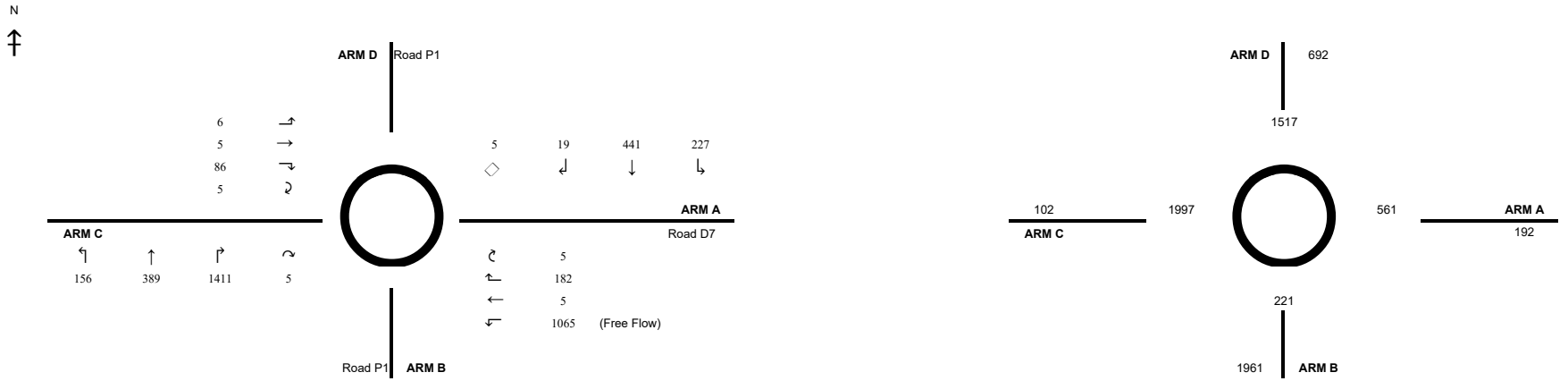


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	7.30		7.30
E	=	Entry width (m)	10.50	10.70		10.70
L	=	Effective length of flare (m)	5.5	9.2		9.2
R	=	Entry radius (m)	30	50		30
D	=	Inscribed circle diameter (m)	66	66		66
A	=	Entry angle (degree)	30	20		36
Q	=	Entry flow (pcu/h)	451	1905		1620
Qc	=	Circulating flow across entry (pcu/h)	1625	185		179
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.93	0.59		0.59
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.06		1.00
X2	=	V + ((E-V)/(1+2S))	8.42	8.86		8.86
M	=	EXP((D-60)/10)	1.82	1.82		1.82
F	=	303*X2	2551	2684		2684
Td	=	1+(0.5/(1+M))	1.18	1.18		1.18
Fc	=	0.21*Td(1+0.2*X2)	0.66	0.69		0.69
Qe	=	K(F-Fc*Qc)	1497	2721		2550
DFC	=	Design flow/Capacity = Q/Qe	0.30	0.70		0.64

Total In Sum = 3976 PCU

DFC of Critical Approach = 0.70

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J5_AM	PROJECT NO: 278463
J5 - Junction of Road D1 and Road D7	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:

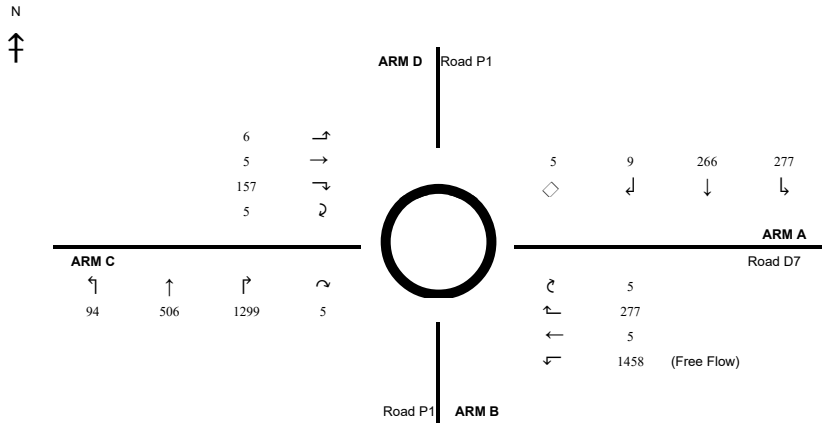


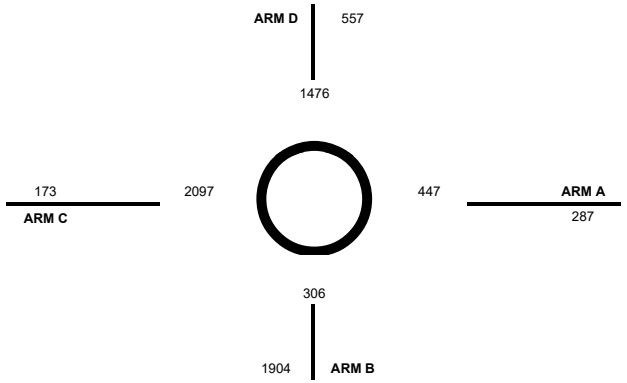
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.65	7.30	3.65	6.75
E	=	Entry width (m)	6.00	10.00	6.00	6.75
L	=	Effective length of flare (m)	5	8.8	8	1
R	=	Entry radius (m)	20	40	20	20
D	=	Inscribed circle diameter (m)	100	100	100	100
A	=	Entry angle (degree)	15	15	15	25
Q	=	Entry flow (pcu/h)	192	1961	102	692
Qc	=	Circulating flow across entry (pcu/h)	561	221	1997	1517
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.75	0.49	0.47	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.05	1.08	1.05	1.02
X2	=	V + ((E-V)/(1+2S))	4.59	8.66	4.86	6.75
M	=	EXP((D-60)/10)	54.60	54.60	54.60	54.60
F	=	303*X2	1390	2625	1473	2045
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.41	0.58	0.42	0.50
Qe	=	K(F-Fc*Qc)	1223	2688	672	1312
DFC	=	Design flow/Capacity = Q/Qe	0.16	0.73	0.15	0.53

Total In Sum = 2947 PCU

DFC of Critical Approach = 0.73

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J5_PM	PROJECT NO: 278463
J5 - Junction of Road D1 and Road D7	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



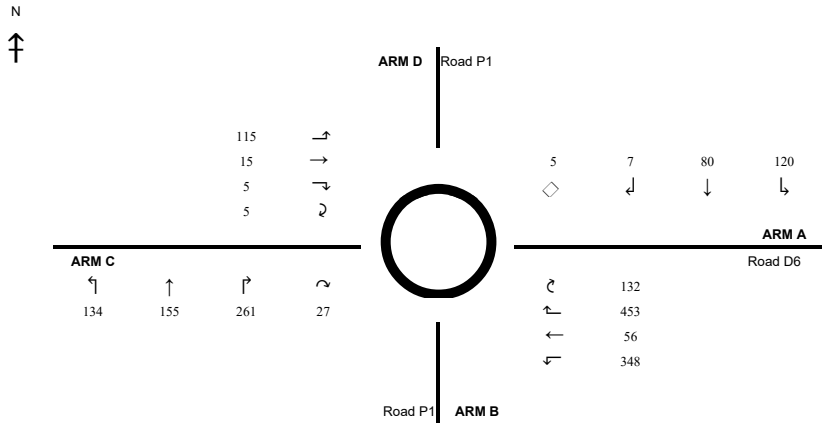


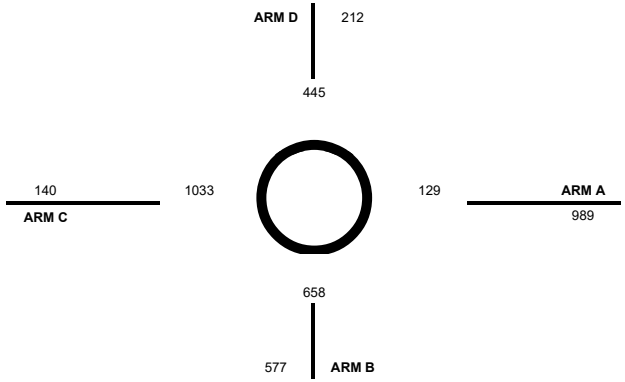
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.65	7.30	3.65	6.75
E	=	Entry width (m)	6.00	10.00	6.00	6.75
L	=	Effective length of flare (m)	5	8.8	8	1
R	=	Entry radius (m)	20	40	20	20
D	=	Inscribed circle diameter (m)	100	100	100	100
A	=	Entry angle (degree)	15	15	15	25
Q	=	Entry flow (pcu/h)	287	1904	173	557
Qc	=	Circulating flow across entry (pcu/h)	447	306	2097	1476
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.75	0.49	0.47	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.05	1.08	1.05	1.02
X2	=	V + ((E-V)/(1+2S))	4.59	8.66	4.86	6.75
M	=	EXP((D-60)/10)	54.60	54.60	54.60	54.60
F	=	303*X2	1390	2625	1473	2045
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.41	0.58	0.42	0.50
Qe	=	K(F-Fc*Qc)	1272	2635	628	1333
DFC	=	Design flow/Capacity = Q/Qe	0.23	0.72	0.28	0.42

Total In Sum = 2921 PCU

DFC of Critical Approach = 0.72

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J6_AM	PROJECT NO: 278463
J6 - Jucntion of Road P1 and Road D6	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



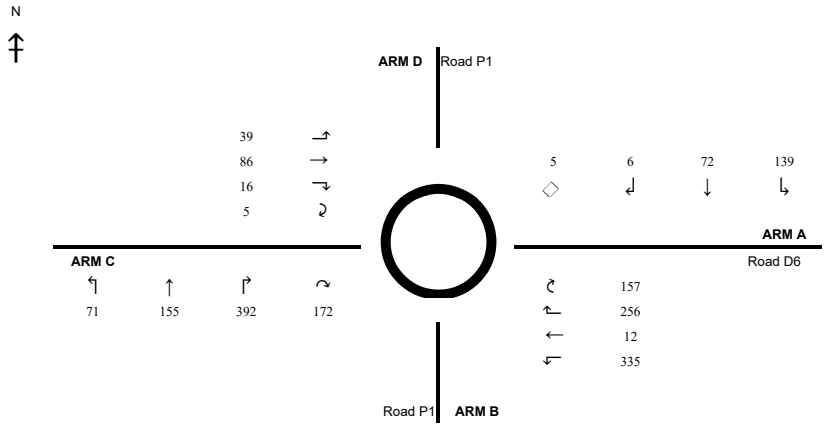


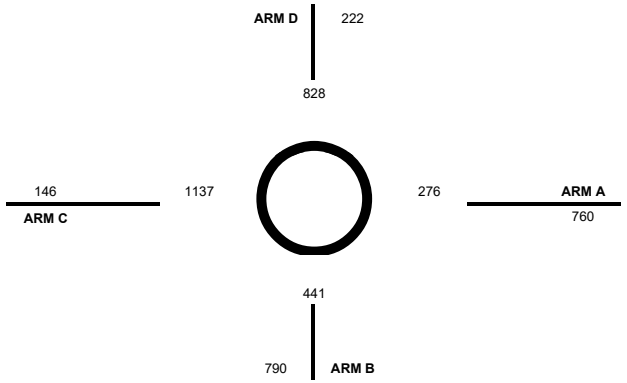
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	6.75	3.65	7.30
E	=	Entry width (m)	7.30	6.75	5.75	7.30
L	=	Effective length of flare (m)	1	1	22	1
R	=	Entry radius (m)	20	15	40	30
D	=	Inscribed circle diameter (m)	74	74	74	74
A	=	Entry angle (degree)	40	42	25	27
Q	=	Entry flow (pcu/h)	989	577	140	212
Qc	=	Circulating flow across entry (pcu/h)	129	658	1033	445
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.00	0.00	0.15	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.97	0.94	1.04	1.03
X2	=	V + ((E-V)/(1+2S))	7.30	6.75	5.26	7.30
M	=	EXP((D-60)/10)	4.06	4.06	4.06	4.06
F	=	303*X2	2212	2045	1593	2212
Td	=	1+(0.5/(1+M))	1.10	1.10	1.10	1.10
Fc	=	0.21*Td(1+0.2*X2)	0.57	0.54	0.47	0.57
Qe	=	K(F-Fc*Qc)	2064	1591	1150	2012
DFC	=	Design flow/Capacity = Q/Qe	0.48	0.36	0.12	0.11

Total In Sum = 1918 PCU

DFC of Critical Approach = 0.48

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J6_PM	PROJECT NO: 278463
J6 - Jucntion of Road P1 and Road D6	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



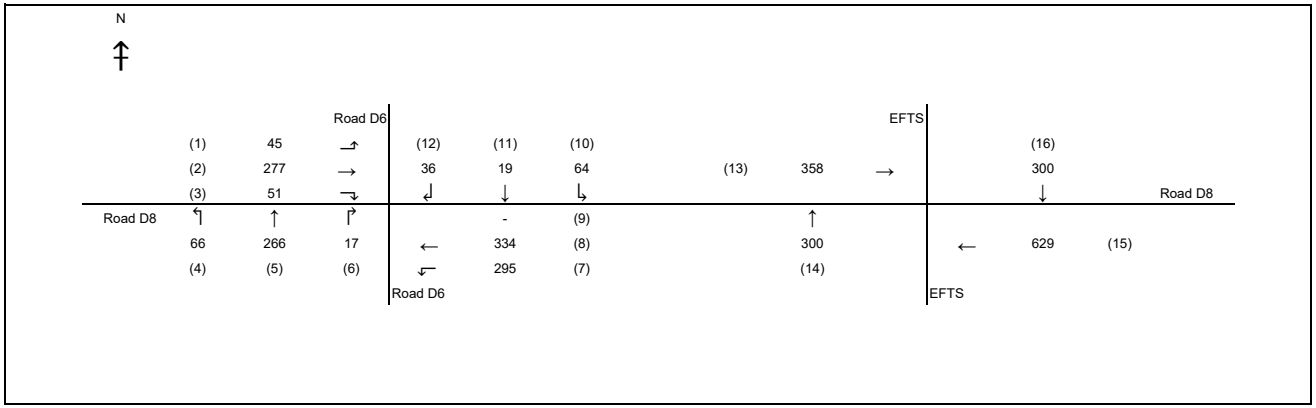


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	6.75	3.65	7.30
E	=	Entry width (m)	7.30	6.75	5.75	7.30
L	=	Effective length of flare (m)	1	1	22	1
R	=	Entry radius (m)	20	15	40	30
D	=	Inscribed circle diameter (m)	74	74	74	74
A	=	Entry angle (degree)	40	42	25	27
Q	=	Entry flow (pcu/h)	760	790	146	222
Qc	=	Circulating flow across entry (pcu/h)	276	441	1137	828
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.00	0.00	0.15	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.97	0.94	1.04	1.03
X2	=	V + ((E-V)/(1+2S))	7.30	6.75	5.26	7.30
M	=	EXP((D-60)/10)	4.06	4.06	4.06	4.06
F	=	303*X2	2212	2045	1593	2212
Td	=	1+(0.5/(1+M))	1.10	1.10	1.10	1.10
Fc	=	0.21*Td(1+0.2*X2)	0.57	0.54	0.47	0.57
Qe	=	K(F-Fc*Qc)	1984	1701	1099	1788
DFC	=	Design flow/Capacity = Q/Qe	0.38	0.46	0.13	0.12

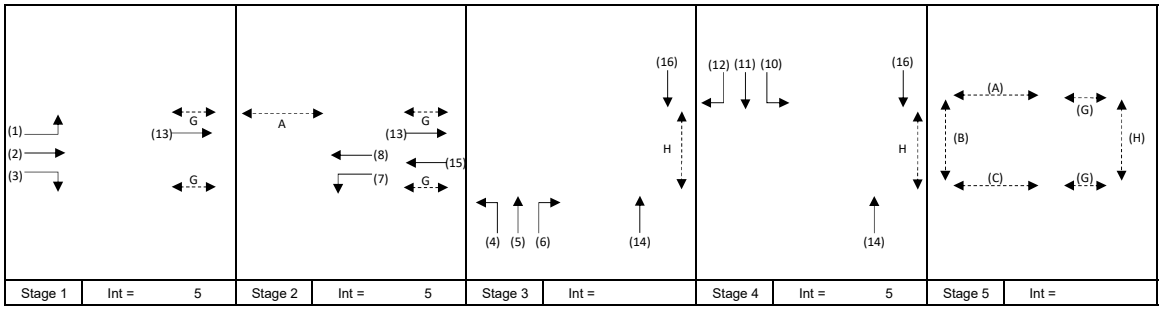
Total In Sum = 1918 PCU

DFC of Critical Approach = 0.46

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J7_AM	PROJECT NO: 278463
J7 - Junction of Road D6 and Road D8	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle	N=	5
No. of Stage Using for Calculation	N=	3
Cycle Time	C=	120 sec
Sum(y)	Y=	0.353
Loss Time	L=	41 sec
Total Flow	=	3057 pcu
Co =(1.5*L+5)/(1-Y)	=	103 sec
Cm =L/(1-Y)	=	63 sec
Yult	=	0.593
R.C.ult =(Yult-Y)/Y*100%	=	67.6 %
Cp =0.9*L/(0.9-Y)	=	67.5 sec
Ymax =1-L/C	=	0.658
R.C.(C) =(0.9*Ymax-Y)/Y*100%	=	67.6 %

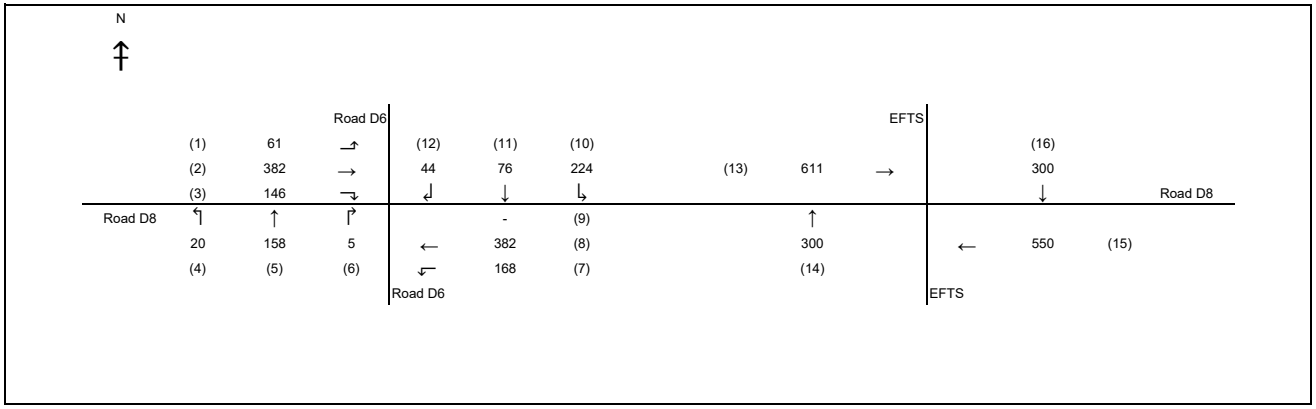


Stage 1	Int = 5	Stage 2	Int = 5	Stage 3	Int =	Stage 4	Int = 5	Stage 5	Int =

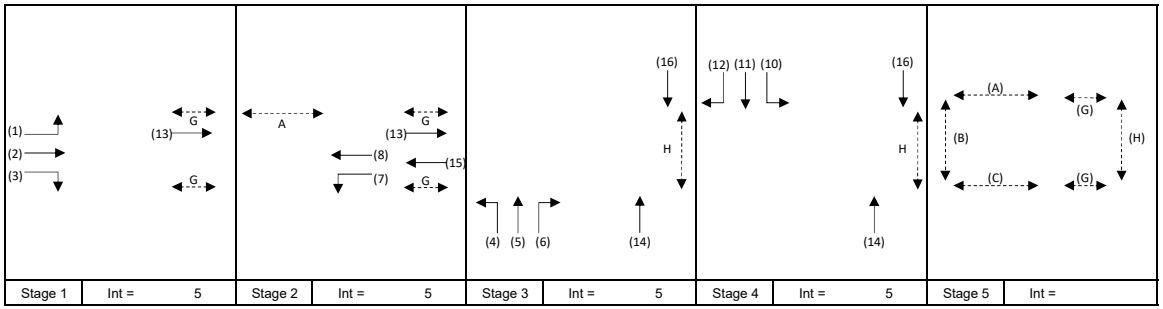
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,5	A	22.00	10	5	18	34	5	18	OK
5	B	19.00	8	5	16	8	5	16	OK
5	C	19.00	8	5	16	8	5	16	OK
5,1,2	G	17.00	8	5	14	63	5	14	OK
3,4,5	H	26.00	11	5	22	40	5	22	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				12				
																			S5	29				
13	1,2	3.50	A	3			N	6175		358		358	0.00	6175		-	6175	0.058			13	49	0.142	4
1,2	1	3.50	B	1	15		N	1965	45	135		180	0.25	1917		-	1917	0.094	0.094	0	21	21	0.537	25
2,3	1	3.50	B	1	20			2105		142	51	193	0.26	2064		-	2064	0.094			21	21	0.535	27
15	2	3.50	C	3				6315		629		629	0.00	6315		-	6315	0.100	0.107	0	22	24	0.500	9
7	2	3.50	C	1	15		N	1965	191			191	1.00	1786		-	1786	0.107			24	24	0.537	25
7,8	2	3.50	C	1	15			2105	104	110		214	0.49	2007		-	2007	0.107			24	24	0.535	29
8	2	3.50	C	1	15			2105		224		224	0.00	2105		-	2105	0.106			24	24	0.534	30
4,5	3	3.50	D	1	15		N	1965	66	100		166	0.40	1890		-	1890	0.088			20	20	0.527	23
5,6	3	3.50	D	1	20			2105		166	17	183	0.09	2090		-	2090	0.088			20	20	0.525	25
10,11	4	3.50	E	1	20		N	1965	64	0		64	1.00	1828		-	1828	0.035			8	10	0.415	10
11,12	4	3.50	E	1	20			2105		19	36	55	0.65	2006		-	2006	0.027			6	10	0.325	8
14	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153	0.153	0	34	34	0.537	107
16	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153			34	34	0.537	107
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J7_PM	PROJECT NO: 278463
J7 - Junction of Road D6 and Road D8	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle	N=	5
No. of Stage Using for Calculation	N=	4
Cycle Time	C=	120 sec
Sum(y)	Y=	0.409
Loss Time	L=	45 sec
Total Flow	=	3427 pcu
Co =(1.5*L+5)/(1-Y)	=	123 sec
Cm =L/(1-Y)	=	76 sec
Yult	=	0.563
R.C.ult =(Yult-Y)/Y*100%	=	37.4 %
Cp =0.9*L/(0.9-Y)	=	82.5 sec
Ymax =1-L/C	=	0.625
R.C.(C) =(0.9*Ymax-Y)/Y*100%	=	37.4 %



Stage 1	Int = 5	Stage 2	Int = 5	Stage 3	Int = 5	Stage 4	Int = 5	Stage 5	Int =

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,5	A	22.00	10	5	18	27	5	18	OK
5	B	19.00	8	5	16	8	5	16	OK
5	C	19.00	8	5	16	8	5	16	OK
5,1,2	G	17.00	8	5	14	62	5	14	OK
3,4,5	H	26.00	11	5	22	41	5	22	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				16				
																			S5	29				
13	1,2	3.50	A	3			N	6175		611		611	0.00	6175		-	6175	0.099			18	48	0.247	7
1,2	1	3.50	B	1	15		N	1965	61	225		286	0.21	1924		-	1924	0.149	0.149	0	27	27	0.653	37
2,3	1	3.50	B	1	20			2105		157	146	303	0.48	2032		-	2032	0.149			27	27	0.655	39
15	2	3.50	C	3				6315		550		550	0.00	6315		-	6315	0.087	0.092	0	16	17	0.621	9
7	2	3.50	C	1	15		N	1965	164			164	1.00	1786		-	1786	0.092			17	17	0.654	25
7,8	2	3.50	C	1	15			2105	4	189		193	0.02	2101		-	2101	0.092			17	17	0.655	28
8	2	3.50	C	1	15			2105		193		193	0.00	2105		-	2105	0.092			17	17	0.654	28
4,5	3	3.50	D	1	15		N	1965	20	68		88	0.23	1921		-	1921	0.046	0.046	0	8	8	0.655	15
5,6	3	3.50	D	1	20			2105		90	5	95	0.05	2097		-	2097	0.045			8	8	0.648	16
10,11	4	3.50	E	1	20		N	1965	224	0		224	1.00	1828		-	1828	0.123	0.123	0	22	22	0.655	31
11,12	4	3.50	E	1	20			2105		76	44	120	0.37	2049		-	2049	0.059			11	22	0.313	16
14	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153			28	35	0.526	106
16	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153			28	35	0.526	106
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

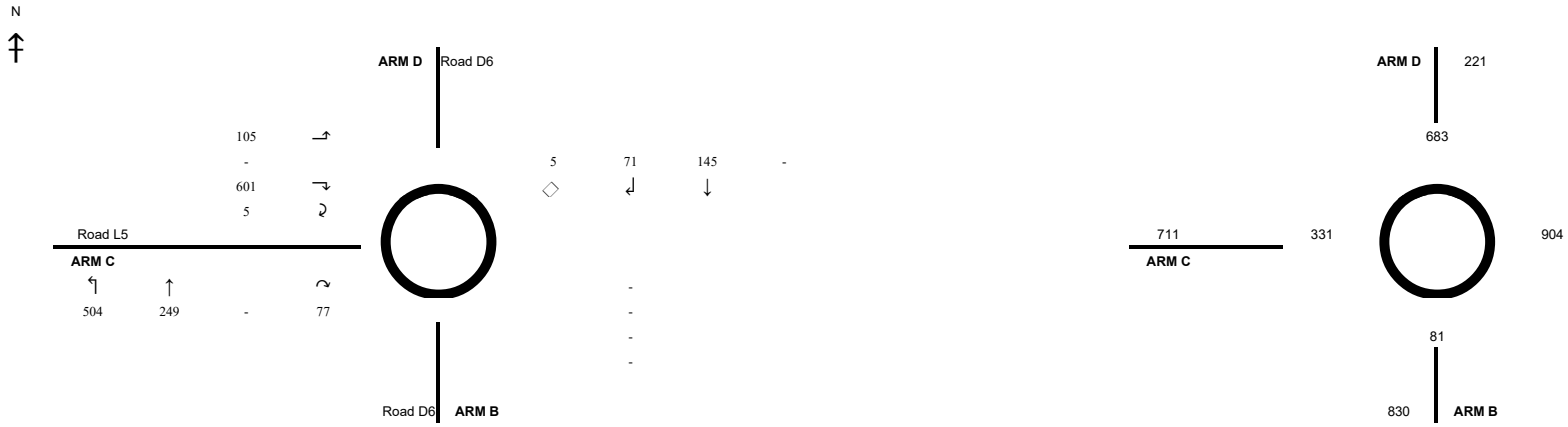
OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J8_AM	PROJECT NO: 278463
J8 - Junction of Road D6 and Road L18	Year 2036 Reference Case (AM Peak)	DATE: 09-Sep-25	FILENAME:

ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)		7.30	5.15	7.30
E	=	Entry width (m)		7.30	6.50	7.30
L	=	Effective length of flare (m)		1	18.5	1
R	=	Entry radius (m)		20	25	20
D	=	Inscribed circle diameter (m)		64	64	64
A	=	Entry angle (degree)		45	35	40
Q	=	Entry flow (pcu/h)		454	841	367
Qc	=	Circulating flow across entry (pcu/h)		115	99	795
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L		0.00	0.12	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)		0.95	0.99	0.97
X2	=	V + ((E-V)/(1+2S))		7.30	6.24	7.30
M	=	EXP((D-60)/10)		1.49	1.49	1.49
F	=	303*X2		2212	1892	2212
Td	=	1+(0.5/(1+M))		1.20	1.20	1.20
Fc	=	0.21*Td(1+0.2*X2)		0.62	0.57	0.62
Qe	=	K(F-Fc*Qc)		2029	1822	1659
DFC	=	Design flow/Capacity = Q/Qe		0.22	0.46	0.22

Total In Sum = 1662 PCU

DFC of Critical Approach = 0.46

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J8_PM	PROJECT NO: 278463
J8 - Junction of Road D6 and Road L18	Year 2036 Reference Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



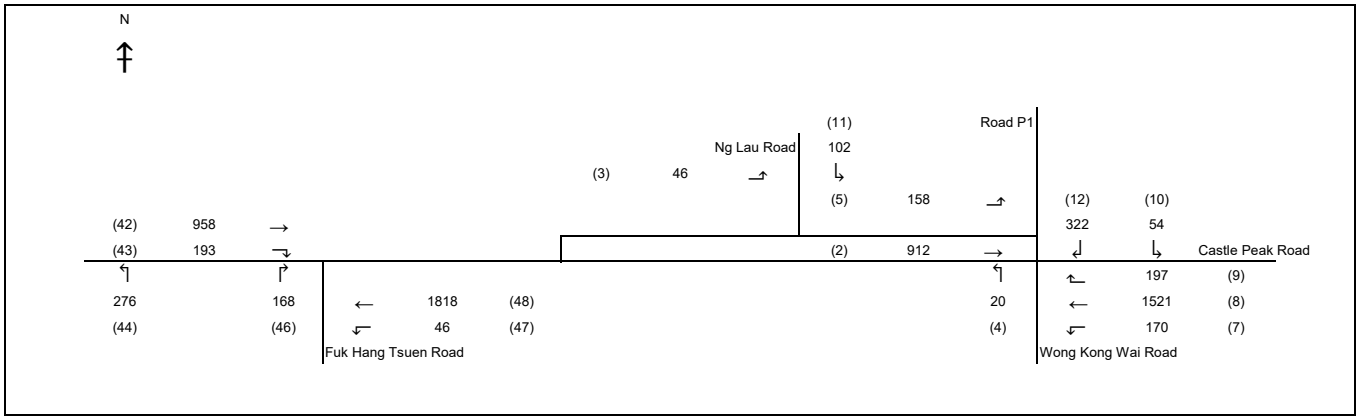
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)		7.30	5.15	7.30
E	=	Entry width (m)		7.30	6.50	7.30
L	=	Effective length of flare (m)		1	18.5	1
R	=	Entry radius (m)		20	25	20
D	=	Inscribed circle diameter (m)		64	64	64
A	=	Entry angle (degree)		45	35	40
Q	=	Entry flow (pcu/h)		830	711	221
Qc	=	Circulating flow across entry (pcu/h)		81	331	683
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L		0.00	0.12	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)		0.95	0.99	0.97
X2	=	V + ((E-V)/(1+2S))		7.30	6.24	7.30
M	=	EXP((D-60)/10)		1.49	1.49	1.49
F	=	303*X2		2212	1892	2212
Td	=	1+(0.5/(1+M))		1.20	1.20	1.20
Fc	=	0.21*Td(1+0.2*X2)		0.62	0.57	0.62
Qe	=	K(F-Fc*Qc)		2049	1691	1726
DFC	=	Design flow/Capacity = Q/Qe		0.41	0.42	0.13

Total In Sum = 1762 PCU

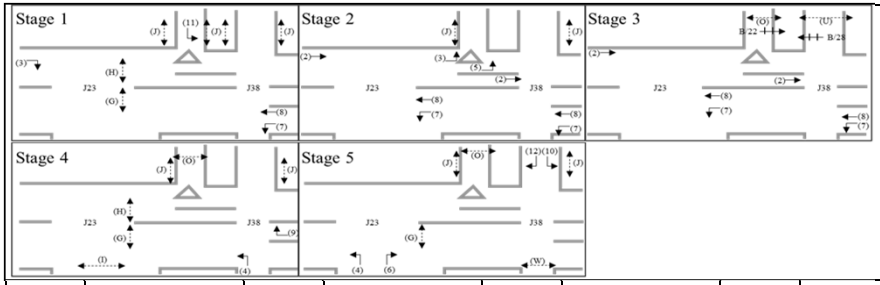
DFC of Critical Approach = 0.42

2036 Design Case

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J1_AM	PROJECT NO: 278463
J1 - Junction of Castle Peak Road and Road P1 and Fuk Hang Tsuen Road	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	5
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	120 sec
Sum(y)		Y=	0.635
Loss Time		L=	14 sec
Total Flow		=	7261 pcu
Co	=(1.5*L+5)/(1-Y)	=	72 sec
Cm	=L/(1-Y)	=	39 sec
Yult		=	0.793
R.C.ult	=(Yult-Y)/Y*100%	=	24.9 %
Cp	=0.9*L/(0.9-Y)	=	48.5 sec
Ymax	=1-L/C	=	0.881
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	24.9 %

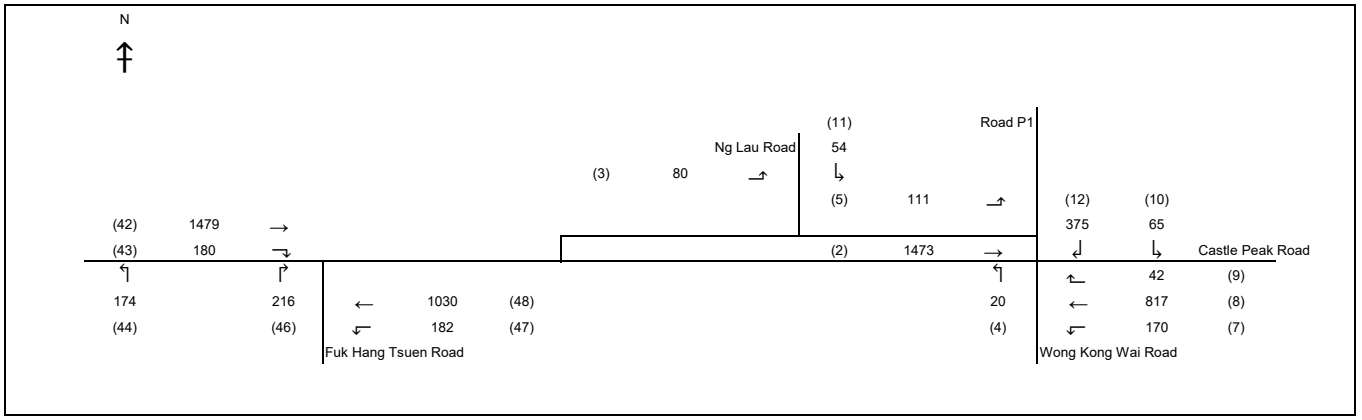


Stage 1	Int =	Stage 2	Int =	Stage 3	Int =	6	Stage 4	Int =	6	Stage 5	Int =	5

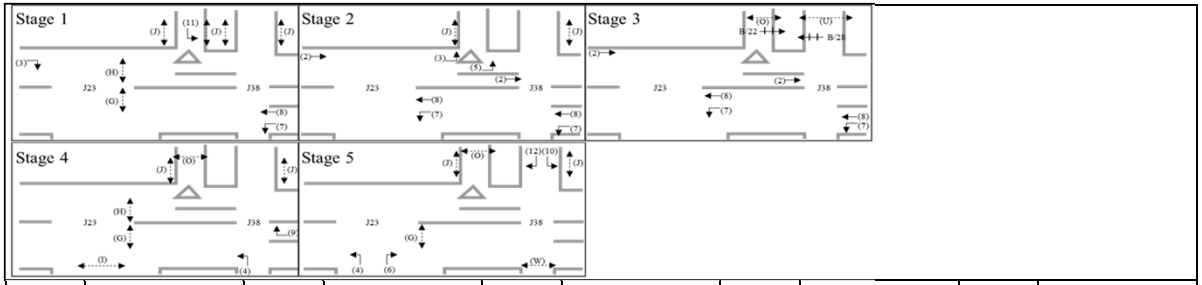
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
3	LRT-B		10	3	10	22	3	10	OK
4,5,1,2	J	8.00	5	2	7	77	2	7	OK
3,4,5	O	10.00	5	2	8	70	2	8	OK
3	U	10.00	9	3	7	25	3	7	OK
5	W	11.00	5	2	9	12	2	9	OK
4,5,1	G	11.00	10	3	10	53	3	10	OK
1,4	H	10.00	10	3	10	29	3	10	OK
4	I	13.50	5	2	10	9	2	10	OK
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14 0				
11	1	3.50	A	1	15		N	1965	102			102	1.00	1792		-	1792	0.057			9	16	0.427	15
43	1	3.50	2	1	25			2105			193	193	1.00	1988		-	1988	0.097			16	17	0.685	29
3	2	3.50	B	1	15		N	1965	46			46	1.00	1792		-	1792	0.026			4	15	0.205	7
5	2	3.50	B	1	20		N	1965	158			158	1.00	1831		-	1831	0.086			14	15	0.690	25
22	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			13	30	0.307	19
28	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			13	30	0.307	19
4	4	3.50	E	1	15		N	1965	20			20	1.00	1792		-	1792	0.011	0.098	0	2	16	0.082	3
9	4	3.50	E	1	30			2105			197	197	1.00	2006		-	2006	0.098			16	16	0.720	30
10,12	5	3.50	F	1	30		N	1965	54		128	182	1.00	1873		-	1873	0.097	0.117	0	16	18	0.632	26
12	5	3.50	F	1	30			2105			194	194	1.00	2006		-	2006	0.097			16	18	0.629	28
44	5	3.60	3	1	20		N	1975	215			215	1.00	1840		-	1840	0.117			19	19	0.720	32
44,46	5	3.50	3	1	20			2105	61		168	229	1.00	1961		-	1961	0.117			19	19	0.720	34
2	2,3	3.50	C	2				4210		912		912	0.00	4210		-	4210	0.217			36	48	0.543	23
7,8	1,2,3	3.50	D	1	15		N	1965	170	638		808	0.21	1926		-	1926	0.420	0.420	1	70	71	0.710	55
8	1,2,3	3.50	D	1				2105		883		883	0.00	2105		-	2105	0.419			70	71	0.710	60
42	2,3	3.50	1	3			N	6175		958		958	0.00	6175		-	6175	0.155			26	51	0.366	10
47,48	2,3	3.60	1	1	13		N	1975	46	544		590	0.08	1958		-	1958	0.301			50	51	0.711	57
48	2,3	3.60	1	2				4230		1274		1274	0.00	4230		-	4230	0.301			50	51	0.710	31
								-				-		-		-	-	-			-		-	-
								-				-		-		-	-	-			-		-	-
								-				-		-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J1_PM	PROJECT NO: 278463
J1 - Junction of Castle Peak Road and Road P1 and Fuk Hang Tsuen Road	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle	N=	5
No. of Stage Using for Calculation	N=	4
Cycle Time	C=	120 sec
Sum(y)	Y=	0.575
Loss Time	L=	30 sec
Total Flow	=	6768 pcu
Co =(1.5*L+5)/(1-Y)	=	119 sec
Cm =L/(1-Y)	=	71 sec
Yult	=	0.673
R.C.ult =(Yult-Y)/Y*100%	=	17.0 %
Cp =0.9*L/(0.9-Y)	=	83.9 sec
Ymax =1-L/C	=	0.748
R.C.(C) =(0.9*Ymax-Y)/Y*100%	=	17.0 %

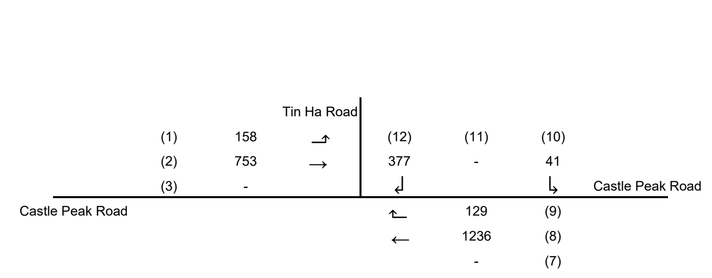


Stage 1	Int = 5	Stage 2	Int =	Stage 3	Int = 8	Stage 4	Int = 6	Stage 5	Int = 6

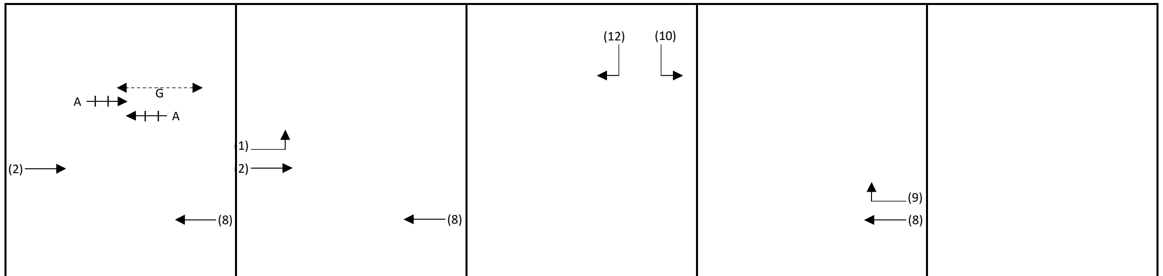
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
3	LRT-B		10	3	10	34	3	10	OK
4,5,1,2	J	8.00	5	2	7	64	2	7	OK
3,4,5	O	10.00	5	2	8	77	2	8	OK
3	U	10.00	9	3	7	37	3	7	OK
5	W	11.00	5	2	9	12	2	9	OK
4,5,1	G	11.00	10	3	10	45	3	10	OK
1,4	H	10.00	10	3	10	22	3	10	OK
4	I	13.50	5	2	10	5	2	10	OK
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				21 0				
11	1	3.50	A	1	15		N	1965	54			54	1.00	1792		-	1792	0.030	0.091	0	5	13	0.276	8
43	1	3.50	2	1	25			2105			180	180	1.00	1988		-	1988	0.091			14	14	0.769	30
3	2	3.50	B	1	15		N	1965	80			80	1.00	1792		-	1792	0.045			7	10	0.536	13
5	2	3.50	B	1	20		N	1965	111			111	1.00	1831		-	1831	0.061			9	10	0.727	20
22	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			12	42	0.220	16
28	3	3.50	G	1			N	1965		150		150	0.00	1965		-	1965	0.076			12	42	0.220	16
4	4	3.50	E	1	15		N	1965	20			20	1.00	1792		-	1792	0.011	0.021	9	2	12	0.109	3
9	4	3.50	E	1	30			2105			42	42	1.00	2006		-	2006	0.021			3	12	0.205	6
10,12	5	3.50	F	1	30		N	1965	65		148	213	1.00	1873		-	1873	0.114	0.114	0	18	18	0.769	34
12	5	3.50	F	1	30			2105			227	227	1.00	2006		-	2006	0.113			18	18	0.765	36
44	5	3.60	3	1	20		N	1975	174			174	1.00	1840		-	1840	0.095			15	19	0.605	25
44,46	5	3.50	3	1	20			2105	0		216	216	1.00	1961		-	1961	0.110			17	19	0.705	32
2	2,3	3.50	C	2				4210		1473		1473	0.00	4210		-	4210	0.350	0.350	0	55	55	0.769	34
7,8	1,2,3	3.50	D	1	15		N	1965	170	298		468	0.36	1898		-	1898	0.247			38	75	0.396	29
8	1,2,3	3.50	D	1				2105		519		519	0.00	2105		-	2105	0.247			38	75	0.396	33
42	2,3	3.50	1	3			N	6175		1479		1479	0.00	6175		-	6175	0.240			37	58	0.499	14
47,48	2,3	3.60	1	1	13		N	1975	182	190		372	0.49	1873		-	1873	0.199			31	58	0.414	32
48	2,3	3.60	1	2				4230		840		840	0.00	4230		-	4230	0.199			31	58	0.414	18
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J2_AM	PROJECT NO: 278463
J2 - Junction of Castle Peak Road and Tin Ha Road	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	4
No. of Stage Using for Calculation		N=	2
Cycle Time		C=	81 sec
Sum(y)		Y=	0.417
Loss Time		L=	24 sec
Total Flow		=	2694 pcu
Co	=(1.5*L+5)/(1-Y)	=	70 sec
Cm	=L/(1-Y)	=	41 sec
Yult		=	0.720
R.C.ult	=(Yult-Y)/Y*100%	=	72.7 %
Cp	=0.9*L/(0.9-Y)	=	44.7 sec
Ymax	=1-L/C	=	0.704
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	51.9 %

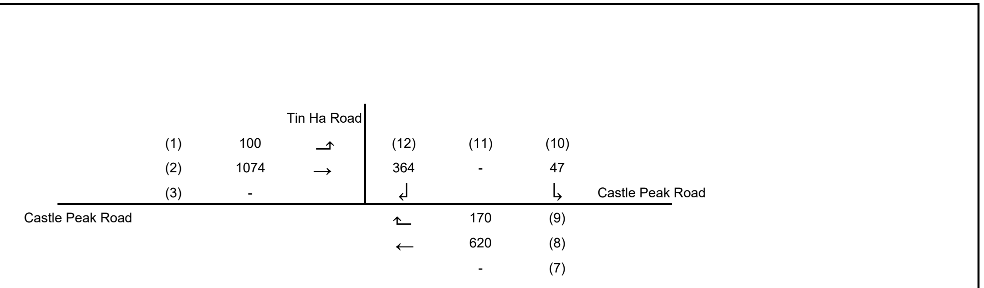


Stage 1	Int = 11	Stage 2	Int =	Stage 3	Int = 5	Stage 4	Int =	Stage 5	Int =

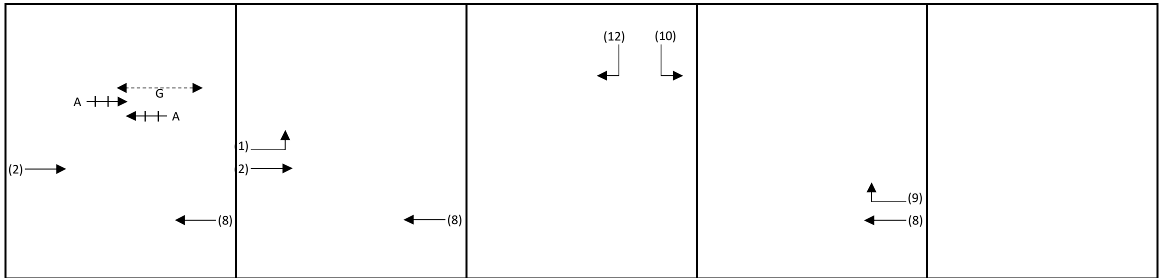
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1	G	8.00	8	7	9	9	7	9	OK
1	A (LRT)		8	9	8	8	9	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				14				
																				0				
2	1,2	3.20	D	3				6225		753		753	0.00	6225		-	6225	0.121			17	35	0.280	5
8	1,2,4	3.65	B	2			N	4100		1236		1236	0.00	4100		-	4100	0.301	0.301	10	41	51	0.477	13
1	2	3.20	E	1	12		N	1935	158			158	1.00	1720		-	1720	0.092			13	13	0.572	15
10,12	3	3.20	F	1	12		N	1935	41		157	198	1.00	1720		-	1720	0.115	0.115	0	16	16	0.591	18
12	3	3.20	F	1	17			2075			220	220	1.00	1907		-	1907	0.115			16	16	0.592	20
9	4	3.20	C	1	20			2075			129	129	1.00	1930		-	1930	0.067			9	9	0.587	14
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	**TRAFFIC SIGNAL CALCULATION**		
Hung Shui Kiu Phase 2 D&C		SHEET: J2_PM	PROJECT NO: 278463
J2 - Junction of Castle Peak Road and Tin Ha Road	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	4
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	81 sec
Sum(y)		Y=	0.374
Loss Time		L=	27 sec
Total Flow		=	2375 pcu
Co	=(1.5*L+5)/(1-Y)	=	73 sec
Cm	=L/(1-Y)	=	43 sec
Yult		=	0.698
R.C.ult	=(Yult-Y)/Y*100%	=	86.5 %
Cp	=0.9*L/(0.9-Y)	=	46.2 sec
Ymax	=1-L/C	=	0.667
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	60.4 %



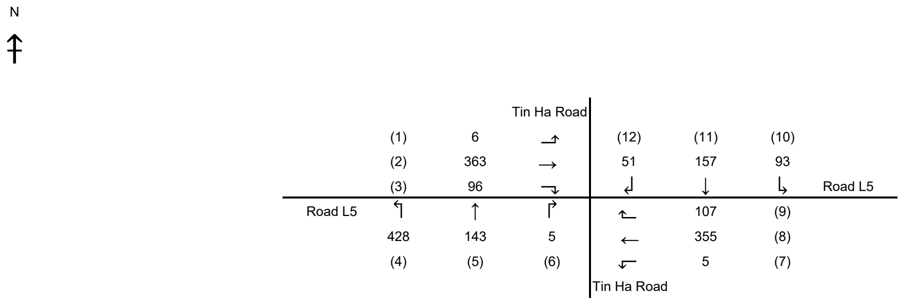
Stage 1	Int =	Stage 2	Int = 10	Stage 3	Int = 5	Stage 4	Int = 9	Stage 5	Int =

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
1	G	8.00	8	7	9	9	7	9	OK
1	A (LRT)		8	9	8	8	9	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

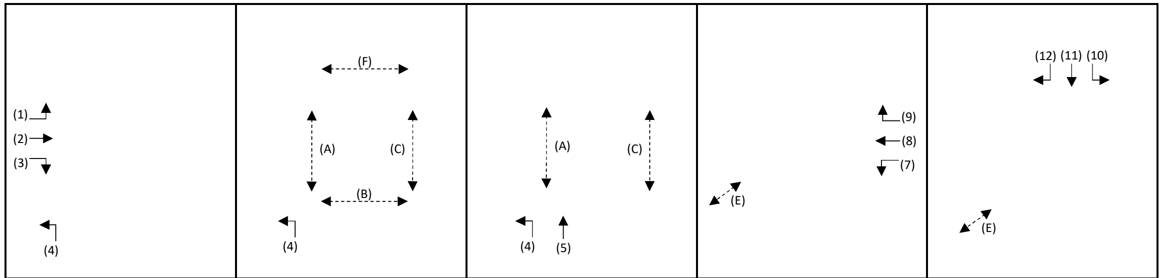
Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				21				
																				0				
2	1,2	3.20	D	3				6225		1074		1074	0.00	6225		-	6225	0.173	0.173	6	25	31	0.452	8
8	1,2,4	3.65	B	2			N	4100		620		620	0.00	4100		-	4100	0.151			22	51	0.242	7
1	2	3.20	E	1	12		N	1935	100			100	1.00	1720		-	1720	0.058			8	9	0.528	11
10,12	3	3.20	F	1	12		N	1935	47		148	195	1.00	1720		-	1720	0.113	0.113	0	16	16	0.561	18
12	3	3.20	F	1	17			2075			216	216	1.00	1907		-	1907	0.113			16	16	0.561	19
9	4	3.20	C	1	20			2075			170	170	1.00	1930		-	1930	0.088	0.088	0	13	13	0.561	17
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS — TRAFFIC SIGNAL CALCULATION

Hung Shui Kiu Phase 2 D&C		SHEET: J3_AM	PROJECT NO: 278463
J3 - Junction of Tin Ha Road and Road L18	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	5
No. of Stage Using for Calculation		N=	3
Cycle Time		C=	120 sec
Sum(y)		Y=	0.435
Loss Time		L=	24 sec
Total Flow		=	1804 pcu
Co	=(1.5*L+5)/(1-Y)	=	73 sec
Cm	=L/(1-Y)	=	42 sec
Yult		=	0.720
R.C.ult	=(Yult-Y)/Y*100%	=	65.6 %
Cp	=0.9*L/(0.9-Y)	=	46.4 sec
Ymax	=1-L/C	=	0.800
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	65.6 %

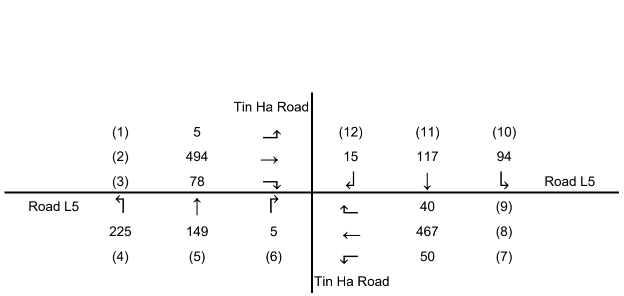


Stage 1	Int =	Stage 2	Int =	Stage 3	Int = 5	Stage 4	Int = 5	Stage 5	Int = 5

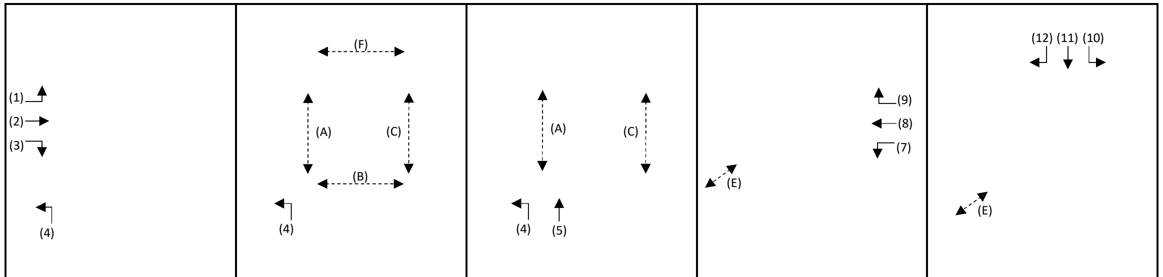
Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,3	A	11.00	10	0	8	31	0	8	OK
2	B	10.00	9	0	7	11	0	7	OK
2,3	C	11.00	10	0	8	31	0	8	OK
4,5	E	5.50	5	0	5	46	0	5	OK
2	F	11.00	10	0	8	10	0	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				12				
																				0				
1,2	1	3.50	A	1	15		N	1965	6	223		229	0.03	1960		-	1960	0.117			26	26	0.539	30
2,3	1	3.50	A	1	15			2105		140	96	236	0.41	2023		-	2023	0.117			26	26	0.538	31
4	1,2,3	3.50	B	1	15		N	1965	428			428	1.00	1786		-	1786	0.240	0.240	12	53	65	0.443	33
5	3	3.50	B	1	15		N	1965		143		143	0.00	1965		-	1965	0.073			16	17	0.517	20
7,8	4	3.50	C	1	15		N	1965	5	225		230	0.02	1961		-	1961	0.117	0.118	0	26	26	0.542	30
8,9	4	3.50	C	1	15			2105		130	107	237	0.45	2014		-	2014	0.118			26	26	0.543	31
10,11	5	3.50	D	1	15		N	1965	93	50		143	0.65	1845		-	1845	0.078	0.078	0	17	17	0.543	20
11,12	5	3.50	D	1	15			2105		107	51	158	0.32	2039		-	2039	0.077			17	17	0.543	23
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J3_PM	PROJECT NO: 278463
J3 - Junction of Tin Ha Road and Road L18	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle		N=	5
No. of Stage Using for Calculation		N=	4
Cycle Time		C=	120 sec
Sum(y)		Y=	0.417
Loss Time		L=	34 sec
Total Flow		=	1734 pcu
Co	=(1.5*L+5)/(1-Y)	=	96 sec
Cm	=L/(1-Y)	=	58 sec
Yult		=	0.645
R.C.ult	=(Yult-Y)/Y*100%	=	54.6 %
Cp	=0.9*L/(0.9-Y)	=	63.4 sec
Ymax	=1-L/C	=	0.717
R.C.(C)	=(0.9*Ymax-Y)/Y*100%	=	54.6 %

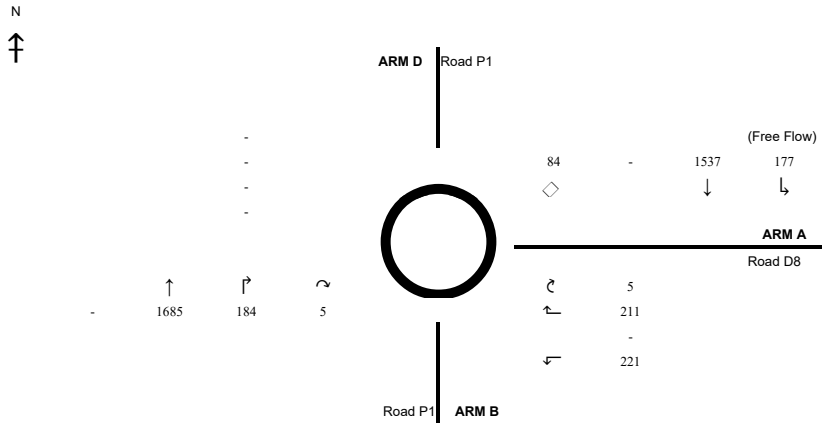


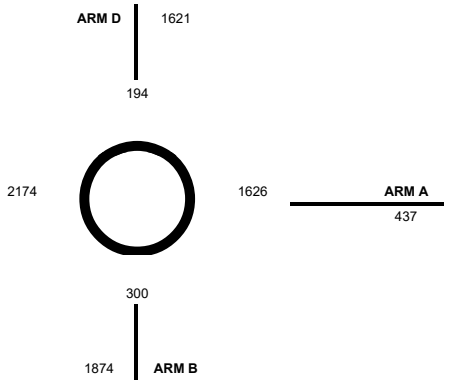
Stage 1	Int = 5	Stage 2	Int =	Stage 3	Int = 5	Stage 4	Int = 5	Stage 5	Int = 5

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,3	A	11.00	10	0	8	30	0	8	OK
2	B	10.00	9	0	7	11	0	7	OK
2,3	C	11.00	10	0	8	30	0	8	OK
4,5	E	5.50	5	0	5	44	0	5	OK
2	F	11.00	10	0	8	10	0	8	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Left pcu/h	Straight pcu/h	Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				16				
																			S2	18				
1,2	1	3.50	A	1	15		N	1965	5	277		282	0.02	1962		-	1962	0.144	0.144	0	30	30	0.582	35
2,3	1	3.50	A	1	15			2105		217	78	295	0.26	2051		-	2051	0.144			30	30	0.582	37
4	1,2,3	3.50	B	1	15		N	1965	225			225	1.00	1786		-	1786	0.126			26	67	0.225	16
5	3	3.50	B	1	15		N	1965		149		149	0.00	1965		-	1965	0.076	0.076	0	16	16	0.582	22
7,8	4	3.50	C	1	15		N	1965	50	218		268	0.19	1929		-	1929	0.139	0.139	0	29	29	0.581	34
8,9	4	3.50	C	1	15			2105		249	40	289	0.14	2076		-	2076	0.139			29	29	0.582	37
10,11	5	3.50	D	1	15		N	1965	94	11		105	0.90	1804		-	1804	0.058	0.058	0	12	12	0.582	16
11,12	5	3.50	D	1	15			2105		106	15	121	0.12	2079		-	2079	0.058			12	12	0.582	19
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J4_AM	PROJECT NO: 278463
J4 - Junction of Road P1 and Road D8	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



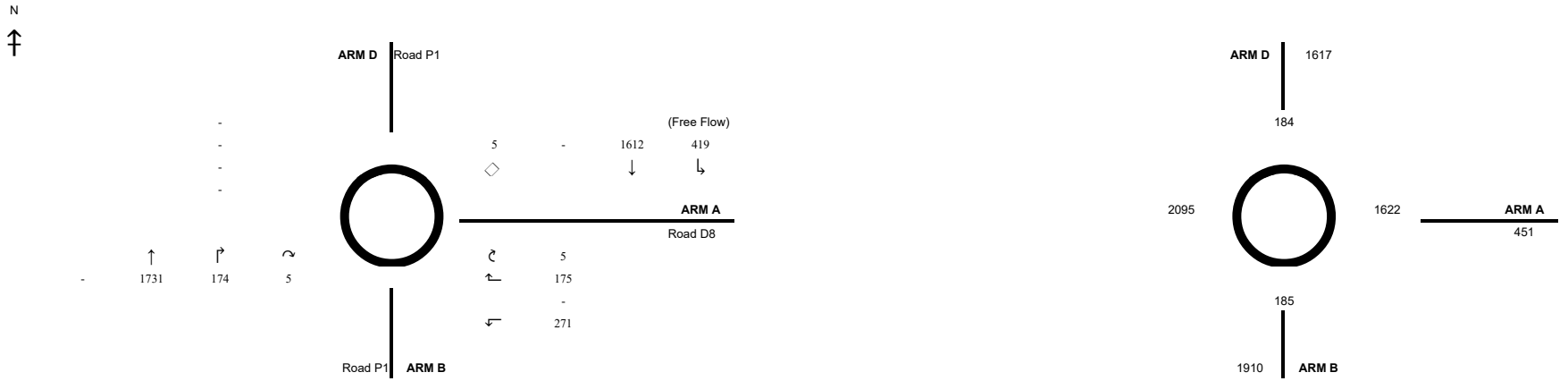


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	7.30		7.30
E	=	Entry width (m)	10.50	10.70		10.70
L	=	Effective length of flare (m)	5.5	9.2		9.2
R	=	Entry radius (m)	30	50		30
D	=	Inscribed circle diameter (m)	66	66		66
A	=	Entry angle (degree)	30	20		36
Q	=	Entry flow (pcu/h)	437	1874		1621
Qc	=	Circulating flow across entry (pcu/h)	1626	300		194
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.93	0.59		0.59
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.06		1.00
X2	=	V + ((E-V)/(1+2S))	8.42	8.86		8.86
M	=	EXP((D-60)/10)	1.82	1.82		1.82
F	=	303*X2	2551	2684		2684
Td	=	1+(0.5/(1+M))	1.18	1.18		1.18
Fc	=	0.21*Td(1+0.2*X2)	0.66	0.69		0.69
Qe	=	K(F-Fc*Qc)	1496	2637		2539
DFC	=	Design flow/Capacity = Q/Qe	0.29	0.71		0.64

Total In Sum = 3932 PCU

DFC of Critical Approach = 0.71

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J4_PM	PROJECT NO: 278463
J4 - Junction of Road P1 and Road D8	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:

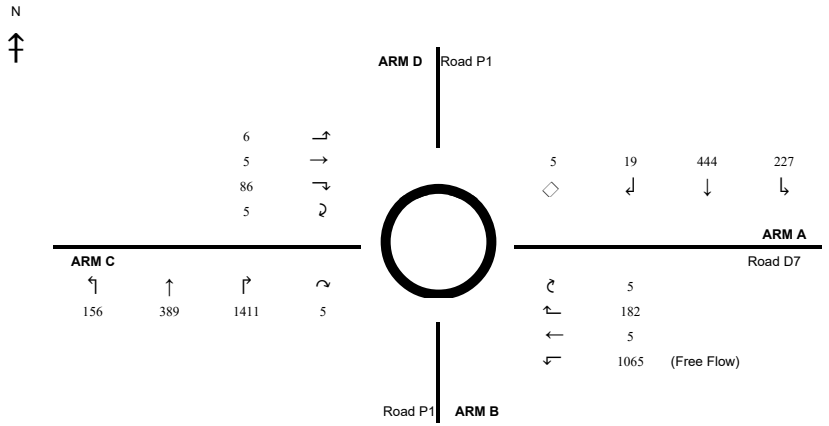


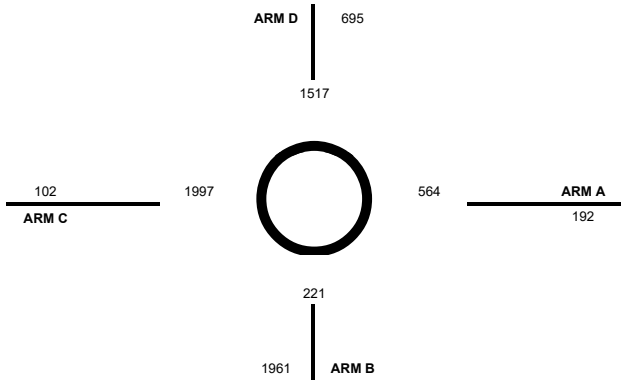
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	7.30		7.30
E	=	Entry width (m)	10.50	10.70		10.70
L	=	Effective length of flare (m)	5.5	9.2		9.2
R	=	Entry radius (m)	30	50		30
D	=	Inscribed circle diameter (m)	66	66		66
A	=	Entry angle (degree)	30	20		36
Q	=	Entry flow (pcu/h)	451	1910		1617
Qc	=	Circulating flow across entry (pcu/h)	1622	185		184
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.93	0.59		0.59
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.06		1.00
X2	=	V + ((E-V)/(1+2S))	8.42	8.86		8.86
M	=	EXP((D-60)/10)	1.82	1.82		1.82
F	=	303*X2	2551	2684		2684
Td	=	1+(0.5/(1+M))	1.18	1.18		1.18
Fc	=	0.21*Td(1+0.2*X2)	0.66	0.69		0.69
Qe	=	K(F-Fc*Qc)	1499	2721		2546
DFC	=	Design flow/Capacity = Q/Qe	0.30	0.70		0.64

Total In Sum = 3978 PCU

DFC of Critical Approach = 0.70

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J5_AM	PROJECT NO: 278463
J5 - Junction of Road P1 and Road D7	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



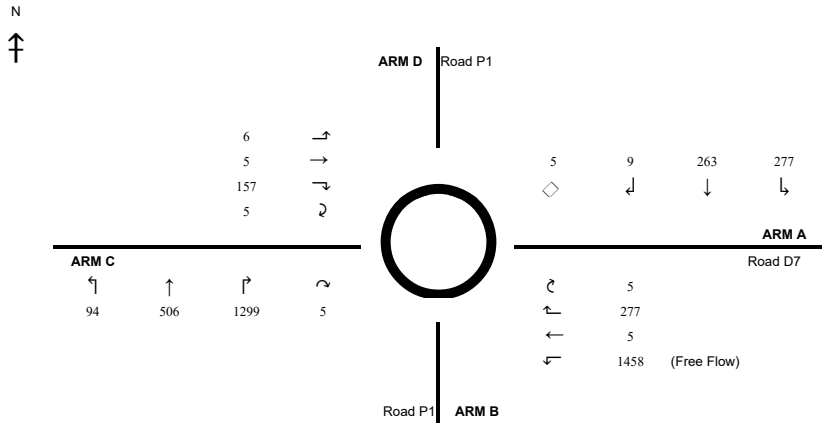


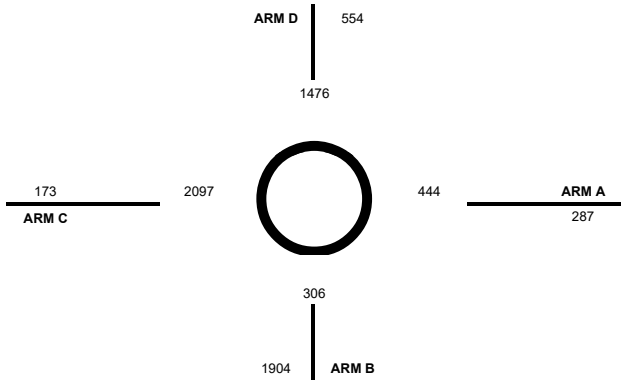
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.65	7.30	3.65	6.75
E	=	Entry width (m)	6.00	10.00	6.00	6.75
L	=	Effective length of flare (m)	5	8.8	8	1
R	=	Entry radius (m)	20	40	20	20
D	=	Inscribed circle diameter (m)	100	100	100	100
A	=	Entry angle (degree)	15	15	15	25
Q	=	Entry flow (pcu/h)	192	1961	102	695
Qc	=	Circulating flow across entry (pcu/h)	564	221	1997	1517
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.75	0.49	0.47	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.05	1.08	1.05	1.02
X2	=	V + ((E-V)/(1+2S))	4.59	8.66	4.86	6.75
M	=	EXP((D-60)/10)	54.60	54.60	54.60	54.60
F	=	303*X2	1390	2625	1473	2045
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.41	0.58	0.42	0.50
Qe	=	K(F-Fc*Qc)	1222	2688	672	1312
DFC	=	Design flow/Capacity = Q/Qe	0.16	0.73	0.15	0.53

Total In Sum = 2950 PCU

DFC of Critical Approach = 0.73

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J5_PM	PROJECT NO: 278463
J5 - Junction of Road P1 and Road D7	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



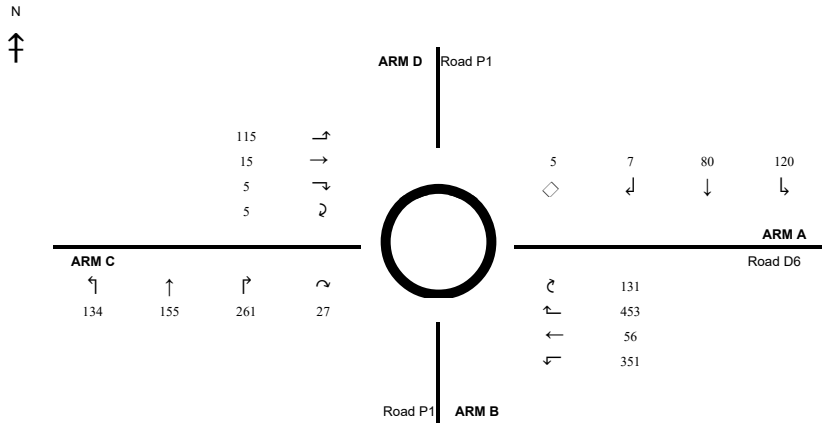


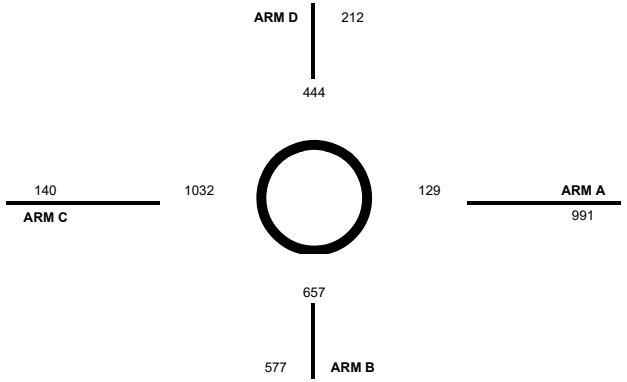
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	3.65	7.30	3.65	6.75
E	=	Entry width (m)	6.00	10.00	6.00	6.75
L	=	Effective length of flare (m)	5	8.8	8	1
R	=	Entry radius (m)	20	40	20	20
D	=	Inscribed circle diameter (m)	100	100	100	100
A	=	Entry angle (degree)	15	15	15	25
Q	=	Entry flow (pcu/h)	287	1904	173	554
Qc	=	Circulating flow across entry (pcu/h)	444	306	2097	1476
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.75	0.49	0.47	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.05	1.08	1.05	1.02
X2	=	V + ((E-V)/(1+2S))	4.59	8.66	4.86	6.75
M	=	EXP((D-60)/10)	54.60	54.60	54.60	54.60
F	=	303*X2	1390	2625	1473	2045
Td	=	1+(0.5/(1+M))	1.01	1.01	1.01	1.01
Fc	=	0.21*Td(1+0.2*X2)	0.41	0.58	0.42	0.50
Qe	=	K(F-Fc*Qc)	1273	2635	628	1333
DFC	=	Design flow/Capacity = Q/Qe	0.23	0.72	0.28	0.42

Total In Sum = 2918 PCU

DFC of Critical Approach = 0.72

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J6_AM	PROJECT NO: 278463
J6 - Junction of Road P1 and Road D6	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



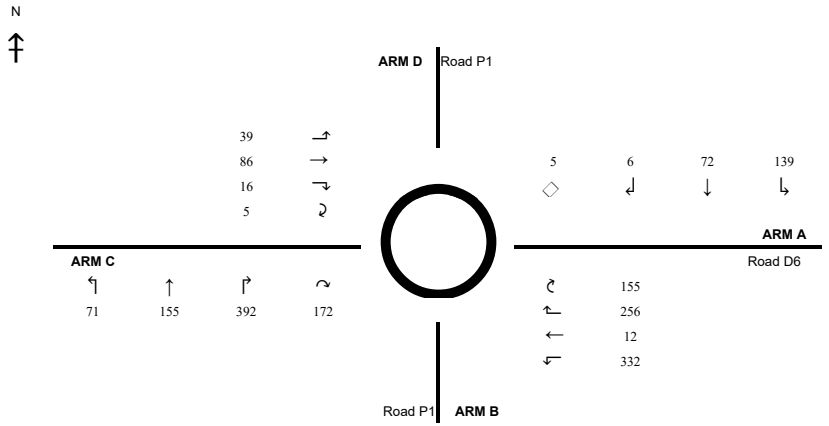


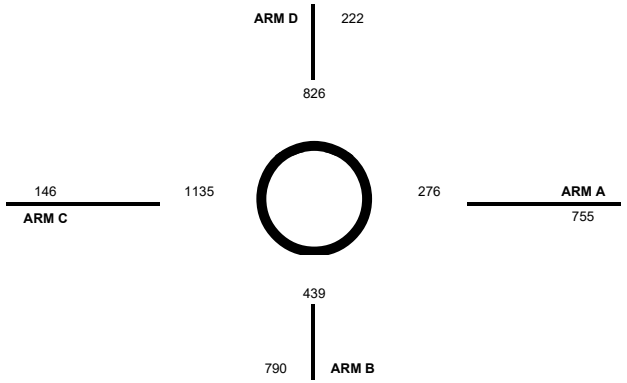
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	6.75	3.65	7.30
E	=	Entry width (m)	7.30	6.75	5.75	7.30
L	=	Effective length of flare (m)	1	1	22	1
R	=	Entry radius (m)	20	15	40	30
D	=	Inscribed circle diameter (m)	74	74	74	74
A	=	Entry angle (degree)	40	42	25	27
Q	=	Entry flow (pcu/h)	991	577	140	212
Qc	=	Circulating flow across entry (pcu/h)	129	657	1032	444
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.00	0.00	0.15	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.97	0.94	1.04	1.03
X2	=	V + ((E-V)/(1+2S))	7.30	6.75	5.26	7.30
M	=	EXP((D-60)/10)	4.06	4.06	4.06	4.06
F	=	303*X2	2212	2045	1593	2212
Td	=	1+(0.5/(1+M))	1.10	1.10	1.10	1.10
Fc	=	0.21*Td(1+0.2*X2)	0.57	0.54	0.47	0.57
Qe	=	K(F-Fc*Qc)	2064	1591	1151	2012
DFC	=	Design flow/Capacity = Q/Qe	0.48	0.36	0.12	0.11

Total In Sum = 1920 PCU

DFC of Critical Approach = 0.48

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J6_PM	PROJECT NO: 278463
J6 - Junction of Road P1 and Road D6	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



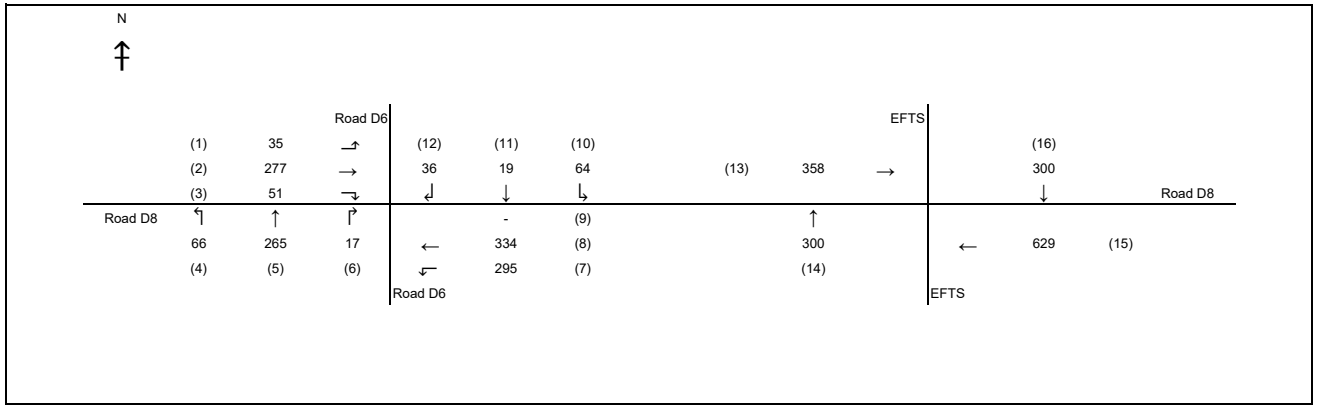


ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)	7.30	6.75	3.65	7.30
E	=	Entry width (m)	7.30	6.75	5.75	7.30
L	=	Effective length of flare (m)	1	1	22	1
R	=	Entry radius (m)	20	15	40	30
D	=	Inscribed circle diameter (m)	74	74	74	74
A	=	Entry angle (degree)	40	42	25	27
Q	=	Entry flow (pcu/h)	755	790	146	222
Qc	=	Circulating flow across entry (pcu/h)	276	439	1135	826
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L	0.00	0.00	0.15	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	0.97	0.94	1.04	1.03
X2	=	V + ((E-V)/(1+2S))	7.30	6.75	5.26	7.30
M	=	EXP((D-60)/10)	4.06	4.06	4.06	4.06
F	=	303*X2	2212	2045	1593	2212
Td	=	1+(0.5/(1+M))	1.10	1.10	1.10	1.10
Fc	=	0.21*Td(1+0.2*X2)	0.57	0.54	0.47	0.57
Qe	=	K(F-Fc*Qc)	1984	1702	1100	1790
DFC	=	Design flow/Capacity = Q/Qe	0.38	0.46	0.13	0.12

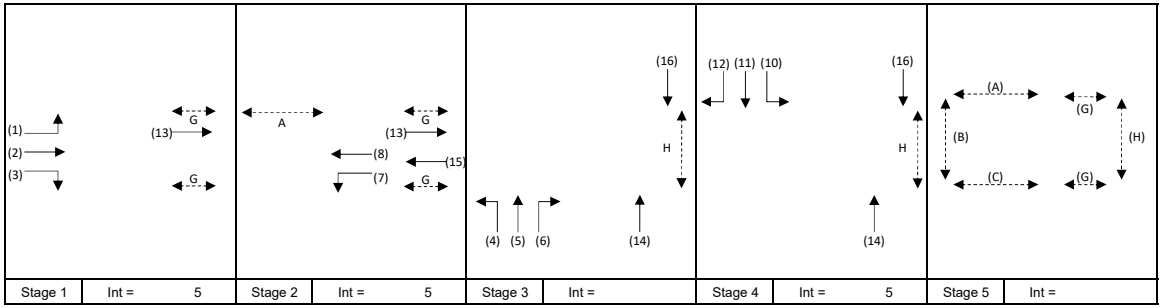
Total In Sum = 1913 PCU

DFC of Critical Approach = 0.46

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J7_AM	PROJECT NO: 278463
J7 - Junction of Road D6 and Road D8	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



No. of Stages per Cycle	N=	5
No. of Stage Using for Calculation	N=	3
Cycle Time	C=	120 sec
Sum(y)	Y=	0.351
Loss Time	L=	41 sec
Total Flow	=	3046 pcu
Co =(1.5*L+5)/(1-Y)	=	102 sec
Cm =L/(1-Y)	=	63 sec
Yult	=	0.593
R.C.ult =(Yult-Y)/Y*100%	=	68.9 %
Cp =0.9*L/(0.9-Y)	=	67.2 sec
Ymax =1-L/C	=	0.658
R.C.(C) =(0.9*Ymax-Y)/Y*100%	=	68.9 %

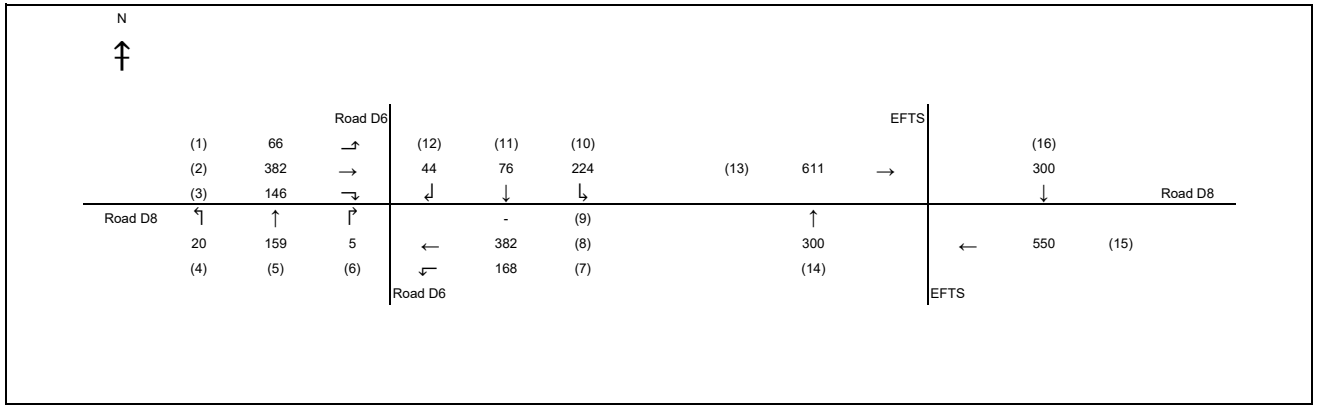


Stage 1	Int = 5	Stage 2	Int = 5	Stage 3	Int =	Stage 4	Int = 5	Stage 5	Int =

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,5	A	22.00	10	5	18	34	5	18	OK
5	B	19.00	8	5	16	8	5	16	OK
5	C	19.00	8	5	16	8	5	16	OK
5,1,2	G	17.00	8	5	14	63	5	14	OK
3,4,5	H	26.00	11	5	22	40	5	22	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				12				
																			S5	29				
13	1,2	3.50	A	3			N	6175		358		358	0.00	6175		-	6175	0.058			13	49	0.143	4
1,2	1	3.50	B	1	15		N	1965	35	140		175	0.20	1926		-	1926	0.091	0.091	0	20	21	0.531	24
2,3	1	3.50	B	1	20			2105		137	51	188	0.27	2063		-	2063	0.091			21	21	0.533	26
15	2	3.50	C	3				6315		629		629	0.00	6315		-	6315	0.100	0.107	0	22	24	0.496	9
7	2	3.50	C	1	15		N	1965	191			191	1.00	1786		-	1786	0.107			24	24	0.533	25
7,8	2	3.50	C	1	15			2105	104	110		214	0.49	2007		-	2007	0.107			24	24	0.531	29
8	2	3.50	C	1	15			2105		224		224	0.00	2105		-	2105	0.106			24	24	0.530	30
4,5	3	3.50	D	1	15		N	1965	66	99		165	0.40	1889		-	1889	0.087			20	20	0.524	23
5,6	3	3.50	D	1	20			2105		166	17	183	0.09	2090		-	2090	0.088			20	20	0.525	25
10,11	4	3.50	E	1	20		N	1965	64	0		64	1.00	1828		-	1828	0.035			8	10	0.404	10
11,12	4	3.50	E	1	20			2105		19	36	55	0.65	2006		-	2006	0.027			6	10	0.317	8
14	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153	0.153	0	34	34	0.533	107
16	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153			34	34	0.533	107
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	TRAFFIC SIGNAL CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J7_PM	PROJECT NO: 278463
J7 - Junction of Road D6 and Road D8	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:



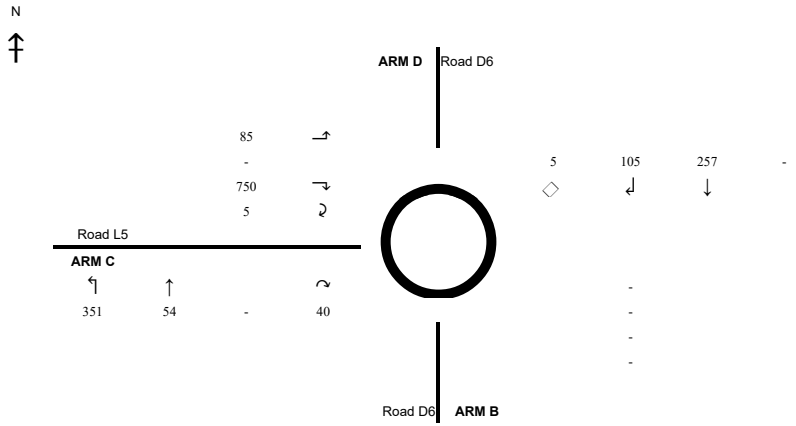
No. of Stages per Cycle	N=	5
No. of Stage Using for Calculation	N=	4
Cycle Time	C=	120 sec
Sum(y)	Y=	0.411
Loss Time	L=	45 sec
Total Flow	=	3433 pcu
Co =(1.5*L+5)/(1-Y)	=	123 sec
Cm =L/(1-Y)	=	76 sec
Yult	=	0.563
R.C.ult =(Yult-Y)/Y*100%	=	37.0 %
Cp =0.9*L/(0.9-Y)	=	82.8 sec
Ymax =1-L/C	=	0.625
R.C.(C) =(0.9*Ymax-Y)/Y*100%	=	37.0 %

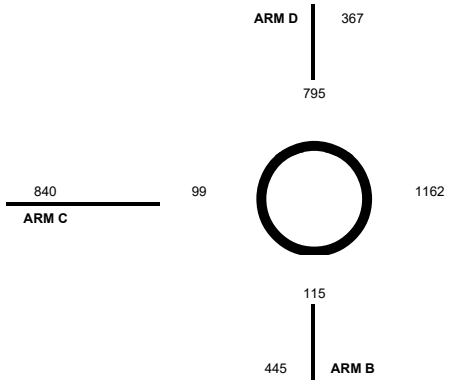
Stage 1	Int = 5	Stage 2	Int = 5	Stage 3	Int = 5	Stage 4	Int = 5	Stage 5	Int =

Pedestrian Stage	Pedestrian Phase	Width (m)	Green Time Required (s) SG	Delay	FG	Green Time Provided (s) SG	Delay	FG	Check
2,5	A	22.00	10	5	18	27	5	18	OK
5	B	19.00	8	5	16	8	5	16	OK
5	C	19.00	8	5	16	8	5	16	OK
5,1,2	G	17.00	8	5	14	62	5	14	OK
3,4,5	H	26.00	11	5	22	41	5	22	OK
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-
			-		-		-	-	-

Move-ment	Stage	Lane Width m.	Phase	No. of Lane	Radius m.	O	N	Straight-Ahead Sat. Flow	m Left pcu/h	m Straight pcu/h	m Right pcu/h	Total Flow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Uphill Gradient %	Short Lane Effect pcu/h	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queuing Length m.
																				16				
																			S5	29				
13	1,2	3.50	A	3			N	6175		611		611	0.00	6175		-	6175	0.099			18	48	0.246	7
1,2	1	3.50	B	1	15		N	1965	66	223		289	0.23	1921		-	1921	0.150	0.150	0	27	27	0.657	37
2,3	1	3.50	B	1	20			2105		159	146	305	0.48	2032		-	2032	0.150			27	27	0.656	39
15	2	3.50	C	3				6315		550		550	0.00	6315		-	6315	0.087	0.092	0	16	17	0.623	9
7	2	3.50	C	1	15		N	1965	164			164	1.00	1786		-	1786	0.092			17	17	0.657	25
7,8	2	3.50	C	1	15			2105	4	189		193	0.02	2101		-	2101	0.092			17	17	0.657	29
8	2	3.50	C	1	15			2105		193		193	0.00	2105		-	2105	0.092			17	17	0.656	28
4,5	3	3.50	D	1	15		N	1965	20	68		88	0.23	1921		-	1921	0.046	0.046	0	8	8	0.657	15
5,6	3	3.50	D	1	20			2105		91	5	96	0.05	2097		-	2097	0.046			8	8	0.657	16
10,11	4	3.50	E	1	20		N	1965	224	0		224	1.00	1828		-	1828	0.123	0.123	0	22	22	0.657	31
11,12	4	3.50	E	1	20			2105		76	44	120	0.37	2049		-	2049	0.059			11	22	0.314	16
14	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153			28	35	0.527	107
16	3,4	3.50	F	1			N	1965		300		300	0.00	1965		-	1965	0.153			28	35	0.527	107
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-
								-				-	-	-		-	-	-			-		-	-

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J8_AM	PROJECT NO: 278463
J8 - Junction of Road D6 and Road L18	Year 2036 Design Case (AM Peak)	DATE: 09-Sep-25	FILENAME:



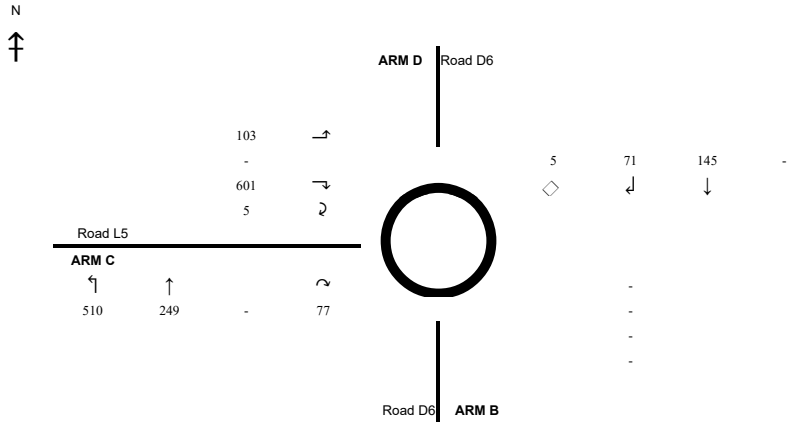


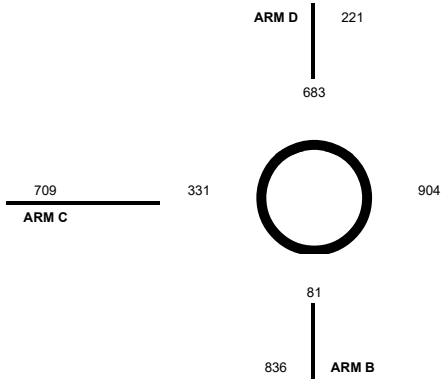
ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)		7.30	5.15	7.30
E	=	Entry width (m)		7.30	6.50	7.30
L	=	Effective length of flare (m)		1	18.5	1
R	=	Entry radius (m)		20	25	20
D	=	Inscribed circle diameter (m)		64	64	64
A	=	Entry angle (degree)		45	35	40
Q	=	Entry flow (pcu/h)		445	840	367
Qc	=	Circulating flow across entry (pcu/h)		115	99	795
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L		0.00	0.12	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)		0.95	0.99	0.97
X2	=	V + ((E-V)/(1+2S))		7.30	6.24	7.30
M	=	EXP((D-60)/10)		1.49	1.49	1.49
F	=	303*X2		2212	1892	2212
Td	=	1+(0.5/(1+M))		1.20	1.20	1.20
Fc	=	0.21*Td(1+0.2*X2)		0.62	0.57	0.62
Qe	=	K(F-Fc*Qc)		2029	1822	1659
DFC	=	Design flow/Capacity = Q/Qe		0.22	0.46	0.22

Total In Sum = 1652 PCU

DFC of Critical Approach = 0.46

OVE ARUP & PARTNERS	ROUNDABOUT CALCULATION		
Hung Shui Kiu Phase 2 D&C		SHEET: J8_PM	PROJECT NO: 278463
J8 - Junction of Road D6 and Road L18	Year 2036 Design Case (PM Peak)	DATE: 09-Sep-25	FILENAME:





ARM			A	B	C	D
INPUT PARAMETERS:						
V	=	Approach half width (m)		7.30	5.15	7.30
E	=	Entry width (m)		7.30	6.50	7.30
L	=	Effective length of flare (m)		1	18.5	1
R	=	Entry radius (m)		20	25	20
D	=	Inscribed circle diameter (m)		64	64	64
A	=	Entry angle (degree)		45	35	40
Q	=	Entry flow (pcu/h)		836	709	221
Qc	=	Circulating flow across entry (pcu/h)		81	331	683
OUTPUT PARAMETERS:						
S	=	Sharpness of flare = 1.6(E-V)/L		0.00	0.12	0.00
K	=	1-0.00347(A-30)-0.978(1/R-0.05)		0.95	0.99	0.97
X2	=	V + ((E-V)/(1+2S))		7.30	6.24	7.30
M	=	EXP((D-60)/10)		1.49	1.49	1.49
F	=	303*X2		2212	1892	2212
Td	=	1+(0.5/(1+M))		1.20	1.20	1.20
Fc	=	0.21*Td(1+0.2*X2)		0.62	0.57	0.62
Qe	=	K(F-Fc*Qc)		2049	1691	1726
DFC	=	Design flow/Capacity = Q/Qe		0.41	0.42	0.13

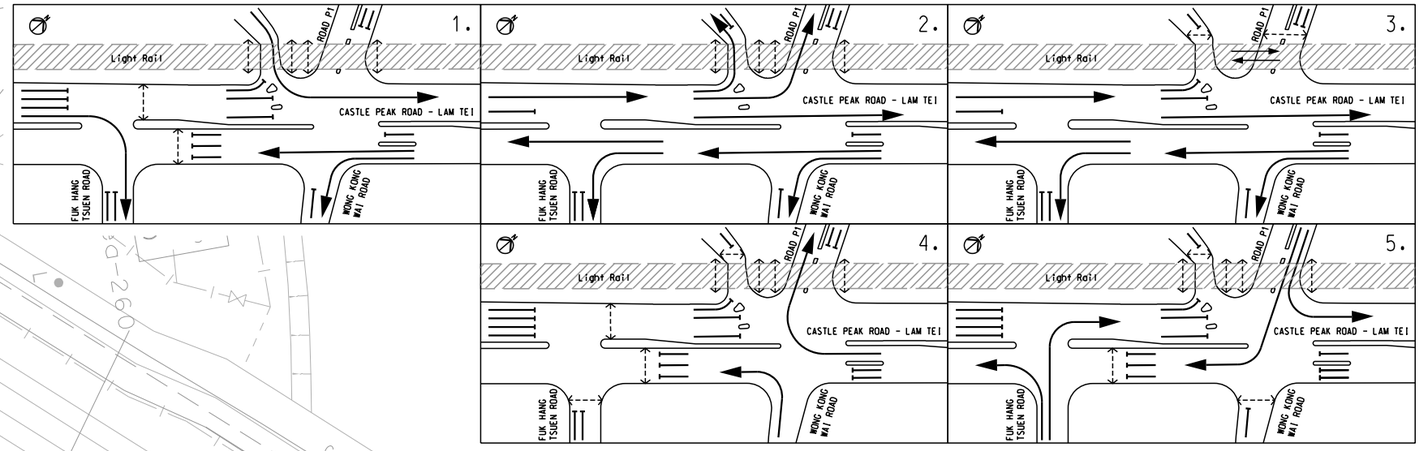
Total In Sum = 1766 PCU

DFC of Critical Approach = 0.42

Appendix D

Future Junction Layouts

PROPOSED METHOD OF CONTROL



CASTLE PEAK ROAD - LAM TEI

FUK HANG TSUEN ROAD

KONG SHAM WESTERN HIGHWAY

WONG KONG WAI ROAD

ROAD P1

Cycling Track

Fuk Hang Playground

Use Pedestrian Crossing 請使用行人過路處

Fuk Nong Tsuen Road 福寧村路 Lam Tei Main Street 藍地大街

New Junction under HSK/HT NDA Second Phase adopted for Years 2036 Assessment

NOTES:

1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

LEGEND:

COMMITTED JUNCTION IMPROVEMENT SCHEME BY OTHERS

PLANNED JUNCTION IMPROVEMENT SCHEME UNDER HSK/HT NDA SECOND PHASE

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title

JUNCTION LAYOUT PLAN - J1
CASTLE PEAK ROAD / ROAD P1/
FUK HANG TSUEN ROAD

Drawing no.			Rev.
			–
Drawn: WKKL	Date: 04/21	Checked: CFEI	Approved: DL
Scale: 1:250 @ A1		Status: PRELIMINARY	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 8/11/2022
Filename : M:\Drawing\278000\278463_CE1_2020_CE_Hung_Shui_Kiu_Phase_2_D&C\01_Drawing\Traffic_Signs_and_Road_Marking_Layout_Plan\20221027 (278463_T_0001-0049_S16_EFTS)\278463_T_0038A.dgn

N

Tin Ha Road Playground

TIN HA ROAD

Basketball Court

Basketball Court

Cycle Parking Place-Parking Advice
1. This parking place is for pedal cycles only.
2. No parking is allowed for a continuous period of more than 24 hours.
3. Pedal cycles must be parked at the parking racks.
4. This parking place may be suspended for use from time to time to clear any pedal cycles left.

單車泊車處-停泊須知
1.此泊車處僅供單車停泊。
2.單車不可連續停泊超過24小時。
3.單車必須停放於停泊架。
4.此泊車處會不定期被中止使用，以清理存放的單車。

Ha Tsuen 廈村
Lau Fau Shan 流浮山

Advice to Public
...parking place may be suspended for use from time to time to ...y pedal cycles left.
...regarding suspension of use will be posted at least 14 days ...the suspension. The public is/shall not leave their pedal cycles in ...ng places after the date specified in the notice.
...ing of pedal cycles is allowed during the suspension period of ...ing places.
...rity will take possession of and remove all pedal cycles left ...rking place during the period of suspension.

一般須知
...泊車處會不定期被中止使用，以清理存放的單車。
...通知日期後，不得將單車留在泊車處。
...被中止後，單車不准停泊。
...用期間將存放在此泊車處的單車，當局會依例搬...單車。

CASTLE PEAK ROAD - HUNG SHUI KIU

FP Cycling Track

Cycling Track

Light Rail

Open Storage

TS

Do Not cross Here
Please Use Footbridge
勿在此橫過馬路
請使用行人天橋
N-TS664

Cyclists dismount
Use footbridge to cross the road
騎單車者到此下車
使用天橋橫過馬路
N-TS69

BAUHINIA GARDEN

Block 5

Block 3

TIN TEI YAN ROAD

STOP 停

50 km/h

70 km/h

12.5

Rev	Description	By	Date

Consultant
ARUP

Project Title
Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title
JUNCTION LAYOUT PLAN - J2
CASTLE PEAK ROAD / TIN HA ROAD

Drawing no.	Rev.
	–

Drawn	Date	Checked	Approved
WKKL	04/21	CFEI	DL

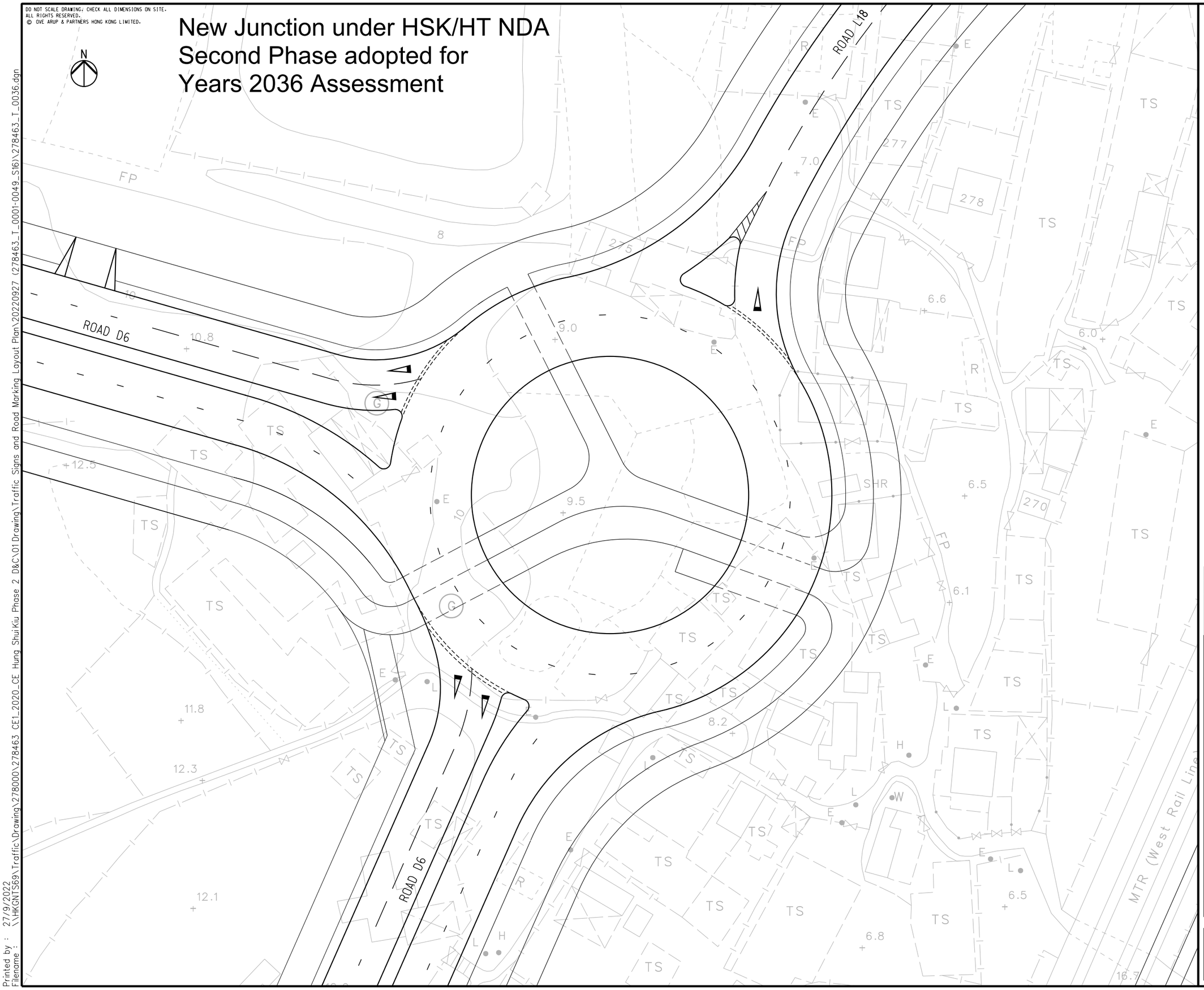
Scale 1:250 @ A1
Status PRELIMINARY

土木工程拓展署
Civil Engineering and Development Department

NOTES:
1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

Printed by : 27/9/2022
Filename : \\HKGNTS69\Traffic\Drawing\278000\278463_CE1_2020_CE_Hung_Shui_Kiu_Phase_2_D&C\01_Drawing\Traffic_Signs_and_Road_Marking_Layout_Plan\20220927 (278463_T_0001-0049_S16)\278463_T_0020.dgn

New Junction under HSK/HT NDA
Second Phase adopted for
Years 2036 Assessment



NOTES:
1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

Rev	Description	By	Date

Consultant
ARUP

Project Title
Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title
JUNCTION LAYOUT PLAN - J3
ROAD D6 / ROAD L18

Drawing no.			Rev.
			–
Drawn: WKKL	Date: 04/21	Checked: CFEI	Approved: DL
Scale: 1:250 @ A1		Status: PRELIMINARY	

土木工程拓展署
Civil Engineering and Development Department

Printed by : 27/9/2022
Filename : \\HKGNTS69\Traffic\Drawing\278000\278463_CE1_2020_CE_Hung_ShuiKiu_Phase_2_D&C\01_Drawing\Traffic_Signs_and_Road_Marking_Layout_Plan\20220927 (278463_T_0001-0049_S16)\278463_T_0036.dgn

New Junction under HSK/HT NDA Second Phase adopted for Years 2036 Assessment

N

Open Storage

KONG SHAM WESTERN HIGHWAY

ROAD P1

ROAD D7

KLUO

Hd Sh

Ah 3603

27.3
34.7
33.7
22.7
23.5
25.1
27.3
33.5
26.6

80 km/h

NOTES:
1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title

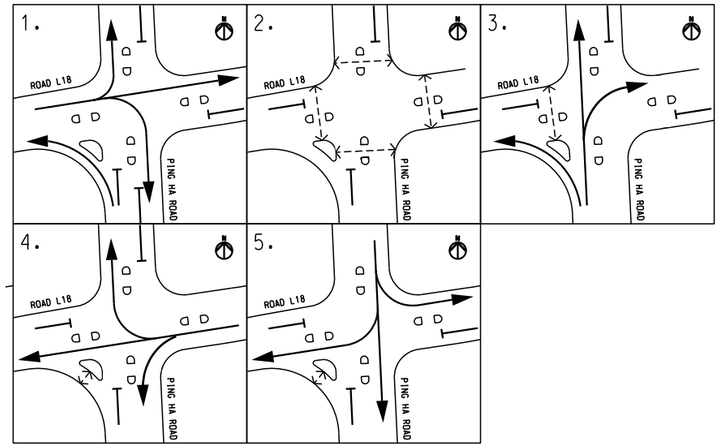
JUNCTION LAYOUT PLAN - J4
ROAD P1 / ROAD D7

Drawing no.			Rev.
			–
Drawn: WKKL	Date: 04/21	Checked: CFEI	Approved: DL
Scale: 1:250 @ A1		Status: PRELIMINARY	

土木工程拓展署
Civil Engineering and Development Department

Printed by : 27/9/2022
Filename : \\HKGNTS69\Traffic\Drawing\278000\278463 CE1_2020_CE Hung Shui Kiu Phase 2 D&C\01 Drawing\Traffic Signs and Road Marking Layout Plan\20220927 (278463_T_0001-0049_S16)\278463_T_0037.dgn

PROPOSED METHOD OF CONTROL



N

TIN HA ROAD

MTR (West Rail Line)

ROAD L18

TIN HA ROAD

Ramp

Outfall

Nullah

New Junction under HSK/HT NDA
Second Phase adopted for
Years 2036 Assessment

NOTES:

1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

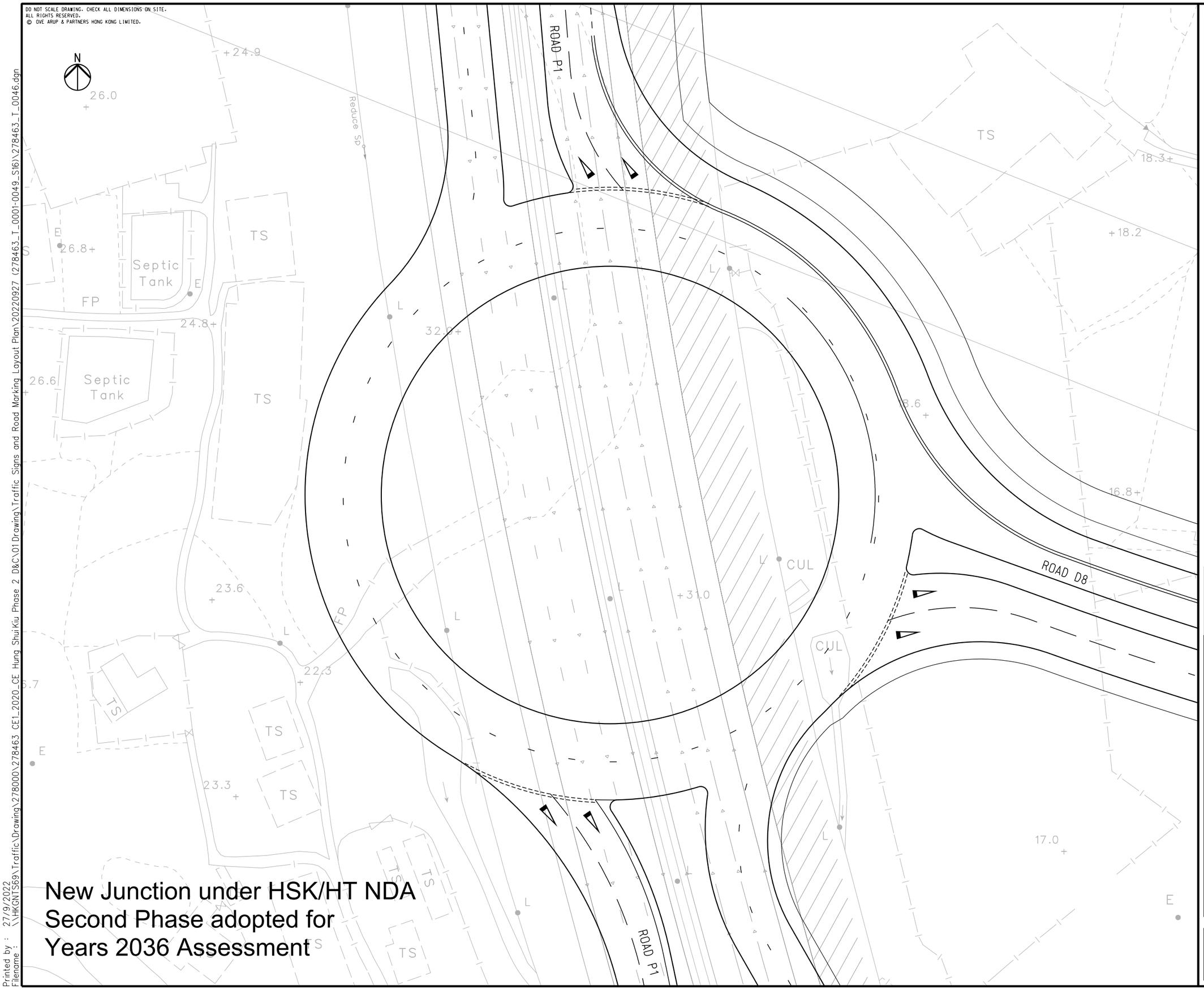
Drawing title

JUNCTION LAYOUT PLAN - J5
TIN HA ROAD / ROAD L18

Drawing no.			Rev.
			-
Drawn: WKKL	Date: 04/21	Checked: CFEI	Approved: DL
Scale: 1:250 @ A1		Status: PRELIMINARY	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 27/9/2022
Filename : \\HKGNTS69\Traffic\Drawing\278000\278463 CE1_2020_CE Hung Shui Kiu Phase 2 D&C\01 Drawing\Traffic Signs and Road Marking Layout Plan\20220927 (278463_T_0001-0049_S16)\278463_T_0041.dgn



New Junction under HSK/HT NDA
Second Phase adopted for
Years 2036 Assessment

NOTES:

1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title

JUNCTION LAYOUT PLAN - J6
ROAD P1 / ROAD D8

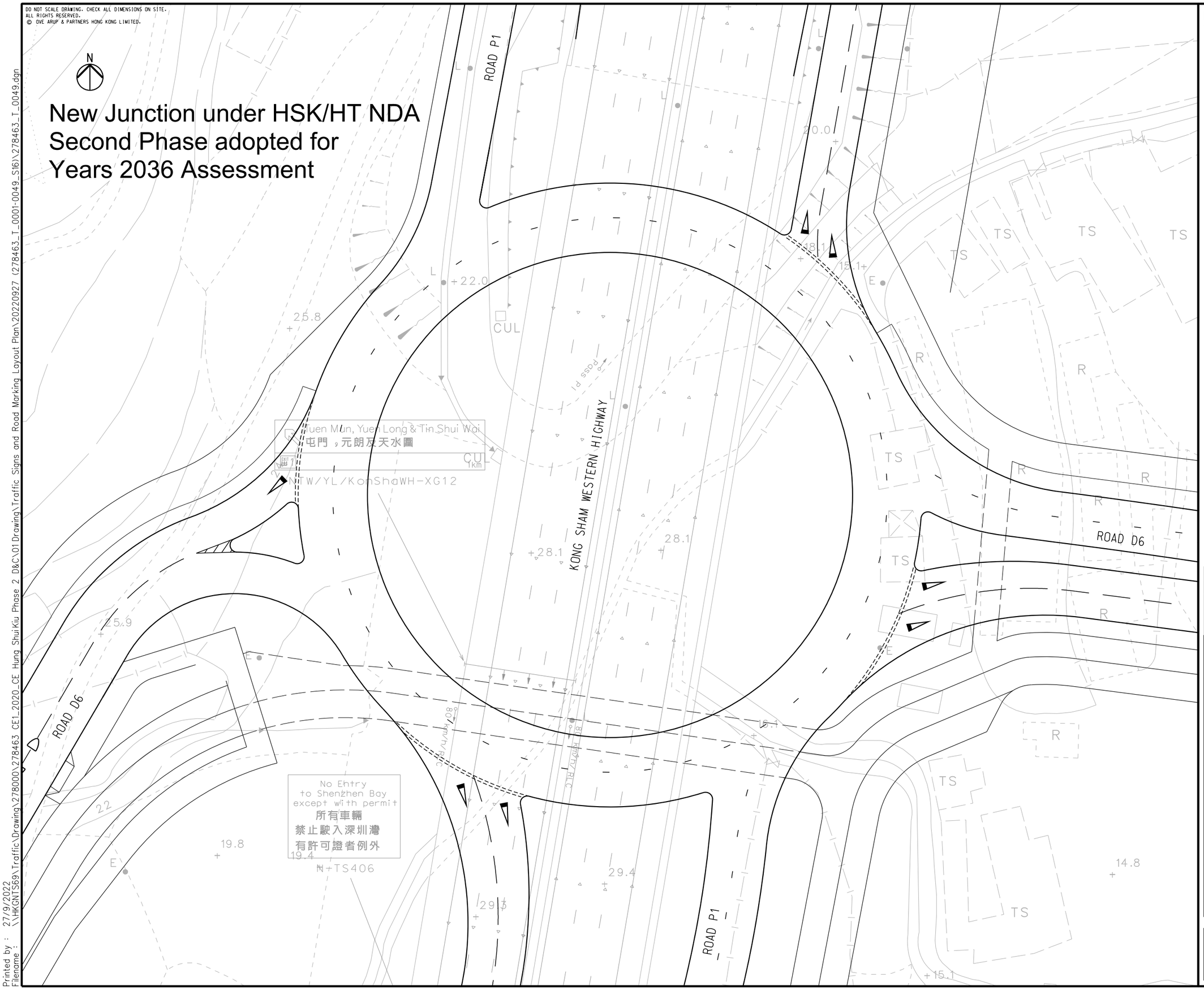
Drawing no.			Rev.
			–
Drawn: WKKL	Date: 04/21	Checked: CFEI	Approved: DL
Scale: 1:250 @ A1		Status: PRELIMINARY	

CEDD 土木工程拓展署
Civil Engineering and Development Department

Printed by : 27/9/2022
Filename : \\HKGNTS69\Traffic\Drawing\278000\278463_CE1_2020_CE_Hung_Shui Kiu_Phase_2_D&C\01 Drawing\Traffic Signs and Road Marking Layout Plan\20220927 (278463_T_0001-0049_S16)\278463_T_0046.dgn

N

New Junction under HSK/HT NDA Second Phase adopted for Years 2036 Assessment



NOTES:

1. FOR NOTES AND LEGEND, REFER TO DWG.NO. 278463/T/0001.

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title

JUNCTION LAYOUT PLAN - J8
ROAD P1/ROAD D6

Drawing no.			Rev.
			-
Drawn: WKKL	Date: 04/21	Checked: CFEI	Approved: DL
Scale: 1:250 @ A1		Status: PRELIMINARY	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 27/9/2022
Filename : \\HKGNTS69\Traffic\Drawing\278000\278463_CE1_2020_CE Hung Shui Kiu Phase 2 D&C\01 Drawing\Traffic Signs and Road Marking Layout Plan\20220927 (278463_T_0001-0049_S16)\278463_T_0049.dgn

N

New Junction under HSK/HT NDA
Second Phase adopted for
Years 2036 Assessment

ROAD D6

ROAD D8

EFTS

MTR (West Rail Line)

LEGEND :

PROPOSED ROAD MARKING

Rev	Description	By	Date

Consultant

ARUP

Project Title

Agreement No. CE 1/2020 (CE)
Hung Shui Kiu / Ha Tsuen
New Development Area Package A
Works for Second Phase Development
– Design and Construction

Drawing title

JUNCTION LAYOUT PLAN - J9
ROAD D6/ROAD D8

Drawing no.			Rev.
			–
Drawn: WKKL	Date: 08/21	Checked: CFEI	Approved: DL
Scale: 1:250 @ A1		Status: PRELIMINARY	

CEDD 土木工程拓展署
Civil Engineering and Development Department

Printed by : 2/11/2022
Filename : M:\Drawing\278000\278463 CE1_2020_CE Hung Shui Kiu Phase 2 D&C\01 Drawing\Traffic Signs and Road Marking Layout Plan\20221027 (278463_T_JA01-JA12_S16_EFTS)\278463_T_JA01.dgn