

立法會工務小組委員會
2019年1月30日的會議

821CL—油塘欣榮街公營房屋發展之
工地平整及基礎設施工程
補充資料

目的

立法會工務小組委員會於2019年1月30日審議上述工程計劃(見PWSC(2018-19)36號文件)時，委員要求政府提交以下補充資料。

- (一) 油塘欣榮街公營房屋計劃的設計佈局，以及有何無障礙通道及升降機等設施，以連接油塘欣榮街公營房屋計劃及相鄰的車站、商場及屋邨；
- (二) 油塘欣榮街公營房屋計劃的附屬社福設施的詳細資料，包括個別設施的面積、受惠人數及服務範圍；
- (三) 油塘欣榮街公營房屋計劃的附屬幼稚園和幼兒中心所提供的全日制學額數目；
- (四) 政府當局有何計劃在油塘及鯉魚門一帶加設貨車泊車位；以及
- (五) 油塘及鯉魚門一帶未來數年的公營及私人房屋發展計劃詳情，包括位置圖、建屋數量、預計入伙日期，以及對區內交通所帶來的影響評估(請提供有關交通影響評估報告)。

政府回應

2. 我們綜合相關部門提供的資料後，就當中的事宜逐點回

覆如下。

- (一) 鯉魚門邨現有的有蓋無障礙通道及升降機等設施已經連接到相鄰的大本型商場及巴士總站、油美苑以及油塘地鐵站。現有的有蓋無障礙通道將會伸延連接到擬議油塘欣榮街公營房屋發展計劃(下稱「油塘公營房屋計劃」)。

—— 有蓋無障礙通道平面圖載於附件一。

- (二) 擬議油塘公營房屋計劃的附屬社福設施，其中及包括日間幼兒中心和幼稚園的詳細資料如下。

(三)

(1) 日間幼兒中心：該資助獨立幼兒中心為三歲以下幼兒提供 100 個全日制託兒服務名額。服務時間為星期一至五，上午八時至下午六時；星期六上午八時至下午一時。該中心亦會提供輔助服務包括延長時間服務及暫託幼兒服務，以協助工作時間較長、需要處理突發事情或其他事宜的家長照顧其子女。

(2) 幼稚園暨幼兒中心：為兩歲至六歲以下的幼兒提供 140 個全日制日間照顧及教育服務名額。該幼稚園暨幼兒中心亦會提供輔助服務包括延長時間服務、暫託幼兒服務及幼稚園暨幼兒中心兼收計劃。服務時間與上述的資助獨立幼兒中心相若。

(3) 到校學前康復服務辦事處：為兩隊到校學前康復服務的跨專業團隊提供辦公地點。該團隊為已參與「到校學前康復服務」的幼稚園／幼稚園暨幼兒中心內就讀約 200 名 6 歲以下輕度殘疾幼兒提供到校訓練服務和配合設有康復

設施的中心訓練；為教師、幼兒工作人員提供到校專業諮詢服務和示範／講座／工作坊／研討會；以及為家長／照顧者提供講座／工作坊／研討會。

(4) 長者日間護理中心：為區內身體機能達中度或嚴重缺損的體弱或認知障礙症長者於日間提供照顧及支援服務，協助他們保持最佳活動能力、發展潛能及改善生活質素，使他們能夠在熟悉的社區安老。中心將提供 60 個名額。此外，又為其護老者提供各類支援和協助，使他們更有動力繼續承擔護老者的責任。

(5) 安老院舍：提供 250 個安老宿位（包括資助及非資助宿位），旨在為一些健康欠佳、身體殘疾、認知能力欠佳及在「安老服務統一評估機制」下被評為中度或嚴重缺損而未能自我照顧起居，但在精神上適合群體生活的長者，提供住宿照顧、膳食、起居照顧、定時的基本醫療和護理及社會支援服務。

(6) 長者鄰舍中心：該中心是在鄰舍層面，為約 700 名區內長者提供一系列支援服務，包括安排社交、康樂及發展性活動、外展服務、義工服務、社區健康教育、輔導及護老者支援服務，使長者能夠健康及有尊嚴地生活。長者鄰舍中心的服務對象包括區內居住的長者、護老者及社區人士。

(7) 殘疾人士社交及康樂中心：讓不同年齡的殘疾人士有機會參加及組織社交、康樂及體育等不同種類的活動。

(8) 自閉症人士支援中心：每年為約 80 名 15

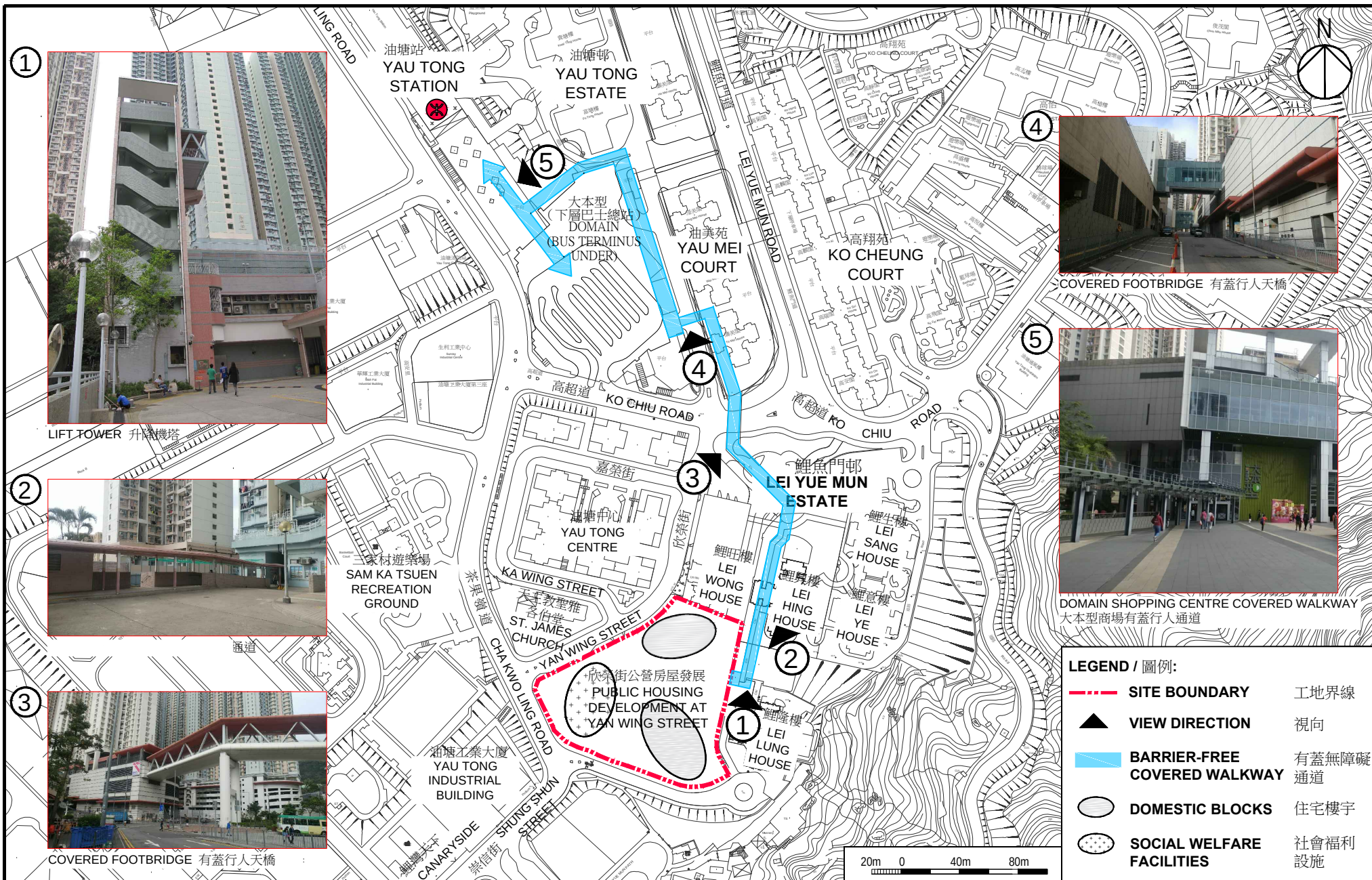
歲或以上高能力自閉症青少年提供專業支援及訓練，以提升生活、社交、就業等技能，並應付步入成年階段的種種挑戰；亦為其家長／照顧者提供支援服務；及為服務自閉症人士的前線員工提供諮詢服務和專業培訓。

- (四) 為增加區內泊車位供應，運輸署要求發展項目以《香港規劃標準與準則》範圍內較高的泊車位參數作為規劃指標，當中包括提供輕型貨車、中重型貨車及／或旅遊巴泊位。另外，因應發展項目周邊的泊車需求，地契條款內亦已要求發展項目提供額外的公眾泊車位。除私家車公眾泊位外，鯉魚門徑發展項目將提供 10 個輕型貨車公眾泊位、仁宇圍和崇信街交界處的綜合發展區將提供 24 個輕型貨車公眾泊位及 25 個中重型貨車公眾泊位、以及油塘灣綜合發展區將提供 2 個旅遊巴公眾泊位。
- (五) 由於香港房屋委員會委託顧問公司於 2016 年擬議油塘公營房屋計劃所進行的交通影響評估報告中的部份資料由第三者提供，而資料提供者表示不願透露該等資料，故我們現僅能提供一份經刪除相關第三者資料後的交通影響評估，以供參考(附件二)。
-

此交通影響評估報告已考慮了油塘及鯉魚門一帶規劃中的公營及私人房屋發展計劃。有關上述的建屋參數、預計落成日期及位置圖，請分別參閱交通影響評估報告中的表 4.2 及圖 4.1。

運輸及房屋局
房屋署
社會福利署
運輸署

2019 年 2 月



PROJECT / 工程項目
**PUBLIC HOUSING DEVELOPMENT
 AT YAN WING STREET, YAU TONG**
 油塘欣榮街公營房屋發展

DRAWING TITLE / 圖標題
**BARRIER-FREE COVERED
 WALKWAY PLAN**
 有蓋無障礙通道平面圖



房屋署
 HOUSING DEPARTMENT

DATE / 日期
 14/2/2019

DRAWING NO. / 圖編號
 KT25/4/A/SK-014

26/01/2016

Reference number: [REDACTED]

**TERM TRAFFIC AND ENVIRONMENTAL CONSULTANCY
SERVICES 2015 - 2016
INSTRUCTION NO. M28
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE
PHASE 4
TRAFFIC IMPACT ASSESSMENT STUDY
FINAL REPORT**



Hong Kong Housing Authority
香港房屋委員會

In association with
Mott MacDonald Hong Kong Ltd.
ENVIRON Hong Kong Ltd.
Cinotech Consultants Ltd.
Maurice Lee & Associates Ltd.



PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4

TRAFFIC IMPACT ASSESSMENT STUDY

IDENTIFICATION TABLE	
Client/Project owner	Hong Kong Housing Authority
Project	Public Housing Development at Lei Yue Mun Estate Phase 4
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APPROVAL					
Version	Name		Position	Date	Modifications
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1. INTRODUCTION

1.1 Background

1.1.1 MVA Hong Kong Limited (MVA) was commissioned by the Hong Kong Housing Authority (HKHA) in 2015 to conduct a Traffic Impact Assessment (TIA) study for Lei Yue Mun Estate Phase 4. **Drawing No. 1.1** shows the location of the development site.

1.1.2 This TIA study is to examine the impact of the traffic generated by the proposed development on the existing road networks in the near vicinity. Any deficiency would be identified and improvement proposals would be recommended if necessary to resolve any foreseeable problem.

1.2 Study Objectives

1.2.1 The main objectives of the study are as follows:

1.2.2 to assess the existing traffic conditions in the vicinity of the proposed development;

1.2.3 to forecast traffic demands on the adjacent road network in the design year 2027;

1.2.4 to estimate the likely traffic generated by the proposed development based on the updated planning parameters;

1.2.5 to assess the impacts of traffic generated by the proposed development on the adjacent road network;

1.2.6 to recommend improvement measures, if necessary, to alleviate any traffic problems on the road network; and

1.2.7 to investigate the public transport and pedestrian needs in the near vicinity.

1.3 Structure of the Report

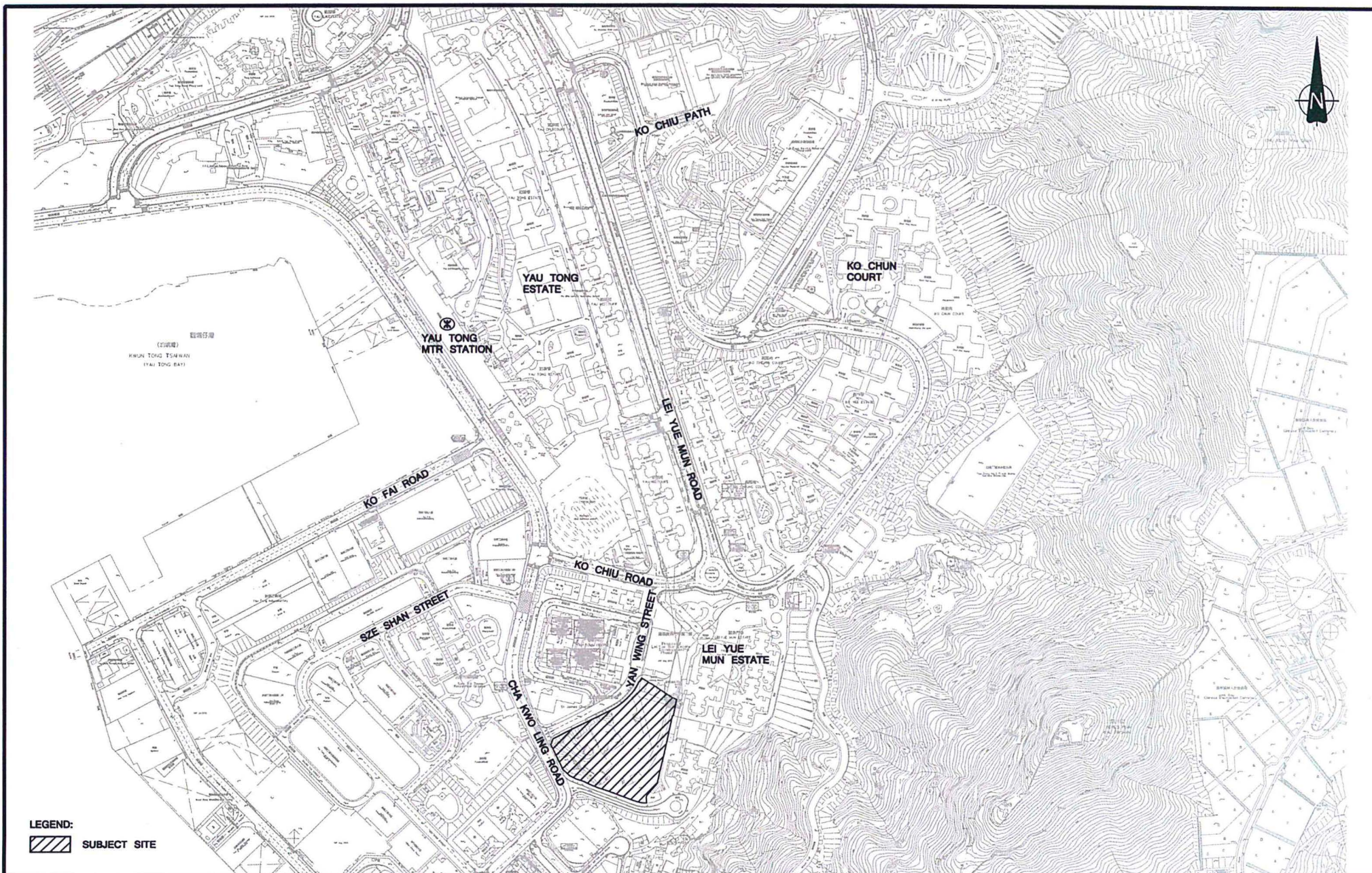
1.3.1 Following this introductory chapter, there are six further chapters.

1.3.2 **Chapter 2 – The Proposed Development**, which presents the planning parameters of the proposed development.

1.3.3 **Chapter 3 – Existing Traffic Conditions**, which describes the existing road network in the vicinity of the proposed development, presents the summary of traffic count survey and assesses the existing traffic conditions.

1.3.4 **Chapter 4 – Future Traffic Conditions**, which discusses the potential traffic generations and attractions of the proposed development under the updated development proposal. It also summarises the methodology for future traffic forecasts.

- 1.3.5 **Chapter 5 – Traffic Impact Assessment**, which presents the findings of the traffic impact assessment in the future design year and recommends improvement measures, if necessary.
- 1.3.6 **Chapter 6 – Public Transport Provisions Service and Pedestrian Facilities**, which provides an examination of the provisions of public transport and pedestrian facilities in the vicinity of the proposed development.
- 1.3.7 **Chapter 7 – Summary and Conclusion**, which summarises the findings of the study and presents the conclusion regarding the traffic issues of the proposed development.



LEGEND:
 SUBJECT SITE

Rev.	Description	Checked	Date

Project Title
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4

Drawing Title
SITE LOCATION
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2. THE PROPOSED DEVELOPMENT

2.1 Site Location

2.1.1 As shown in **Drawing No. 1.1**, the development site is located at Yan Wing Street which is bounded by Yan Wing Street to the North, Cha Kwo Ling Road to the West and Lei Lung House to the East.

2.2 Proposed Development

2.2.1 The proposed development is planned as an integrated development consist of public housing use and ancillary facilities. **Table 2.1** summarises the development parameters. The proposed development is scheduled to be completed by 2024.

Table 2.1 Development Parameters

Component	Development Parameter
Public Rental Housing (PRH)	2,400 flats (including 612 flats of 1/2P)
Welfare Facilities at the Basement Floor	Podium

2.3 Vehicular Access of Proposed Development

2.3.1 As shown in **Drawing No. 2.1**, the vehicular access of the proposed development will be located at Yan Wing Street. At present Yan Wing Street is a single-2 lane one-way carriageway running in north-west direction.

2.3.2 Taking into account of the level difference within the site, a separate vehicular access for the welfare facilities (at the basement floor) will be located at the estate road of Lei Yue Mun Estate at the end of Cha Kwo Ling Road.

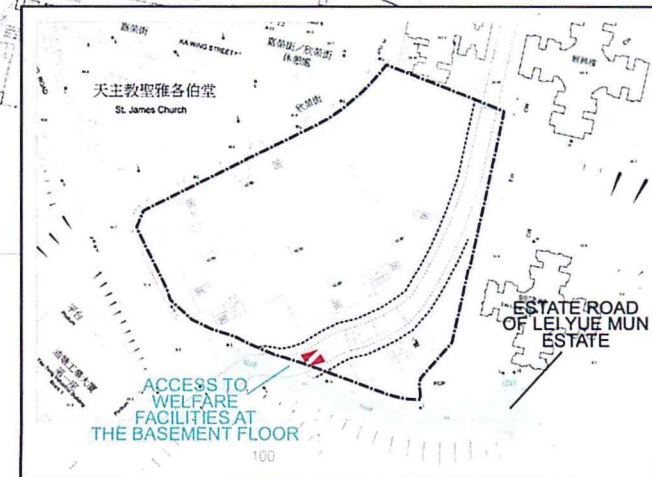
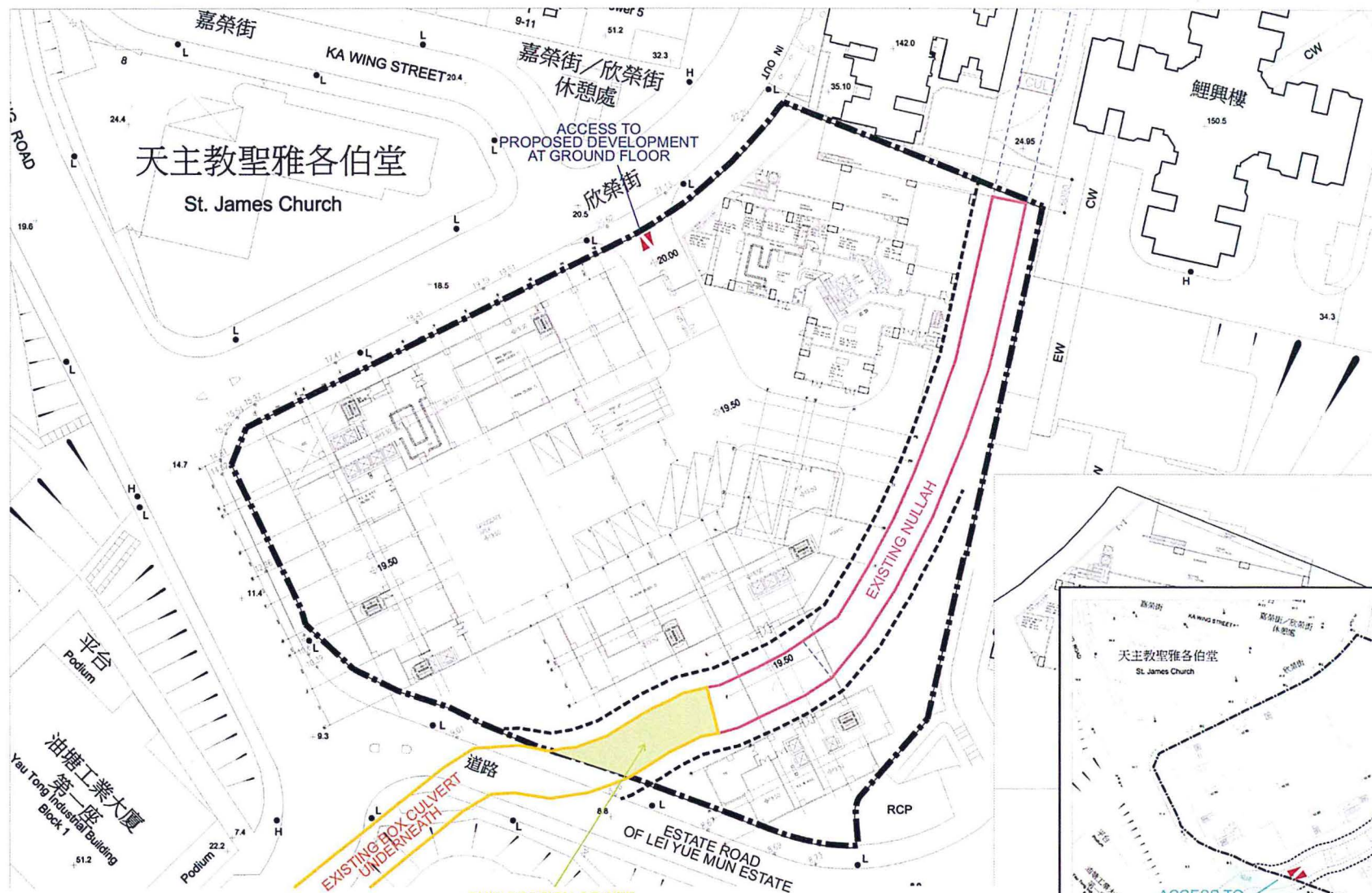
2.4 Parking and Servicing Facilities Provisions of Proposed Development

2.4.1 Based on the proposed development parameters in **Table 2.1**, Hong Kong Planning Standards and Guidelines (HKPSG) and District-based Parking Standards (DBPS), the proposed parking provisions for the proposed development are summarized in **Table 2.2**.

Table 2.2 Proposed Parking Provisions for Proposed Development

Parking Facilities	Standard	Requirements	Proposed Provision
Public Rental Housing (PRH)			
Car Parking Spaces	1 per 34-37 flats (2400 flats including 612 1/2P flats) ⁽¹⁾⁽²⁾	49-53	54 ⁽⁴⁾
Motorcycle Parking	1 per 130 flats (2400 flats including 612 1/2P flats) ⁽¹⁾⁽²⁾	14	14
LGV Parking Spaces	1 per 200-400 flats (2400 flats including 612 1/2P flats) ⁽¹⁾⁽²⁾	5-9	9
L/UL Bay	1 HGV per block (3 Blocks) ⁽³⁾	3 HGV	3 HGV

Remark: (1) Based on DBPS Requirements (Kwun Tong District)
 (2) 1/2P flats are excluded from parking provision
 (3) Based on HKPSG Requirements
 (4) According to HKPSG, the current proposal of 54 parking spaces includes 2 accessible parking spaces
 (HKPSG Requirement: 1 for 1-50 carparking space, 2 for 51-150 carparking space, 3 for 151-250 carparking space, 4 for 251-350 carparking space and 5 for 351-450 carparking space and 6 for above 450 carparking space)



Rev.	Description	Checked	Date
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Project Title

PUBLIC HOUSING DEVELOPMENT
AT LEI YUE MUN ESTATE PHASE 4

Drawing Title

GROUND FLOOR PLAN OF PROPOSED DEVELOPMENT

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3. EXISTING TRAFFIC CONDITIONS

3.1 Existing Road Network

- 3.1.1 **Drawing No. 3.1** shows the existing road network that serves the proposed development. The proposed development is mainly served by Ko Chiu Road, Cha Kwo Ling Road and Lei Yue Mun Road.
- 3.1.2 Yan Wing Street is a single-2 lane one-way carriageway running from north to west, which is the immediate access of the proposed development.
- 3.1.3 Ko Chiu Road is a local distributor which links up Yau Tong with various estates in the upper Lam Tin area and connects to Sau Mau Ping Road.
- 3.1.4 Lei Yue Mun Road is a dual-2 lanes primary distributor whereas Cha Kwo Ling Road is mainly a single-4 lanes district distributor and both of them provide direct and convenient connections to the Eastern Harbour Crossing linking to Hong Kong Island, to the Kwun Tong Bypass linking to other parts of Kowloon and the New Territories. They also connect to Tseung Kwan O Road at Lam Tin linking to Tseung Kwan O.

3.2 Critical Junctions

- 3.2.1 Eight junctions were identified to be critical for assessment of traffic impact due to the proposed development. They are listed in **Table 3.1** below.

Table 3.1 Critical Junctions for Assessment

Ref.	Junction	Type	Drawing No.
A	Lei Yue Mun Road / Ko Chiu Road (N)	Signal	3.2
B	Lei Yue Mun Road / Yau Tong Estate Southern Access	Signal	3.3
C	Lei Yue Mun Road/Ko Chiu Road (S)	Roundabout	3.4
D	Cha Kwo Ling Road/Ko Fai Road	Priority	3.5
E	Cha Kwo Ling Road / Ko Chiu Road	Signal	3.6
F	Cha Kwo Ling Road / Sze Shan Street	Priority	3.7
G	Cha Kwo Ling Road / Yan Wing Street	Priority	3.8
H	Cha Kwo Ling Road / Access Road	Priority	3.9

- 3.2.2 The locations of the above eight junctions are illustrated in **Drawing No. 3.1**. The existing junction layout arrangements and method of control for Junction A to Junction H are shown in **Drawings No. 3.2 to 3.9** respectively.
- 3.2.3 In order to appraise the existing traffic conditions of these junctions, a traffic survey in the form of manual classified count was conducted at a typical weekday in September 2015. Analysis of the observed traffic data indicates that the AM and PM peak hour flows occurred from 7:30 to 8:30 and from 17:30 to 18:30 respectively. The results are shown in **Drawing No. 3.10**.
- 3.2.4 Existing operational performance of the critical junctions and the results are listed in **Table 3.2** below.

Table 3.2 Operational Performance of Critical Junctions in 2015

Ref.	Junction	Type	2015 RC/RFC	
			AM Peak	PM Peak
A	Lei Yue Mun Road / Ko Chiu Road (N)	Signal	73%	>100%
B	Lei Yue Mun Road / Yau Tong Estate Southern Access	Signal	>100%	>100%
C	Lei Yue Mun Road/Ko Chiu Road (S)	Roundabout	0.34	0.43
D	Cha Kwo Ling Road/Ko Fai Road	Priority	0.79	0.80
E	Cha Kwo Ling Road / Ko Chiu Road	Signal	63%	72%
F	Cha Kwo Ling Road / Sze Shan Street	Priority	0.22	0.27
G	Cha Kwo Ling Road / Yan Wing Street	Priority	0.32	0.57
H	Cha Kwo Ling Road / Access Road	Priority	0.01	0.01

Remark: RC = Reserve Capacity, RFC = Ratio of Flow to Capacity

3.2.5 The assessment results in **Table 3.2** indicate that all critical junctions are at present operating within capacities.

3.2.6 Queue length survey at critical junctions have also been carried out and the results are summarized in **Table 3.3**.

Table 3.3 Year 2015 Observed Traffic Queue

Index	Junction	Approach	Capacity (m)	Average Queue Length (m)		Within Capacity	
				AM Peak	PM Peak	AM Peak	PM Peak
A	Lei Yue Mun Road / Ko Chiu Road (N)	Lei Yue Mun Road SB	220	40	40	Yes	Yes
		Ko Chiu Road WB	415	35	10	Yes	Yes
		Lei Yue Mun Road NB	370	40	25	Yes	Yes
B	Lei Yue Mun Road / Yau Tong Estate Southern Access	Lei Yue Mun Road SB	375	20	25	Yes	Yes
		Lei Yue Mun Road NB	95	35	25	Yes	Yes
		Yau Tong Estate Southern Access EB	30	15	15	Yes	Yes
E	Cha Kwo Ling Road / Ko Chiu Road	Cha Kwo Ling Road SB	120	20	15	Yes	Yes
		Ko Chiu Road WB	115	10	15	Yes	Yes
		Cha Kwo Ling Road NB	150	40	40	Yes	Yes

3.2.7 As observed on site, there are sufficient allowable queue lengths at the surveyed junctions.



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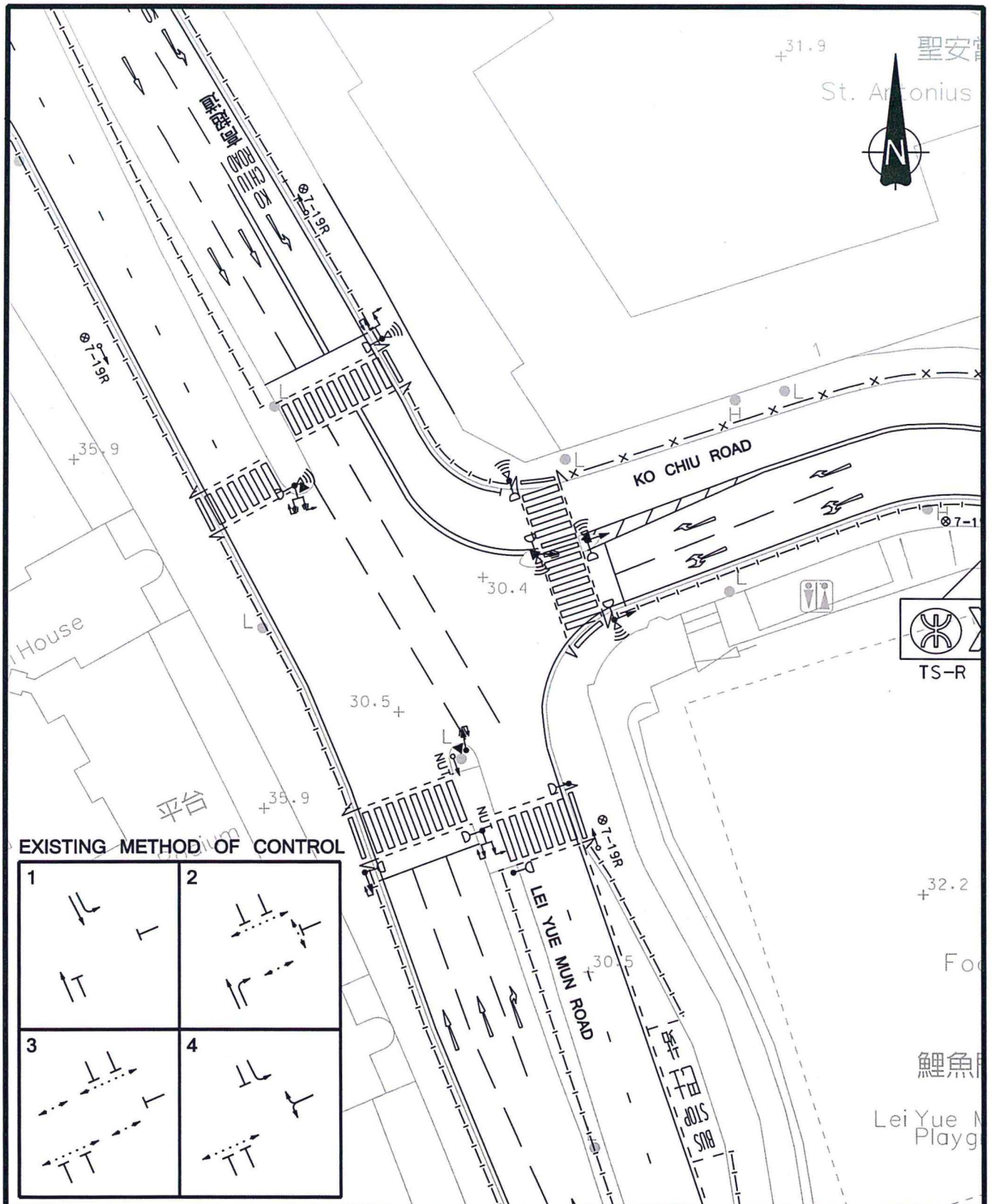
 SUBJECT SITE

 CRITICAL JUNCTION

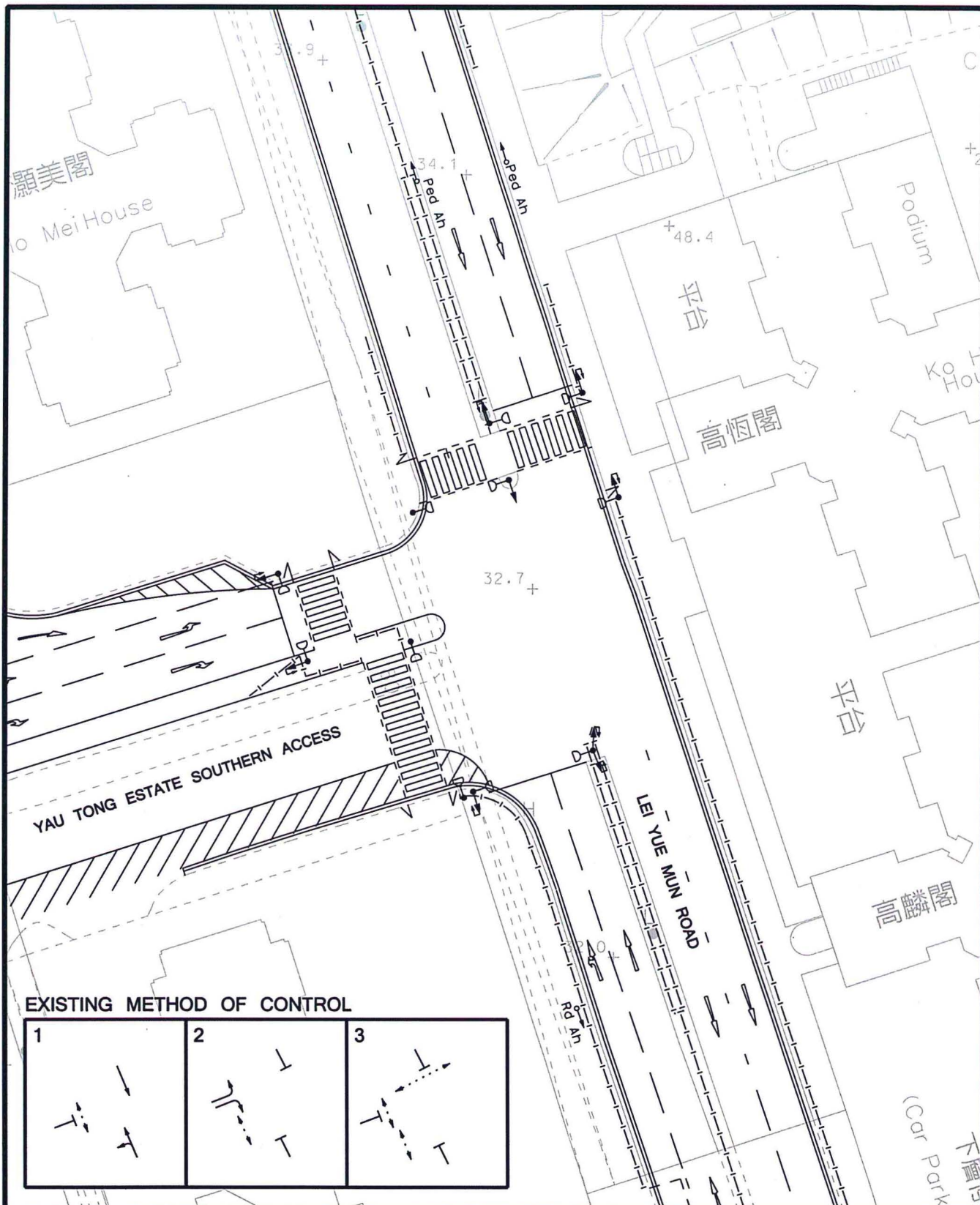
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Drawing No.				Rev.			
3.1				-			

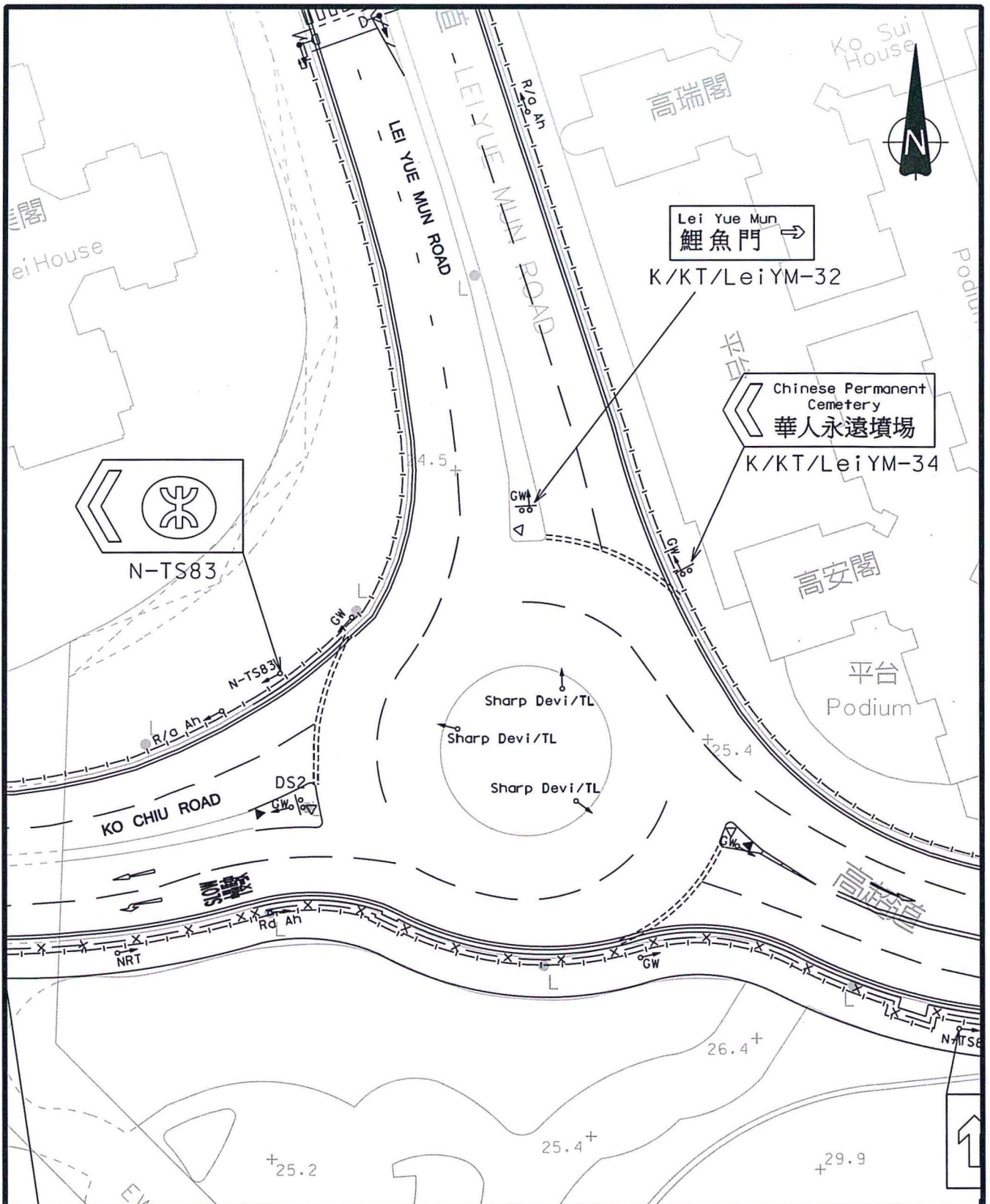
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SYSTRA GROUP



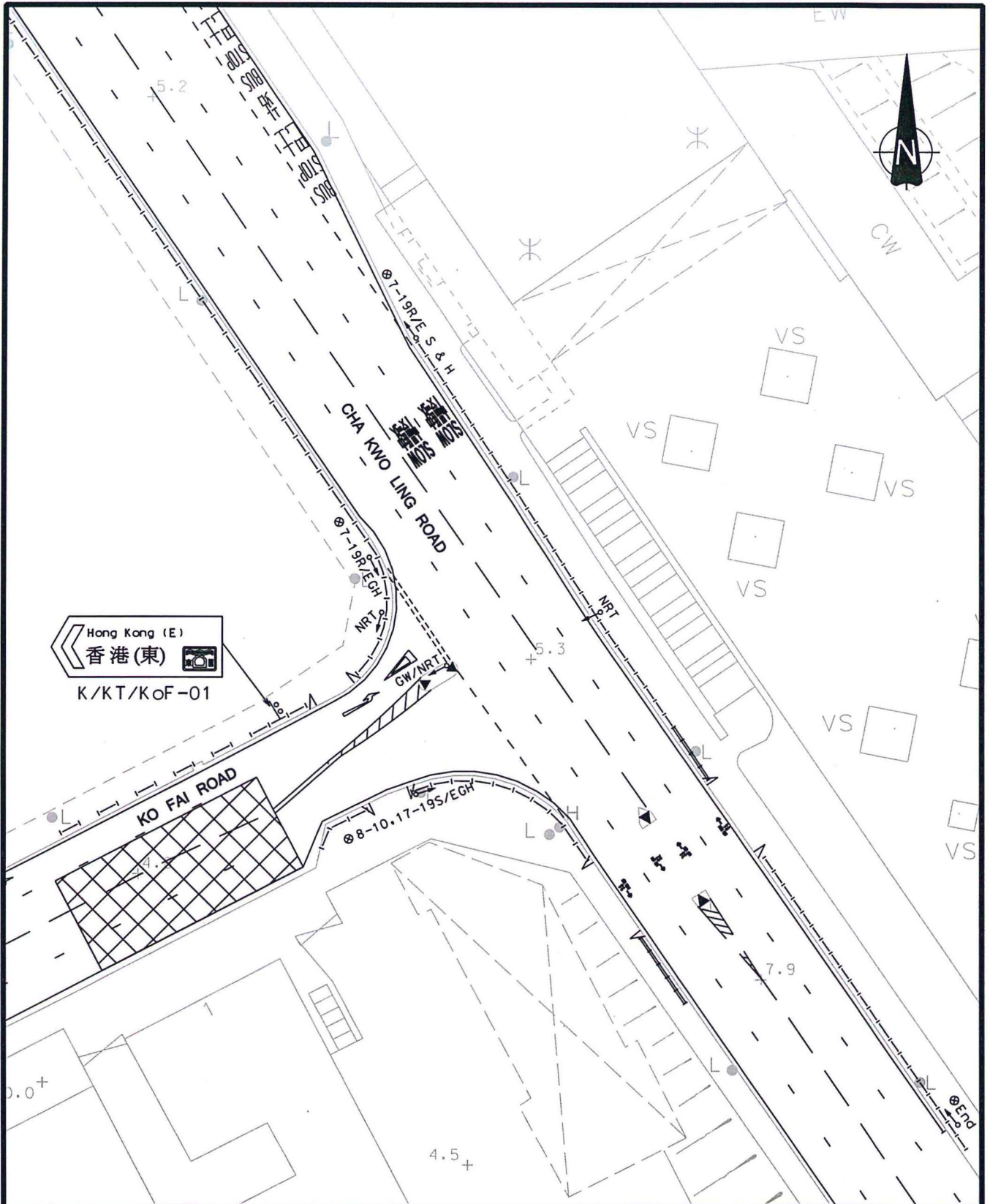
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Drawing Title				EXISTING JUNCTION LAYOUT OF LEI YUE MUN ROAD / KO CHIU ROAD (N) (A)			
Designed	Checked	Scale	Date	Drawing No.	Rev.		
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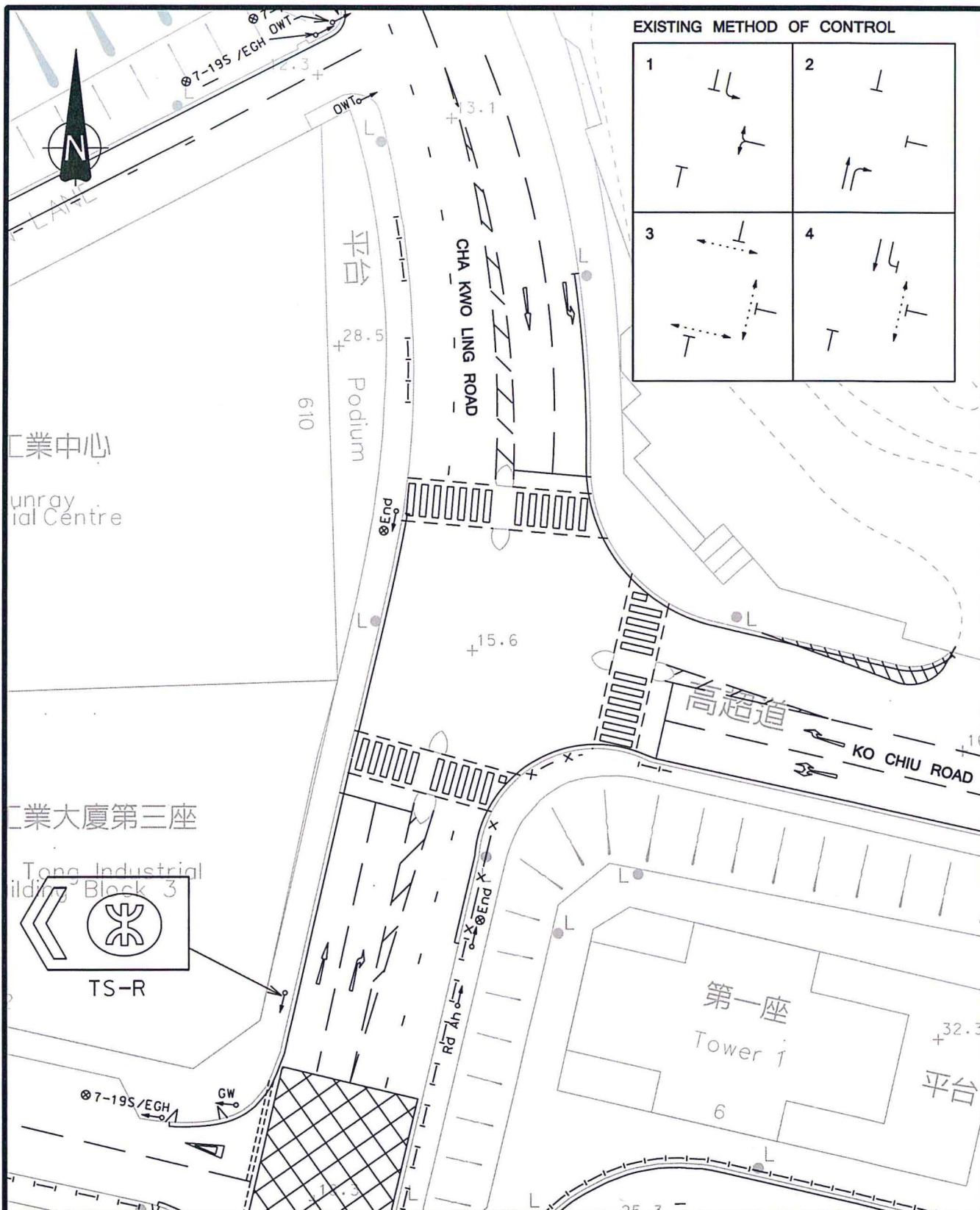
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Drawing Title				Drawing Title			
EXISTING JUNCTION LAYOUT OF LEI YUE MUN ROAD / YAU TONG ESTATE SOUTHERN ACCESS (B)				MVA SYSTRA GROUP			
Designed	Checked	Scale	Date	Drawing No.	Rev.		
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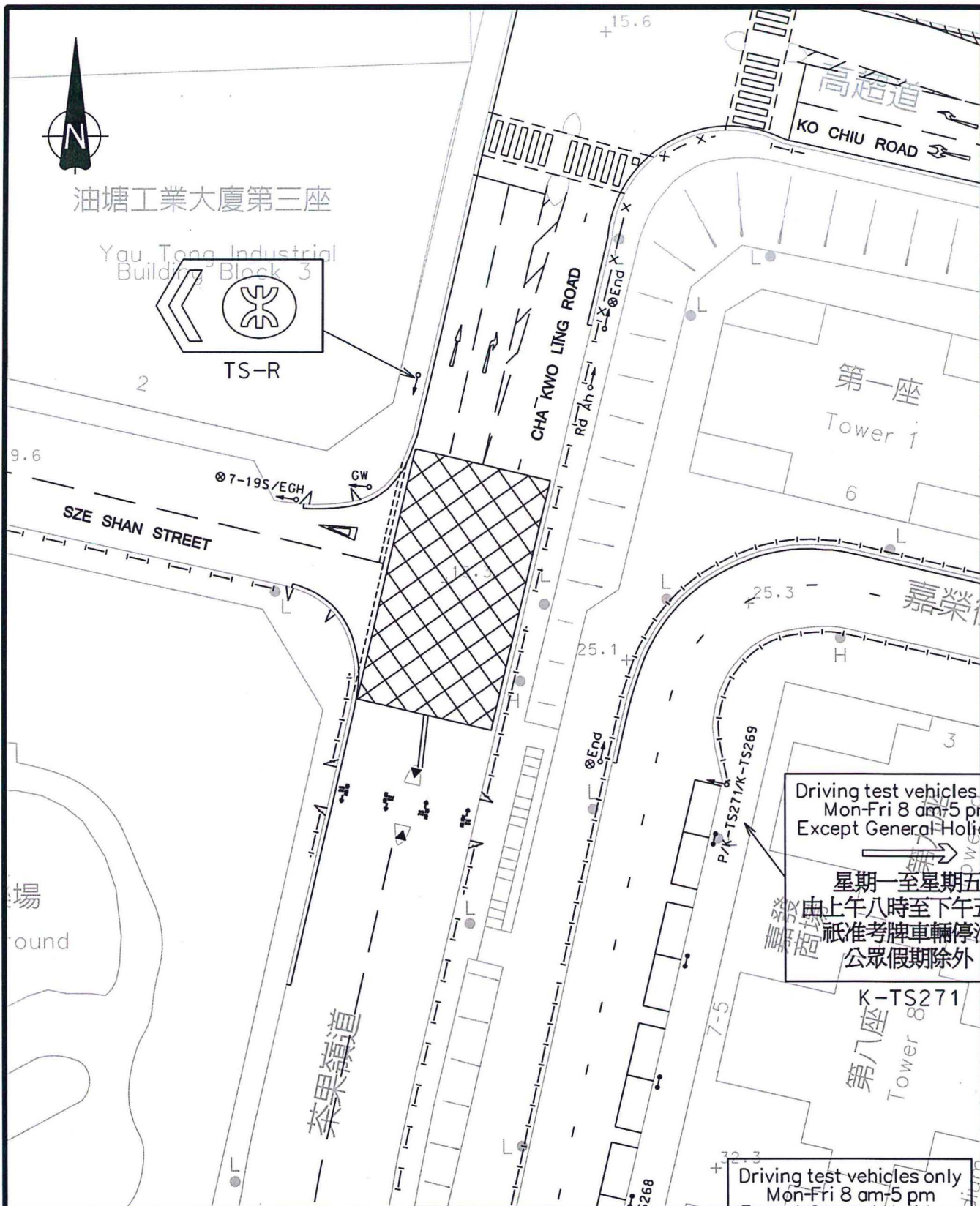
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Drawing Title				Drawing Title			
EXISTING JUNCTION LAYOUT OF LEI YUE MUN ROAD / KO CHIU ROAD (S) (C)				EXISTING JUNCTION LAYOUT OF LEI YUE MUN ROAD / KO CHIU ROAD (S) (C)			
Designed	Checked	Scale	Date	Drawing No.	Rev.		
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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
Project Title				PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4			
Drawing Title				EXISTING JUNCTION LAYOUT OF CHA KWO LING ROAD / KO FAI ROAD (D)			
Designed	Checked	Scale	Date	Drawing No.	Rev.	MVA SYSTRA GROUP	
		1:500(A4)	SEP 2015	3.5	-		



Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
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Project Title				PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4			
Drawing Title				EXISTING JUNCTION LAYOUT OF CHA KWO LING ROAD / KO CHIU ROAD (E)			
Designed	Checked	Scale	Date	Drawing No.	Rev.	MVA SYSTRA GROUP	
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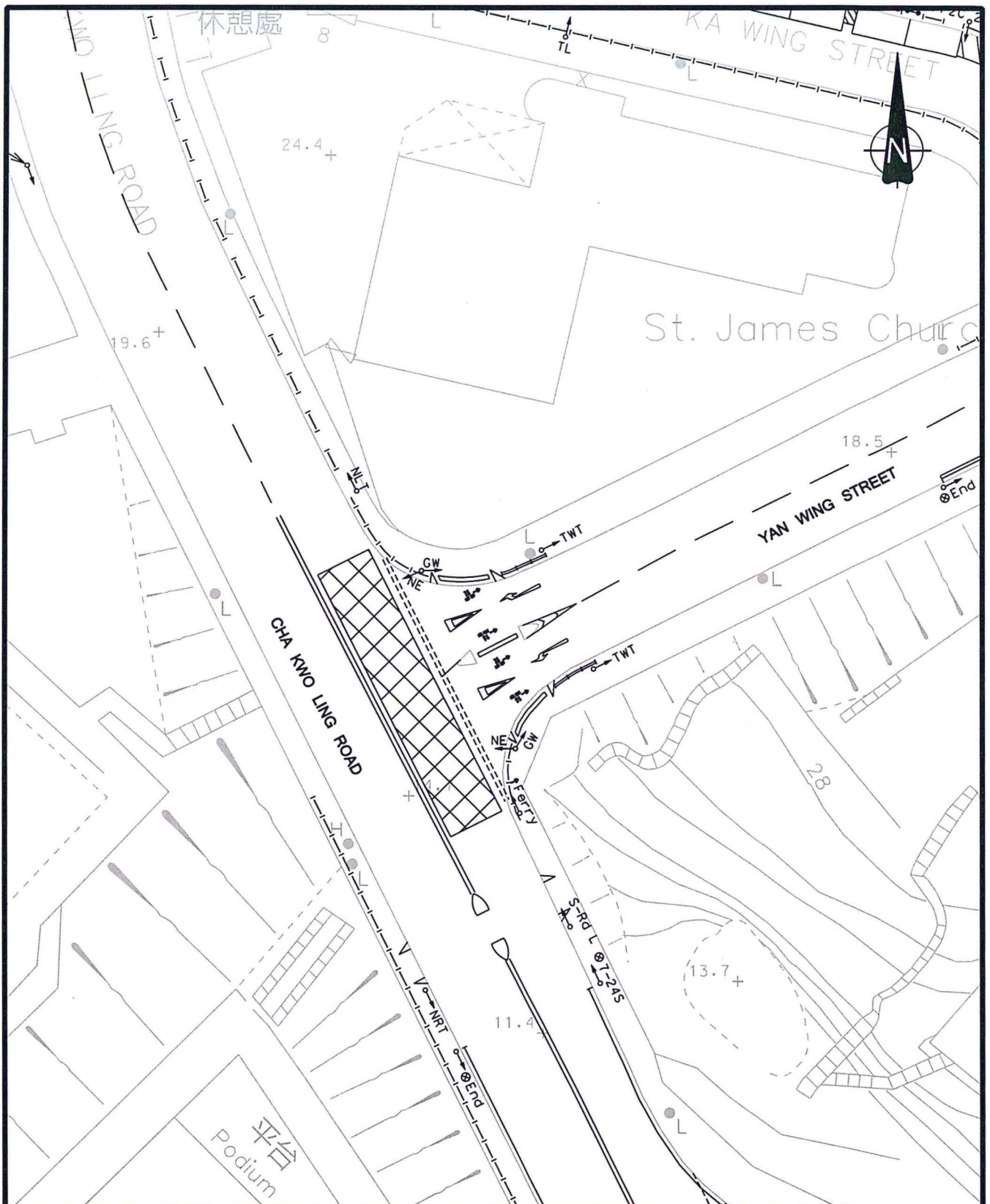
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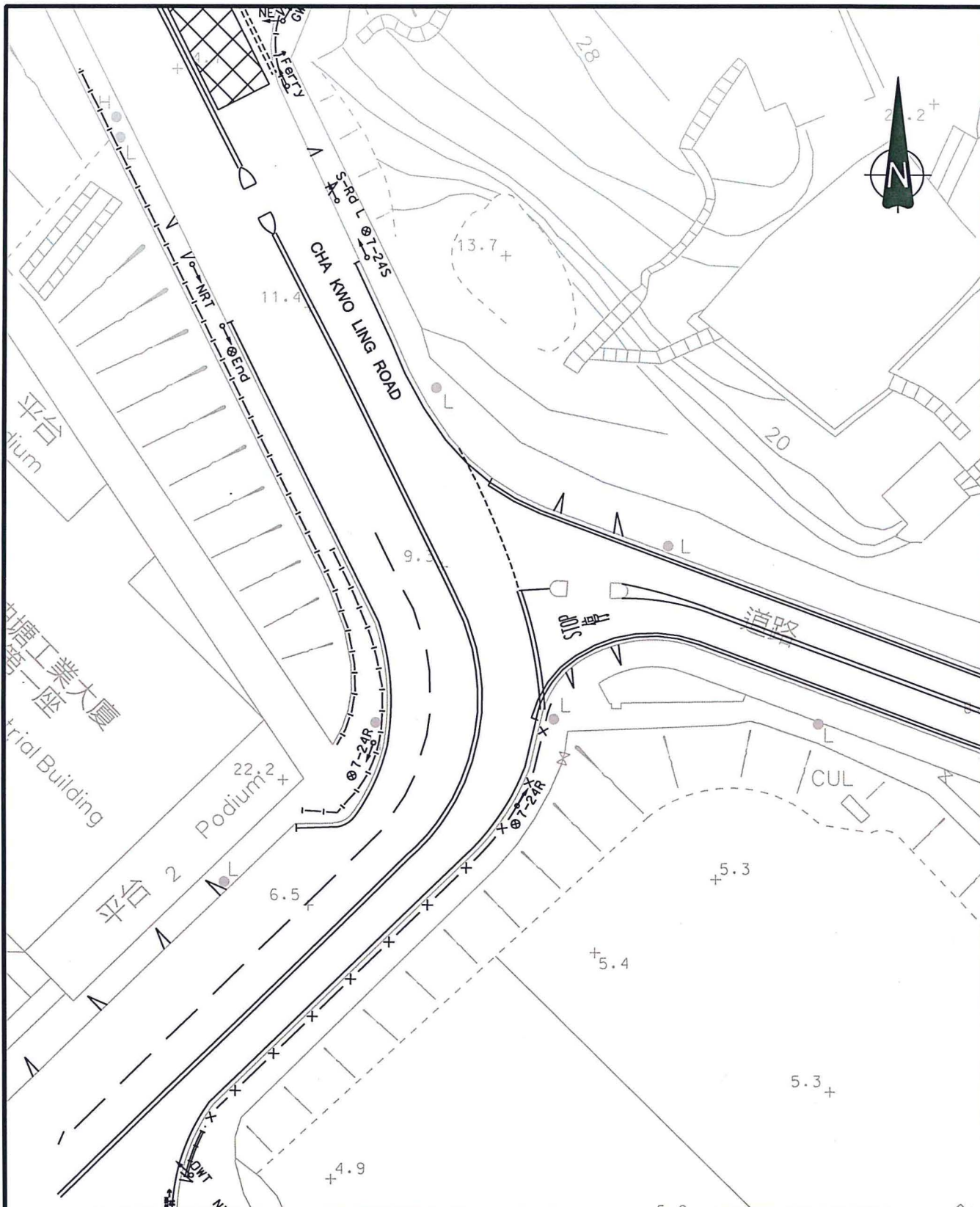
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Driving test vehicles only
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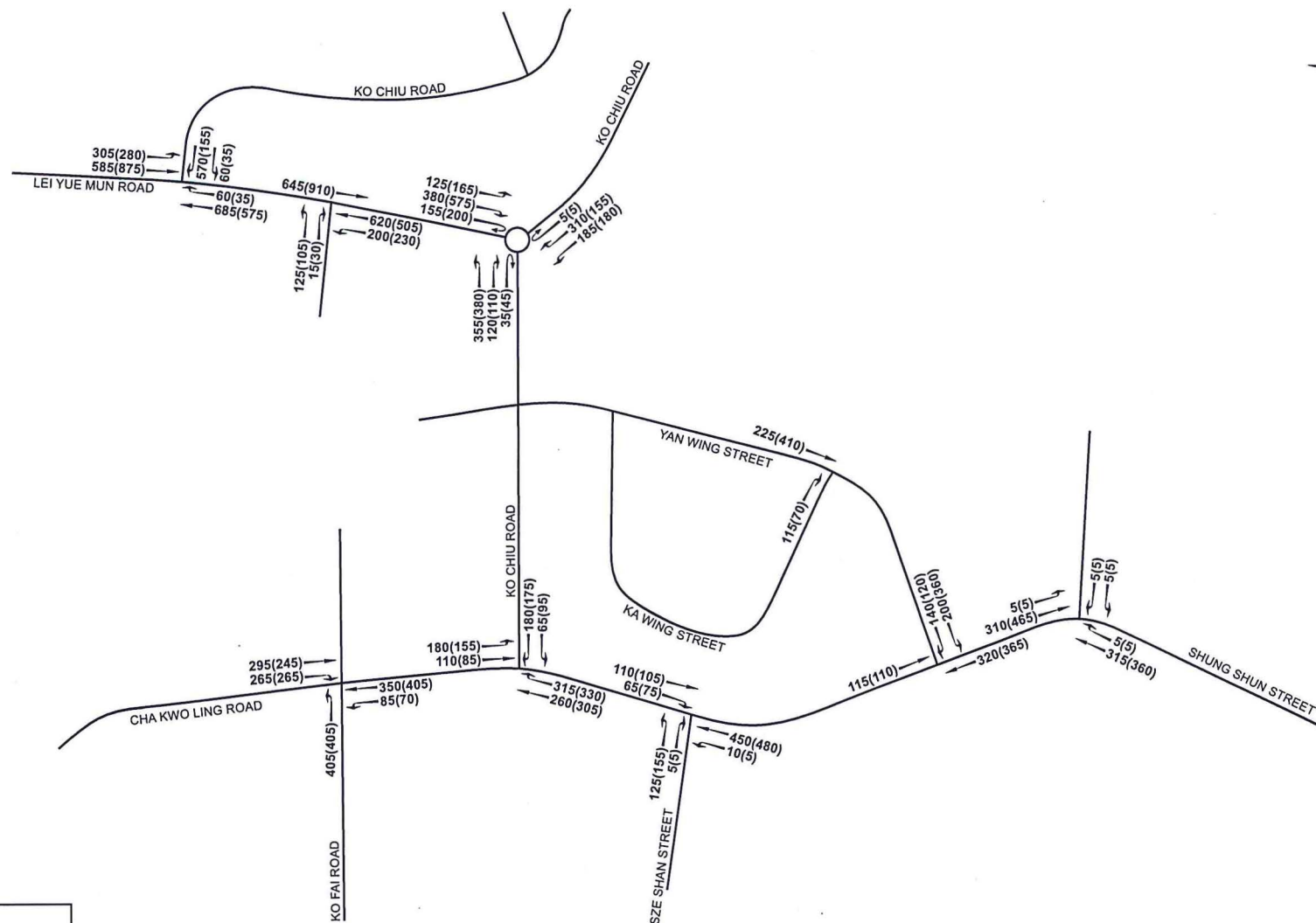
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Drawing Title				EXISTING JUNCTION LAYOUT OF CHA KWO LING ROAD / SZE SHAN STREET (F)			
Designed	Checked	Scale	Date	Drawing No.	Rev.		
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Project Title		PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4					
Drawing Title		EXISTING JUNCTION LAYOUT OF CHA KWO LING ROAD / YAN WING STREET (G)					
Designed	Checked	Scale	Date	Drawing No.	Rev.		
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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
Project Title		PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4					
Drawing Title		EXISTING JUNCTION LAYOUT OF CHA KWO LING ROAD / ACCESS ROAD (H)				MVA SYSTRA GROUP	
Designed	Checked	Scale	Date	Drawing No.	Rev.		
		1:500(A4)	SEP 2015	3.9	-		



Project Title			Drawing Title		
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4			2015 OBSERVED TRAFFIC FLOWS		
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-	-	-	-	-	-
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Scale			NTS	Date	OCT 2015
Drawing No.			3.10	Rev.	-

4. FUTURE TRAFFIC CONDITIONS

4.1 Design Year

- 4.1.1 It is anticipated that the proposed development will be completed by year 2024. In order to assess the impact of the development related traffic on the local road network, it is necessary to forecast the traffic flows for year 2027, the adopted design year, which is 3 years upon completion.

4.2 Reference Traffic Flows

Growth Rate

- 4.2.1 To estimate the 2027 reference traffic flows (without the proposed development) in the local road network, an appropriate growth factor has to be identified for the area in the first instance.
- 4.2.2 Reference has also been made to the latest 2011-Based Enhanced Territorial Population and Employment Data Matrices (TPEDM) planning data published by Planning Department for years 2016 and 2026 in the area. The average annual growth rate in terms of population from years 2016 to 2026 is illustrated in **Table 4.1**.

Table 4.1 Population Growth in the Local Area

TPEDM Zone	Population	
	2016	2026
126 ⁽¹⁾	15,650	20,083
127 ⁽²⁾	40,750	42,044
355 ⁽³⁾	18,650	21,122
Total	75,050	83,249
Growth Rate per annum (%)		1.04%

- Notes: (1) Trip generation from Yau Tong Inland Lot No.42 at Lei Yue Mun Path, Yau Tong, 5 Tung Yuen Street and adjacent Government land site and 13 and 15 Sze Shan Street site will be added separately and will not be included as part of the population growth.
- (2) Trip generation from Yau Tong Bay Development will be added separately and will not be included as part of the population growth.
- (3) Trip generation from Paik Wan Road Housing sites will be added separately and will not be included as part of the population growth.

- 4.2.3 From **Table 4.1**, it can be seen that the average annual growth rate of population in the area from year 2016 to 2026 is +1.04% per annum.
- 4.2.4 Therefore, an annual growth rate of 1.04% p.a. was adopted to project the 2015 observed flows to 2027 traffic flows.

Committed Development Traffic

- 4.2.5 In the vicinity of the subject site, there are some planned/committed developments as summarised in **Table 4.2**. The location plan for the planned/committed developments is also shown in **Drawing No. 4.1**. The planned/committed developments in the vicinity of the proposed development has been confirmed with Housing Department and PlanD.

Table 4.2 Planned/committed developments in the vicinity of the proposed Public Housing Development at Yan Wing Street

Index	Planned / Committed Development	Component	Development Parameters	Anticipated Completion Year
1	Pik Wan Road Housing Sites	Home Ownership Scheme	3000 Flats	2025
		Retail	5300 sqm	
2	Lei Yue Mun Phase 3	Public Rental Housing	443 Flats	2016
3	Yau Tong Inland Lot No.42 at Lei Yue Mun Path, Yau Tong	Private Housing	505 flats	N/A
		Non-domestic	9090 sqm (7653 sqm for PVP)	
4	3-11 Tung Yuen Street (Peninsula East)	Private Housing	256 flats	N/A
		Non-domestic	3960 sqm	
5	13 and 15 Sze Shan Street	Private Housing	326 flats	N/A
		Non-domestic	3808 sqm	
6	Yau Tong Bay Development	Private Housing	6556 flats	2021
		Retail	12304 sqm	
		Hotel	889 rooms	
		GIC	7109 sqm	
7	5 and 8 Tung Yuen Street, and adjoining Government Land ("CDA(1) zone")	Private Housing	754 flats	N/A
8	Shung Shun Street and Yan Yue Wai site ("CDA(5) zone")	Private Housing	886 flats	N/A
		Retail	500 sqm	
9	Ko Chiu Road Site	Private Housing	980 flats	N/A

4.2.6 In order to estimate the traffic generation and attraction of the planned/committed development in the vicinity, reference has been made to the trip generation rates as stipulated in Volume 1 Chapter 3 Appendix D Table 1 of the latest T.P.D.M. The adopted trip rates are summarised in Table 4.3.

Table 4.3 Adopted Trip Rate of Planned/Committed Development

Planned/Committed Development		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Pik Wan Road Housing sites	Subsidised Housing: HOS/PSPS (Avg. Flat Size: 50 m ²) (pcu/flat/hr)	0.0622	0.0426	0.0297	0.0401
	Retail (pcu/hr/100m ² GFA)	0.2296	0.2434	0.3100	0.3563

Planned/Committed Development		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Lei Yue Mun Phase 3	Subsidised Housing: Public Rental (Avg. Flat Size: 40 m ²) (pcu/flat/hr)	0.0432	0.0326	0.0237	0.0301
Yau Tong Inland Lot No.42 at Lei Yue Mun Path, Yau Tong	Private Housing R(A) (Avg. Flat Size: 60 m ²) (pcu/flat/hr)	0.0718	0.0425	0.0286	0.0370
	Retail (pcu/hr/100m ² GFA)	0.2296	0.2434	0.3100	0.3563
3-11 Tung Yuen Street (Peninsula East)	Private Housing R(A) (Avg. Flat Size: 80 m ²) (pcu/flat/hr)	0.1058	0.0605	0.0426	0.0590
	Retail (pcu/hr/100m ² GFA)	0.2296	0.2434	0.3100	0.3563
13 and 15 Sze Shan Street	Private Housing R(A) (Avg. Flat Size: 60 m ²) (pcu/flat/hr)	0.0718	0.0425	0.0286	0.0370
	Retail (pcu/hr/100m ² GFA)	0.2296	0.2434	0.3100	0.3563
Yau Tong Bay Development	Private Housing R(A) (Avg. Flat Size: 60 m ²) (pcu/flat/hr)	0.0718	0.0425	0.0286	0.0370
	Retail (pcu/hr/100m ² GFA)	0.2296	0.2434	0.3100	0.3563
	Hotel (pcu/hr/guest room)	0.1329	0.1457	0.1290	0.1546
	GIC	-	-	-	-
5 and 8 Tung Yuen Street, and adjoining Government Land ("CDA(1) zone")	Private Housing R(A) (Avg. Flat Size: 60 m ²) (pcu/flat/hr)	0.0718	0.0425	0.0286	0.0370
Shung Shun Street and Yan Yue Wai site ("CDA(5) zone")	Private Housing R(A) (Avg. Flat Size: 60 m ²) (pcu/flat/hr)	0.0718	0.0425	0.0286	0.0370
	Retail (pcu/hr/100m ² GFA)	0.2296	0.2434	0.3100	0.3563
Ko Chiu Road Site	Private Housing R(A) (Avg. Flat Size: 60 m ²) (pcu/flat/hr)	0.0718	0.0425	0.0286	0.0370

4.2.7 Based on the planned/committed development parameters and the adopted trip rate shown in Table 4.2 to 4.3, Table 4.4 summarises the volume of traffic generated by the Committed Development.

Table 4.4 Traffic Generations of Planned/Committed Development (pcu/hr)

Planned/Committed Development	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Pik Wan Road Housing sites	199	141	105	139
Lei Yue Mun Phase 3	19	14	10	13
Yau Tong Inland Lot No.42 at Lei Yue Mun Path, Yau Tong	57	43	42	51
3-11 Tung Yuen Street (Peninsula East)	36	25	23	29
13 and 15 Sze Shan Street	32	23	21	26
Yau Tong Bay Development	627	449	351	434
5 and 8 Tung Yuen Street, and adjoining Government Land ("CDA(1) zone")	54	32	22	28
Shung Shun Street and Yan Yue Wai site ("CDA(5) zone")	65	39	27	35
Ko Chiu Road Site	70	42	28	36

4.2.8 Based on an annual growth rate of 1.04% p.a. and the traffic generation of planned/committed development shown in **Table 4.4**, 2027 reference traffic flows have been projected from 2015 observed flows and shown in **Drawing No. 4.2**.

4.2.9 2027 Reference Flows = 2015 Observed Flows x Growth Factor (1.04% p.a. for 12 years) + Planned/Committed Development Traffic

4.3 Development Traffic Generation

4.3.1 In order to estimate the traffic generation and attraction of the proposed development, reference has been made to the trip generation rates as stipulated in Volume 1 Chapter 3 Appendix D Table 1 of the latest T.P.D.M. and the adopted trip rates and a trip generation survey conducted in September 2015. The adopted trip rates are summarised in **Table 4.5**.

Table 4.5 Adopted Trip Rates

	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Subsidised Housing: Public Rental (PRH) (pcu/hr/flat)	0.0432	0.0326	0.0237	0.0301
Welfare Facilities at the Basement Floor ⁽¹⁾	10	10	10	10

Note: (1) Nominal figure assumed.

4.3.2 As a conservative approach, an additional 10% allowance had been allowed for the proposed development to cater for future design variation. The traffic impact assessment has been based on 2,640 PRH flats and a welfare facilities at the basement floor.

4.3.3 Based on the adopted trip rates given in **Table 4.5**, the total trips generated by the proposed development are computed and shown in **Table 4.6**.

Table 4.6 Traffic Generations of Proposed Development (pcu/hr)

Development Parameters	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
2,640 PRH Flats	114	86	63	79
Welfare Facilities at the Basement Floor	10	10	10	10
Total	124	96	73	89

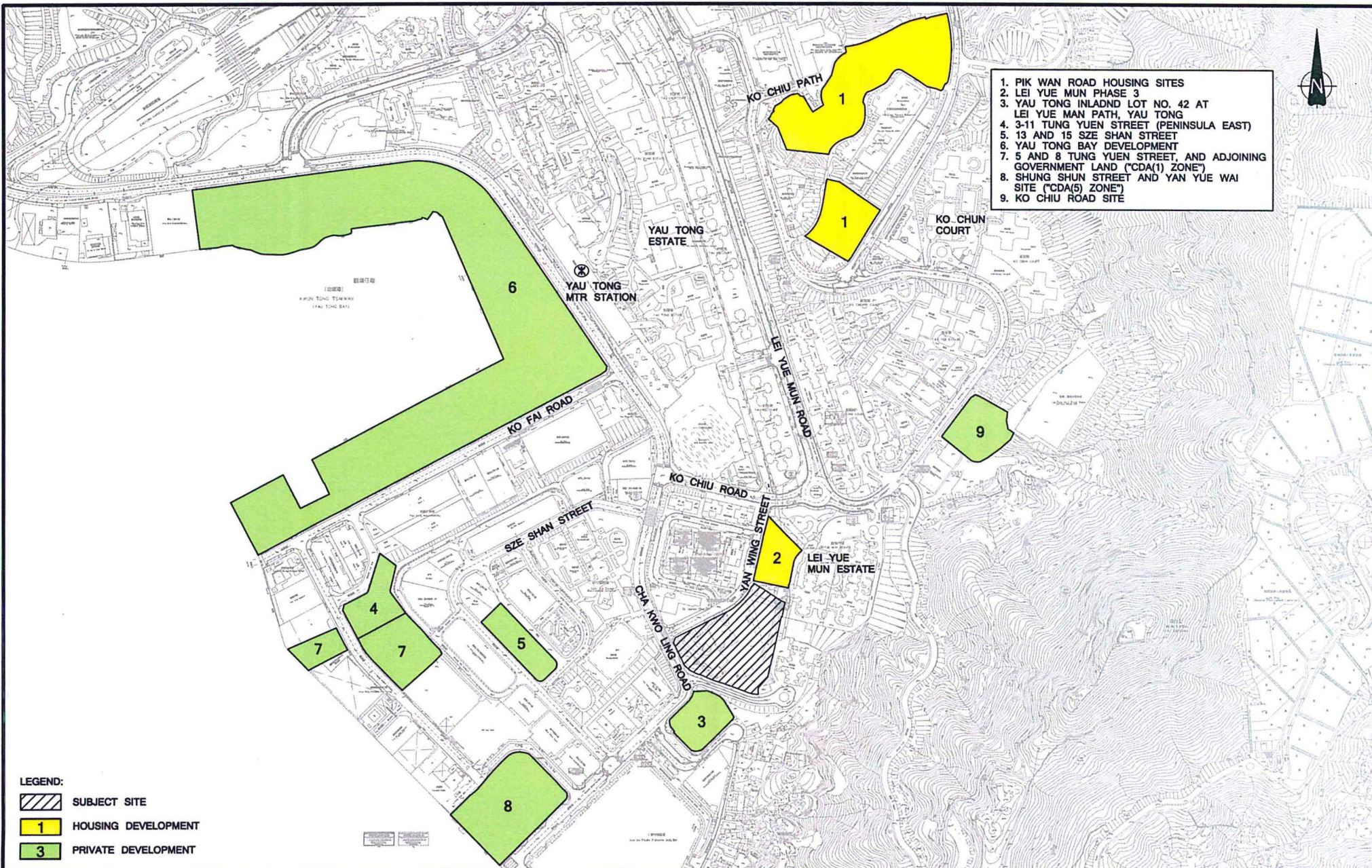
4.3.4 It is estimated that the proposed development will generate and attract about 124pcu/hr and 96pcu/hr in the AM peak hour, and generate and attract about 73pcu/hr and 89pcu/hr in the PM peak hour respectively. The development flows is shown in **Drawing No. 4.3**.

4.4 Design Traffic Forecasts

4.4.1 The development traffic flows were then superimposed onto the 2027 reference traffic flows (without development) as shown in **Drawing No. 4.2** to derive the 2027 design traffic forecasts (with development).

4.4.2 2027 Design Flows = 2027 Reference Flows + Proposed Development Traffic

4.4.3 The 2027 AM and PM peak design traffic forecasts (with development) are shown in **Drawing No. 4.4**.

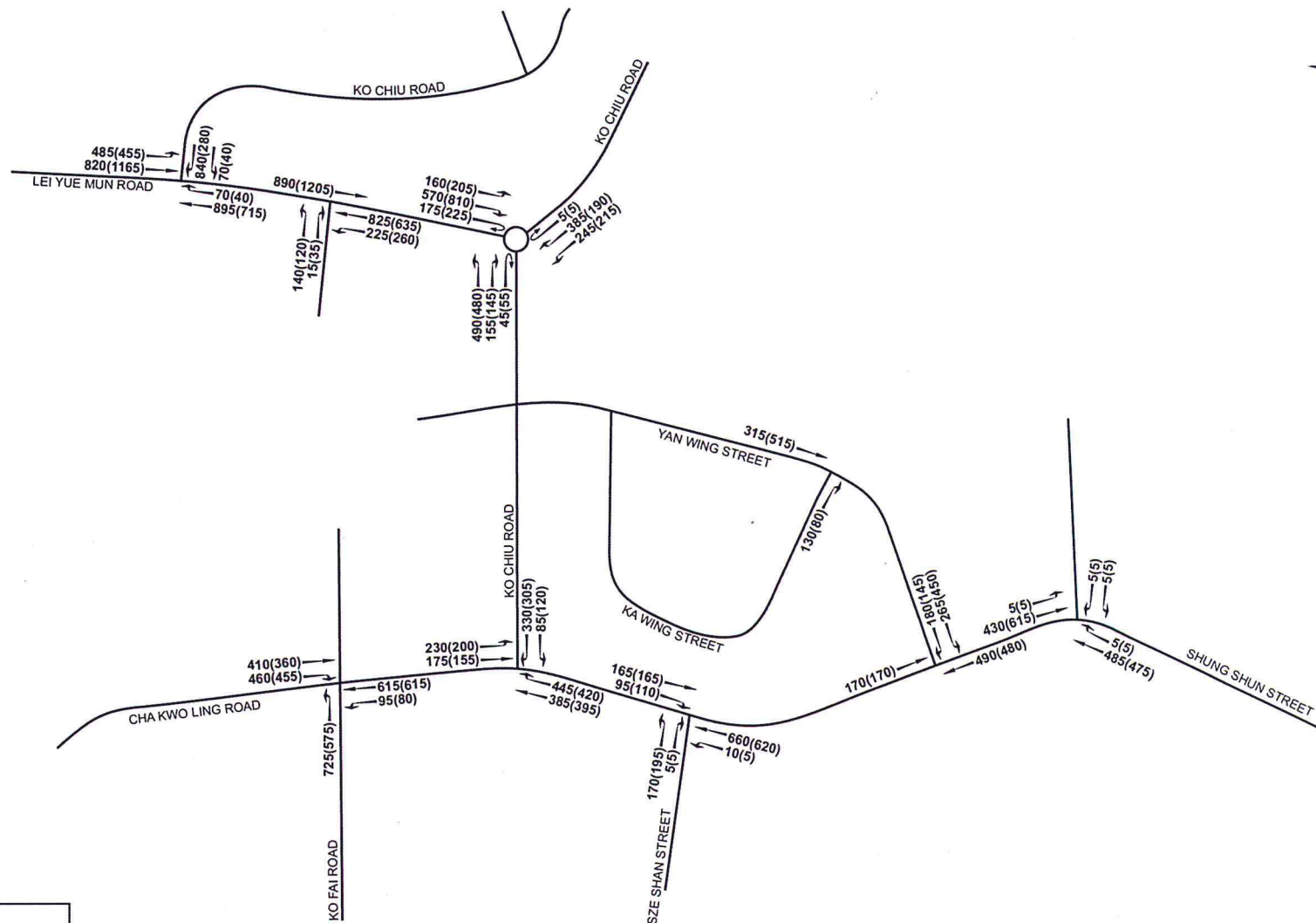


1. PIK WAN ROAD HOUSING SITES
2. LEI YUE MUN PHASE 3
3. YAU TONG INLAND LOT NO. 42 AT LEI YUE MUN PATH, YAU TONG
4. 3-11 TUNG YUEN STREET (PENINSULA EAST)
5. 13 AND 15 SZE SHAN STREET
6. YAU TONG BAY DEVELOPMENT
7. 5 AND 8 TUNG YUEN STREET, AND ADJOINING GOVERNMENT LAND ("CDA(1) ZONE")
8. SHUNG SHUN STREET AND YAN YUE WAI SITE ("CDA(5) ZONE")
9. KO CHIU ROAD SITE

- LEGEND:
- SUBJECT SITE
 - HOUSING DEVELOPMENT
 - PRIVATE DEVELOPMENT

		Project Title		Drawing Title			
		PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4		PLANNED / COMMITTED DEVELOPMENTS			
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A	MINOR AMENDMENT		16DEC15	Scale	N.T.S.	Date	DEC 2015
Rev.	Description	Checked	Date	Drawing No.		4.1	Rev. B





Rev.	Description	Checked	Date
-	-	-	-
B	MINOR AMENDMENT		20JAN16
A	MINOR AMENDMENT		16DEC15

Project Title	PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4
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Drawing Title											
2027 REFERENCE TRAFFIC FLOWS (WITHOUT DEVELOPMENT)											
Designed		Checked		Scale	NTS	Date	OCT 2015	Drawing No.	4.2	Rev.	B



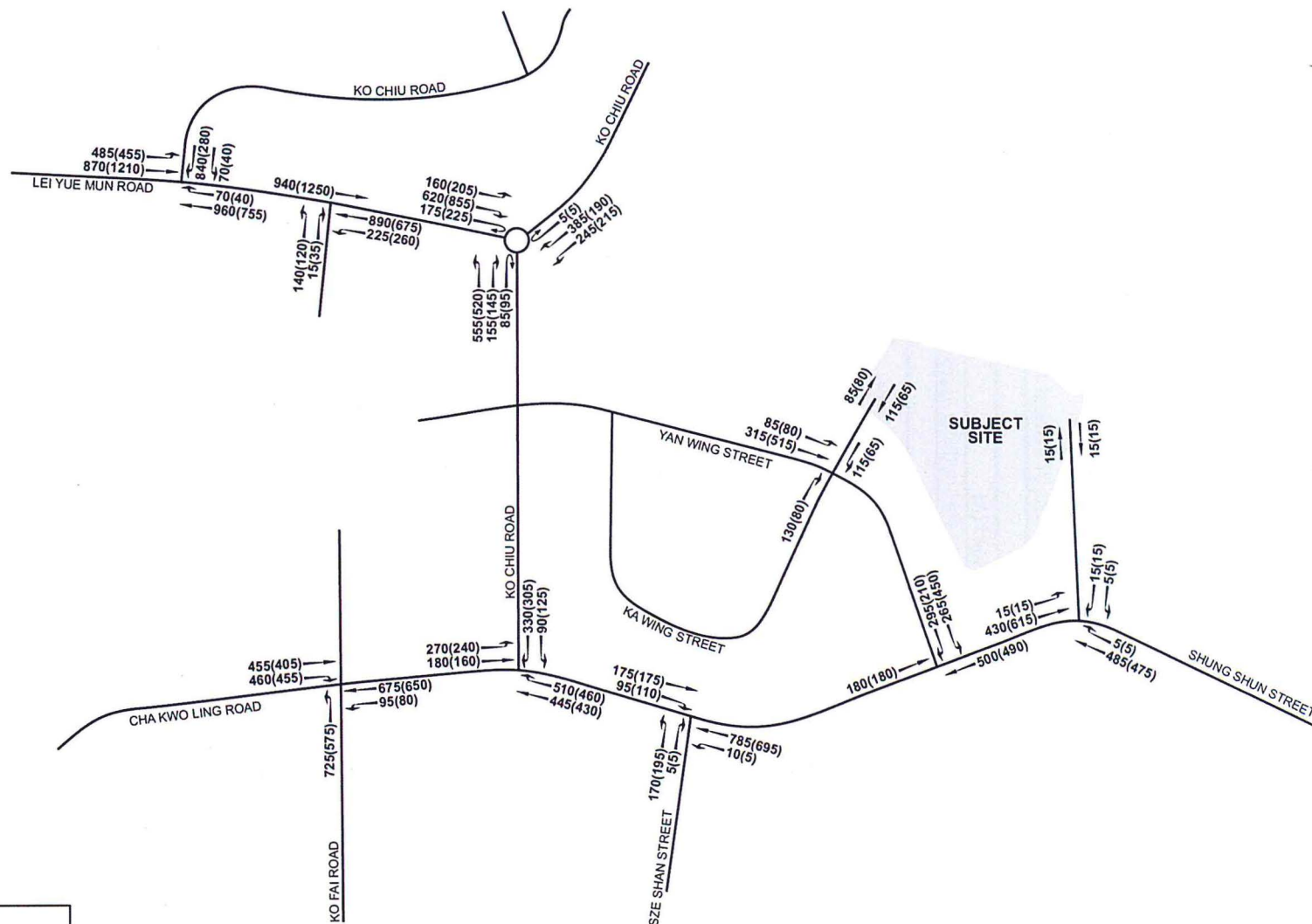
LEGEND :

225(110) AM(PM) PEAK HOUR
TRAFFIC FLOWS IN PCU/HR

Rev.	Description	Checked	Date
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-	-	-	-

Project Title
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4

Drawing Title
DEVELOPMENT TRAFFIC FLOW
Designed
Checked
Scale
NTS
Date
JAN 2016
Drawing No.
4.3
Rev.
-



LEGEND :

225(110) AM(PM) PEAK HOUR
TRAFFIC FLOWS IN PCU/HR

Rev.	Description	Checked	Date
B	MINOR AMENDMENT		20JAN16
A	MINOR AMENDMENT		16DEC15

Project Title

PUBLIC HOUSING DEVELOPMENT
AT LEI YUE MUN ESTATE PHASE 4

Drawing Title

2027 DESIGN TRAFFIC FLOWS (WITH DEVELOPMENT)

Designed	Checked	Scale	NTS	Date	OCT 2015	Drawing No.	4.4	Rev.	B
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5. TRAFFIC IMPACT ASSESSMENT

5.1 Operational Assessment

5.1.1 The existing / planned layouts in design year 2027 adopted for the operational assessments of the critical junctions were summarised in **Table 5.1**.

Table 5.1 Detailed Layout Arrangement of Critical Junctions in 2027

Ref.	Junction	Type	Layout	Drawing No.
A	Lei Yue Mun Road / Ko Chiu Road (N)	Signal	Existing	3.2
B	Lei Yue Mun Road / Yau Tong Estate Southern Access	Signal	Existing	3.3
C	Lei Yue Mun Road/Ko Chiu Road (S)	Roundabout	Existing	3.4
D	Cha Kwo Ling Road/Ko Fai Road	Signal	Planned	5.1
E	Cha Kwo Ling Road / Ko Chiu Road	Signal	Existing	3.6
F	Cha Kwo Ling Road / Sze Shan Street	Priority	Existing	3.7
G	Cha Kwo Ling Road / Yan Wing Street	Priority	Existing	3.8
H	Cha Kwo Ling Road / Access Road	Priority	Existing	3.9

5.1.2 The assessments of the junctions (except Junction D – Cha Kwo Ling Road/Ko Fai Road) were basically based on their existing layout arrangements and method of control. The assessment of Junction D was based on the future planned layout and method of control under the proposed development at Yau Tong Bay as illustrated in **Drawing No. 5.1**.

5.1.3 To assess the traffic impact due to the proposed development, capacity analysis of the identified critical junctions in the study area for both reference and design scenarios in year 2027 has been carried out. The results are summarised and presented in **Table 5.2**.

Table 5.2 Operational Performance of Critical Junctions in 2027

Ref.	Junction	Type	2027 RC/RFC			
			Reference Scenario (Without Development)		Design Scenario (With Development)	
			AM Peak	PM Peak	AM Peak	PM Peak
A	Lei Yue Mun Road / Ko Chiu Road (N)	Signal	22%	47%	19%	43%
B	Lei Yue Mun Road / Yau Tong Estate Southern Access	Signal	88%	82%	80%	77%
C	Lei Yue Mun Road/Ko Chiu Road (S)	Roundabout	0.48	0.57	0.50	0.60
D	Cha Kwo Ling Road/Ko Fai Road	Signal	41%	64%	38%	61%
E	Cha Kwo Ling Road / Ko Chiu Road	Signal	17%	25%	3%	15%
F	Cha Kwo Ling Road / Sze Shan Street	Priority	0.31	0.35	0.33	0.36
G	Cha Kwo Ling Road / Yan Wing Street	Priority	0.44	0.73	0.65	0.77
H	Cha Kwo Ling Road / Access Road	Priority	0.01	0.02	0.04	0.05

Remark: RC = Reserve Capacity, RFC = Ratio of Flow to Capacity

5.1.4 The assessment results in **Table 5.2** revealed that all critical junctions will still operate within their capacities in design year 2027 except Junction E – Cha Kwo Ling/Ko Chiu Road will operate close to its capacities.

5.2 Proposed Junction Improvement Scheme

- 5.2.1 In accordance with the results of junction capacity analysis result for design year 2027, Junction E will operate close to its capacities and junction improvement scheme have been proposed for Junction E.
- 5.2.2 Under the proposed improvement, the existing junction configuration (number of lanes, road marking) will be remain unchanged, the method of control of Junction E will be modified as illustrated in **Drawing No. 5.2**. Cha Kwo Ling Road southbound Left Turn traffic will be released in 2 stages (i.e. only 1 stage under existing method of control) which could help to improve the junction capacities.
- 5.2.3 The junction performance of Junction E in design year 2027 with proposed improvement scheme was assessed and the results are summarised and presented in **Table 5.3**.

Table 5.3 Operational Performance of Critical Junctions in 2027

Ref.	Junction	Type	2027 RC	
			Design Scenario (With Development)	
			AM Peak	PM Peak
E	Cha Kwo Ling Road / Ko Chiu Road	Signal	15%	24%

Remark: RC = Reserve Capacity

- 5.2.4 The assessment results in **Table 5.3** revealed that Junction E – Cha Kwo Ling/Ko Chiu Road would be operating with ample capacities with the proposed method of control.

Pedestrian Crossing at Ko Chiu Road

- 5.2.5 For the modified method of control as proposed in **Drawing No. 5.2**, the operational performance of the crossing at Ko Chiu Road has been assessed and the results are summarized in **Table 5.4**.

Table 5.4 Operational Performance of Crossings at Ko Chiu Road (Junction E) in Year 2027

Scenario	Cycle Time (Sec)	Pedestrian Green Time (Sec)	Pedestrian Waiting Time (Sec)	Green Time Proportion	Lateral Width (m)	Pedestrian Capacity (Ped/hr) ⁽¹⁾	Anticipated 2-way Flow (Ped/hr) ⁽²⁾	V/C Ratio
AM Peak								
Existing MOC	100	36	64	0.36	4	2736	920	0.34
Modified MOC	100	22	78	0.22	4	1672	920	0.55
PM Peak								
Existing MOC	100	36	64	0.36	4	2736	1200	0.44
Modified MOC	100	22	78	0.22	4	1672	1200	0.72

Remark: (1) $PC = K \times GTP \times W$ (Refer to TPDM Volume 4, 3.2.5.6)

where PC = Pedestrian crossing capacity in pedestrians per hour

GTP = Green time proportion i.e. (Pedestrian green + flashing green time) / Cycle time

W = Lateral width of pedestrian crossing

K = A constant equivalent to saturation flow for pedestrians, may be taken as 1900 ped/metre/hours.

(2) The 2027 anticipated pedestrian flows is based on observed pedestrian flows with growth rate of 1.04% p.a. (population growth from TPEDM)

- 5.2.6 The proposed modification of method of control will increase the waiting time by 14s (from 64s under original method of control to 78s under proposed method control) in year 2027. The results in **Table 5.4** indicate that the concerned crossing will still operate with ample capacities in year 2027.

Anticipated Queue Lengths

- 5.2.7 The results of year 2027 anticipated traffic queues at critical junctions are listed in **Table 5.5** below.

Table 5.5 Year 2027 Anticipated Traffic Queue

Index	Junction	Approach	Capacity (m)	Average Queue Length (m)		Within Capacity	
				AM Peak	PM Peak	AM Peak	PM Peak
A	Lei Yue Mun Road / Ko Chiu Road (N)	Lei Yue Mun Road SB	220	45	45	Yes	Yes
		Ko Chiu Road WB	415	45	20	Yes	Yes
		Lei Yue Mun Road NB	370	45	25	Yes	Yes
B	Lei Yue Mun Road / Yau Tong Estate Southern Access	Lei Yue Mun Road SB	375	30	40	Yes	Yes
		Lei Yue Mun Road NB	95	35	30	Yes	Yes
		Yau Tong Estate Southern Access EB	30	15	15	Yes	Yes
D	Cha Kwo Ling Road / Ko Fai Road	Cha Kwo Ling Road SB	525	30	35	Yes	Yes
		Cha Kwo Ling Road NB	80	35	30	Yes	Yes
		Ko Fai Road EB	380	35	30	Yes	Yes
E	Cha Kwo Ling Road / Ko Chiu Road	Cha Kwo Ling Road SB	120	25	20	Yes	Yes
		Ko Chiu Road WB	115	25	25	Yes	Yes
		Cha Kwo Ling Road NB	150	45	40	Yes	Yes

- 5.2.8 The results in **Table 5.5** indicate that there are sufficient allowable queue lengths at the critical junctions.

5.3 Sensitivity Test (Without Yau Tong Bay Proposed Junction Modification)

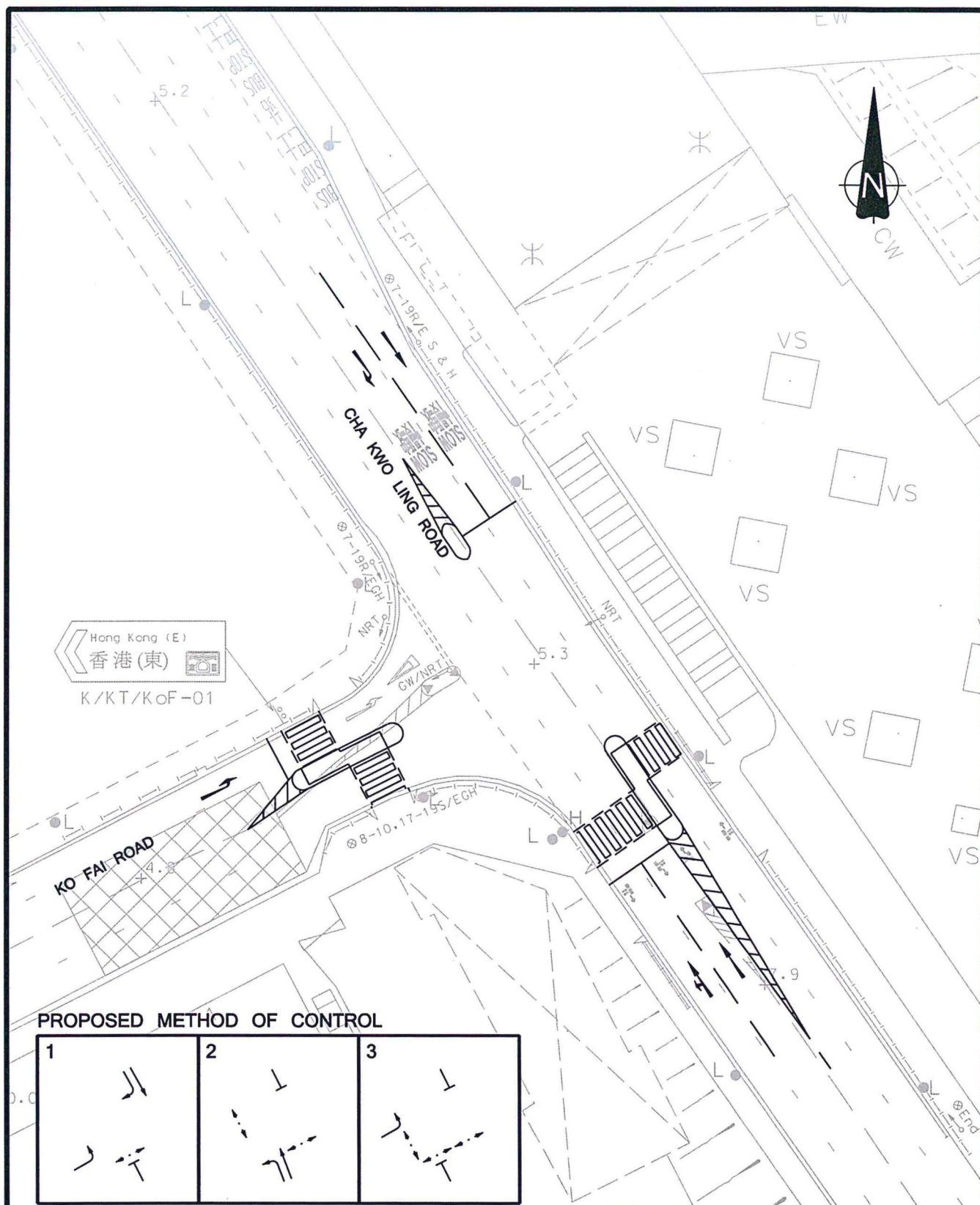
- 5.3.1 According to the approved MLP of Yau Tong Bay development, the completion year of the proposed development and the modification at Junction D will be year 2021. The proposed junction modification will be in place before the completion of proposed PRH development in year 2024.
- 5.3.2 Despite the proposed junction modification will be in place before the completion of proposed PRH development, a test scenario is conducted for this junction with no junction modification in year 2027 (3 years after completion of proposed PRH). The modification at Junction D is proposed for the Yau Tong Bay development. For the scenario without the proposed junction modification, the Yau Tong Bay development should not appear. The operation performance of Junction D (without proposed junction modification and Yau Tong Bay development) is shown in **Table 5.6** below.

Table 5.6 Operational Performance of Junction D (Without Yau Tong Bay Proposed Junction Modification) in 2027

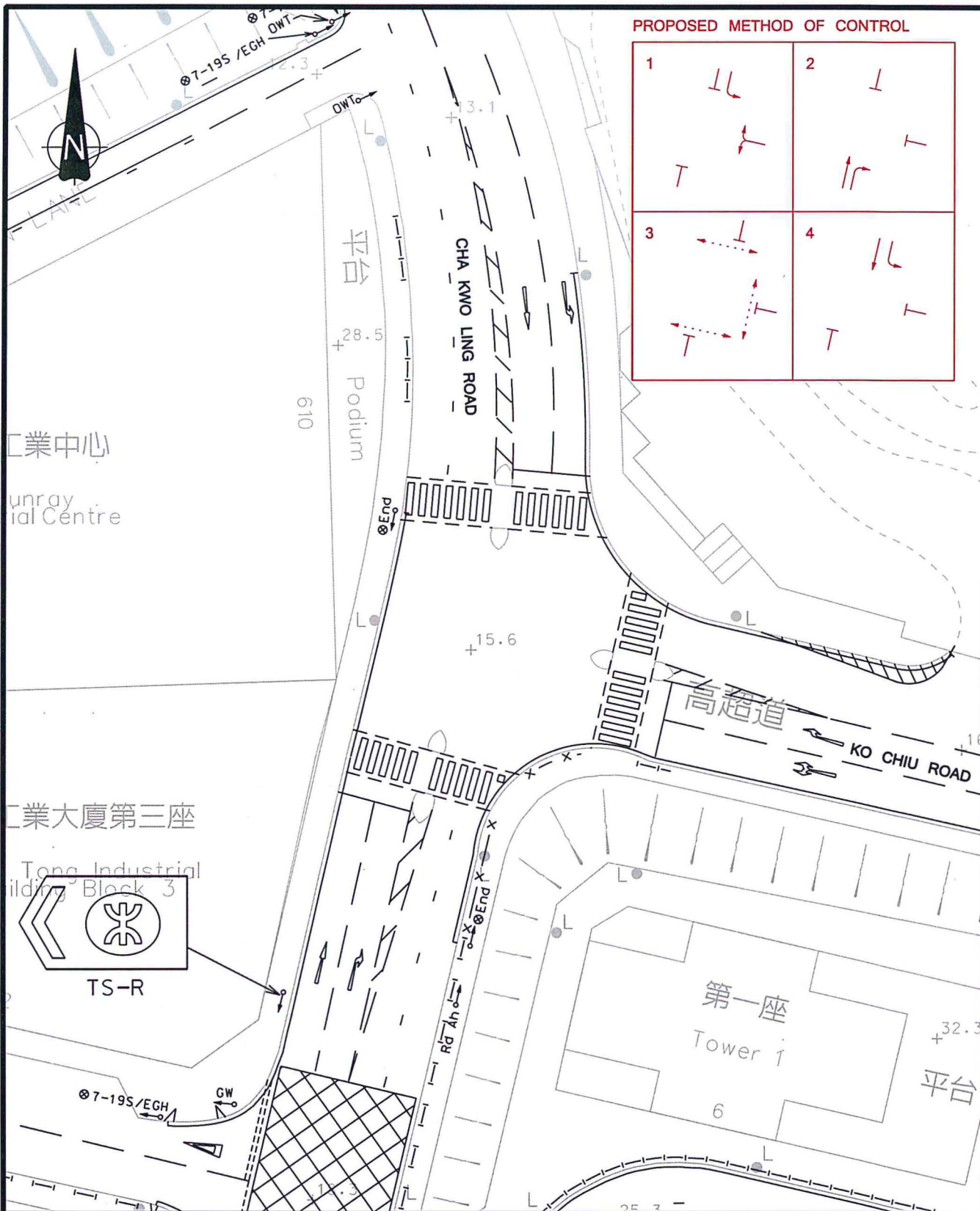
Ref.	Junction	2027 RFC			
		Reference Scenario (Without Development)		Design Scenario (With Development)	
		AM Peak	PM Peak	AM Peak	PM Peak
D	Cha Kwo Ling Road/Ko Fai Road	1.13	1.03	1.15	1.04

Remark: RFC = Ratio of Flow to Capacity

- 5.3.3 As shown in above table, the junction D will already be overloaded under reference scenario due to the background growth and other committed developments (excluding proposed PRH development). The increase in traffic impact due to the proposed PRH development at this junction is minimal.



Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
Project Title				PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4			
Drawing Title				PLANNED JUNCTION LAYOUT OF CHA KWO LING ROAD / KO FAI ROAD (D) (UNDER PROPOSED DEVELOPMENT AT YAU TONG BAY)			
Designed	Checked	Scale	Date	Drawing No.	Rev.		
		1:500(A4)	SEP 2015	5.1	-		



-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
Project Title							
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4							
Drawing Title							
PROPOSED JUNCTION IMPROVEMENT SCHEME OF CHA KWO LING ROAD / KO CHIU ROAD (E)							
Designed	Checked	Scale	Date	Drawing No.	Rev.		
		1:500(A4)	SEP 2015	5.2	-		

6. PUBLIC TRANSPORT PROVISIONS AND PEDESTRIAN FACILITIES

6.1 Public Transport Services

6.1.1 The nearest rail station to the subject site would be Yau Tong Station, which is located within 500m from the proposed development. At present, there are currently bus routes and GMB routes operating in the near vicinity to the proposed development site.

6.1.2 Details of the existing public transport services in the vicinity are summarised in **Table 6.1** and illustrated in **Drawings No. 6.1 & 6.2**.

Table 6.1 Existing Public Transport Services in the vicinity

Route	Service	Destinations	Peak Hour Frequency (minutes)
MTR – Yau Tong Station (Drawing No. 6.1)			
Buses (Drawing No. 6.1)			
14	KMB	China Ferry B/T – Yau Tong B/T	12
14B	KMB	Lam Tin B/T – Ngau Tau Kok B/T	15
14D ⁽¹⁾	KMB	Yau Tong B/T – Choi Hung B/T	-
14X	KMB	Lei Yue Mun – Tsim Sha Tsui (Circular)	20
62X ⁽²⁾	KMB	Tuen Mun Central B/T – Yau Tong B/T	10
215P ⁽¹⁾	KMB	Lam Tin B/T -> Kowloon Station	-
216M	KMB	Lam Tin B/T – Yau Tong Estate (Circular)	10
259D	KMB	Lung Mun Oasis – Yau Tong B/T	7
603	KMB	Ping Tin – Central Ferry Pier	7
603P ⁽¹⁾	KMB	Admiralty Railway Station -> Ping Tin	-
603S ⁽¹⁾	KMB	Ping Tin -> Central	-
889 ⁽¹⁾	KMB	Ping Tin – Shatin Race Course B/T	-
N216 ⁽³⁾	KMB	Yau Tong B/T – Hung Hom Station B/T (Circular)	-
E22P ⁽¹⁾	CTB/NWFB	Yau Tong B/T – Airport (Asiaworld-Expo)	-
E22X ⁽¹⁾	CTB/NWFB		-
N26 ⁽³⁾	CTB/NWFB	Yau Tong B/T – Tung Chung MTR Station	-
GMB (Drawing No. 6.2)			
23C	GMB	Yau Tong Station – Sceneway Garden (Circular)	5
24	GMB	Lei Yue Mun (Sam Ka Tsuen Ferry Pier) – Lam Tin (Kai Tin Shopping Centre)	10
24M	GMB	Yau Tong – Hing Tin Estate	24M
86B	GMB	Yau Tong – United Christian Hospital	12

Notes: (1) Special trips.

(2) Peak hours service only.

(3) Night service only.

6.1.3 In addition to the above-mentioned scheduled services, there are also some Public Light Bus routes providing services to Mongkok, Jordan and Kwun Tong, etc. which have no fixed routing and schedule.

- 6.1.4 Based on our in-house MVCTS Public Transport Model, **Table 6.2** summarises the 2027 Peak outbound direction Public Transport (PT) Demand (rail and non-rail) due to the proposed PRH development. According to the model, the modal split for rail and non-rail (bus/GMB) is about $\square\%$ and $\square\%$. Therefore, the demand for bus/GMB is estimated to be 268 patronage/hr ($\square \times \square\%$). There are two public transport terminus located in the near vicinity of the site including the Lei Yue Mun Estate Phase 3 bus terminus and Yau Tong Estate (DOMAIN) bus terminus with numerous bus and GMB routes. It is anticipated the minimal PT demand generated by the proposed PRH development can be well served by the existing PT services and no additional PT facilities is required.

Table 6.2 Year 2027 Anticipated Outbound Direction PT Demand

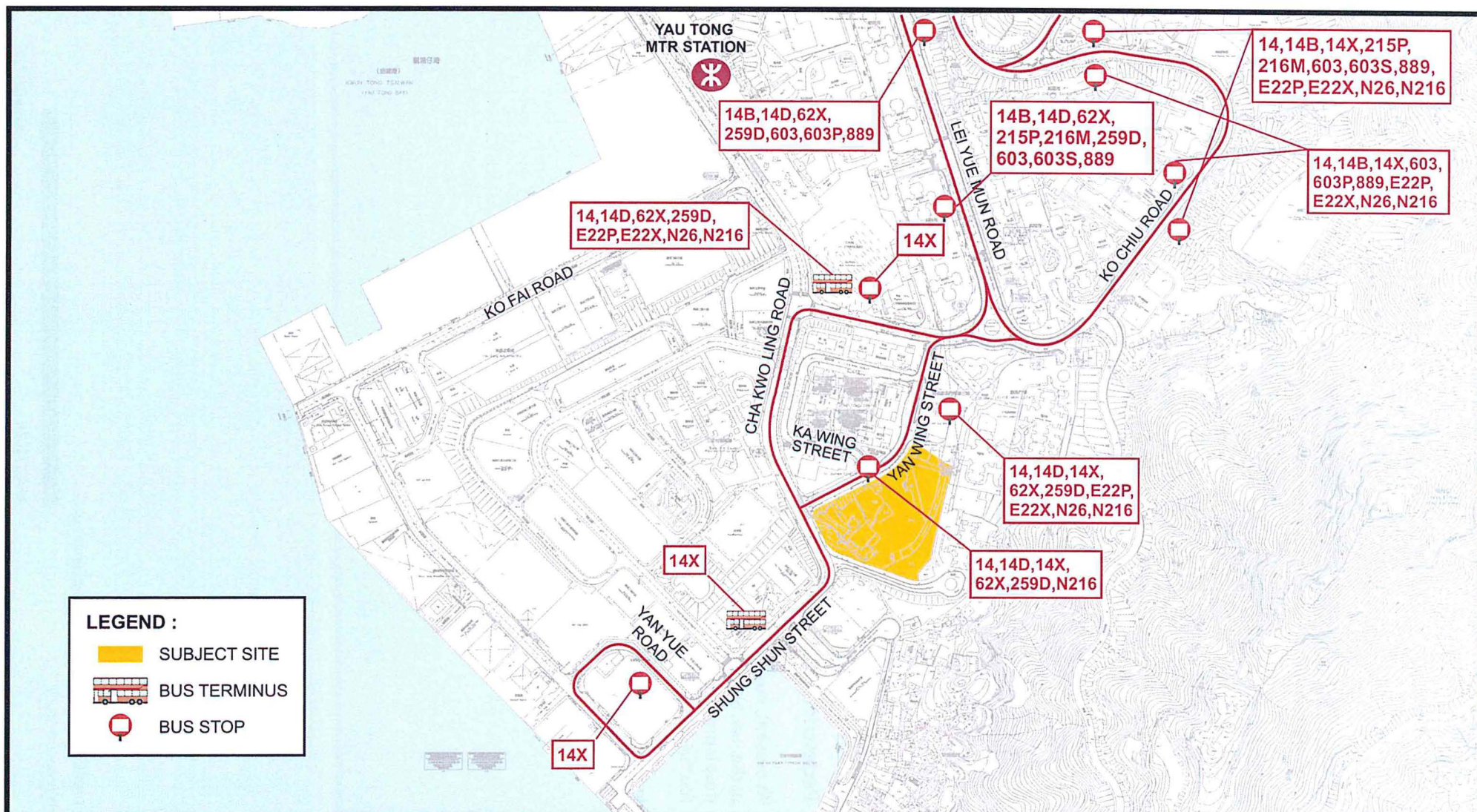
Site	Population	2027 AM Peak Outbound Direction Public Transport Demand (patronage/hr)
Lei Yue Mun Estate Phase 4	6,600 ⁽¹⁾	835

Notes: (1) A total of 2,400 PRH would be provided on Lei Yue Mun Estate Phase 4. To allow for 10% additional buffer and assume 2.5 persons per flat, a total population of 6,600 is assumed for Lei Yue Mun Estate Phase 4.

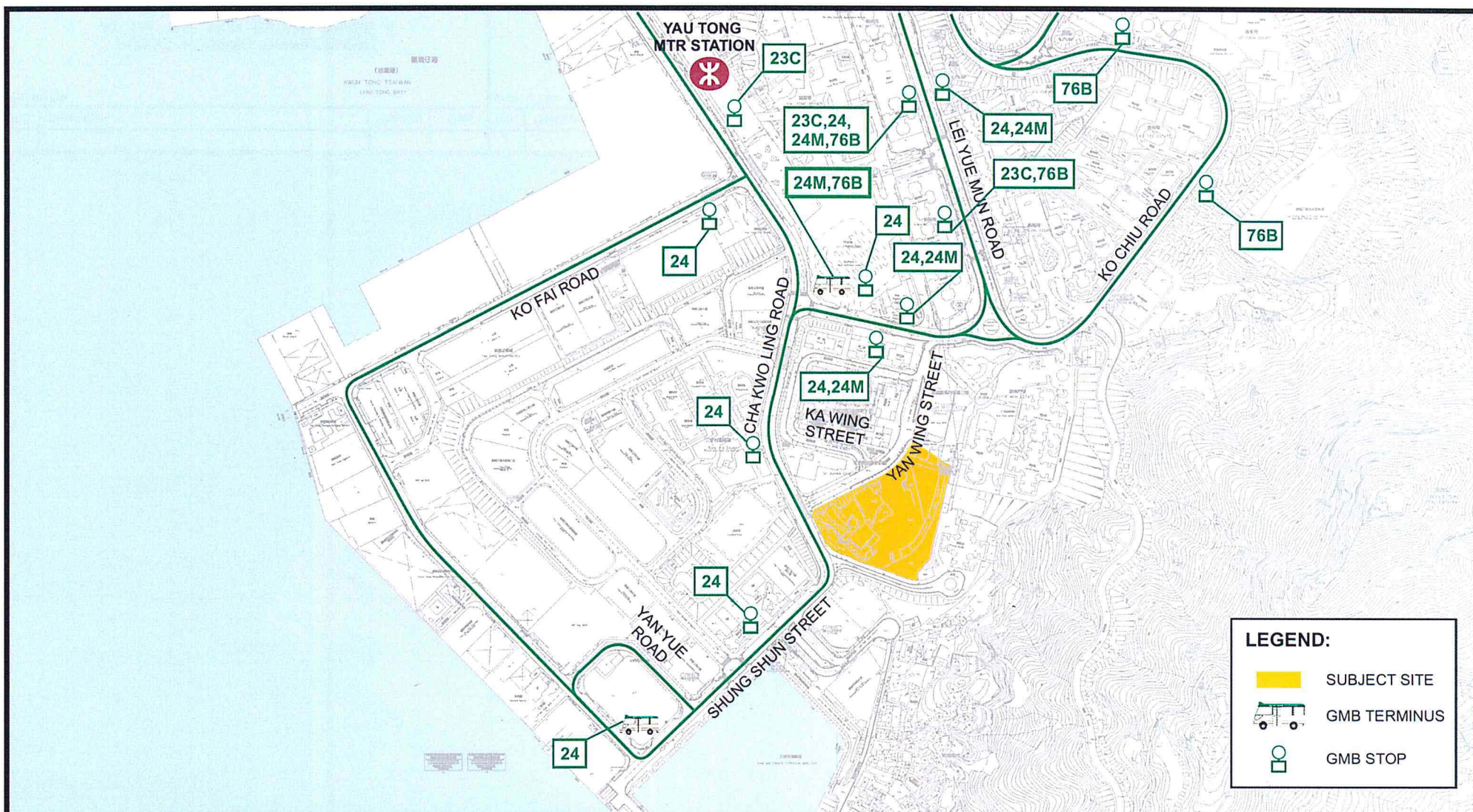
- 6.1.5 In view of the comprehensive coverage of the public transport services and the available different choices on transport modes, the proposed development is considered to have very good accessibility via the public transport.

6.2 Pedestrian Facilities

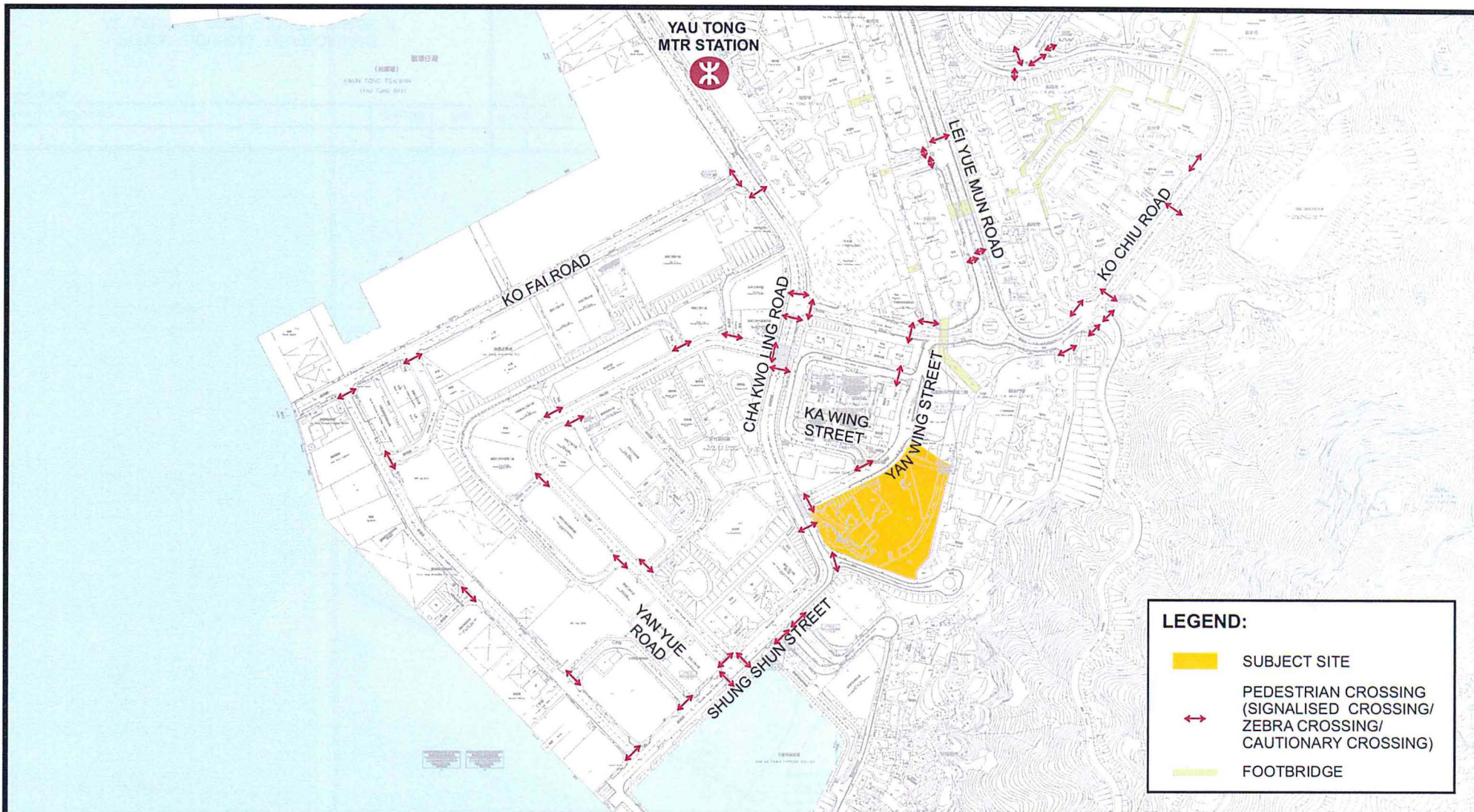
- 6.2.1 At present, numerous pedestrian crossings and footbridge are provided in the vicinity and at the nearby junctions to link up the proposed development and the surrounding housing developments and shopping centre. The locations of the pedestrian crossings and footbridges in the vicinity of the proposed development are shown in **Drawing No. 6.3**.
- 6.2.2 In view of the pedestrian facilities provision and the scale of the proposed development, it is not expected that there will be significant impact on the existing pedestrian facilities.



A MINOR AMENDMENT		27JAN16	-	-	-	-	-	-	-
Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description
Project Title				Drawing Title					
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4				EXISTING BUS SERVICES IN THE VICINITY					
Designed	Checked	Scale	Date	Rev.	Description	Checked	Date		
		NTS	SEP 2015					6.1	A



-	-	-	-	-	-	-	-	-	-	-	
Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
Project Title				Drawing Title							
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4				EXISTING GMB SERVICES IN THE VICINITY							
Designed		Checked		Scale		Date		Drawing No.		Rev.	
				NTS		OCT 2015		6.2		-	



LEGEND:

- SUBJECT SITE
- PEDESTRIAN CROSSING
(SIGNALISED CROSSING/
ZEBRA CROSSING/
CAUTIONARY CROSSING)
- FOOTBRIDGE

Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
Project Title				Drawing Title							
PUBLIC HOUSING DEVELOPMENT AT LEI YUE MUN ESTATE PHASE 4				EXISTING PEDESTRIAN CROSSING FACILITIES							
				Designed		Checked		Scale	NTS	Date	OCT 2015
										Drawing No.	6.3
										Rev.	-

7. SUMMARY AND CONCLUSION

7.1 Summary

- 7.1.1 MVA Hong Kong Limited (MVA) was commissioned by the Hong Kong Housing Authority (HKHA) in 2015 to conduct a Traffic Impact Assessment (TIA) study for Lei Yue Mun Estate Phase 4.
- 7.1.2 The public housing development comprise of 2,400 PRH flats with welfare facilities at the basement floor which is anticipated to be completed by 2024. As a conservative approach, an additional 10% allowance had been allowed for the proposed development to cater for future design variation. The traffic impact assessment has been based on 2,640 PRH flats and welfare facilities at the basement floor.
- 7.1.3 To appraise the existing traffic condition, traffic count surveys were conducted in the surrounding road network of the proposed development. Moreover, current operational performance of the critical junctions was assessed with the observed traffic flows. The operational assessment results revealed that all critical junctions are at present operating within capacities.
- 7.1.4 In order to assess the impact of the development related traffic on the local road network, it is necessary to forecast the traffic flows for 2027, the adopted design year, which is 3 years upon completion. The 2027 traffic flows have been projected with the basis on local area planning data published by government.
- 7.1.5 The planned/committed development traffic from adjacent Pik Wan Road Housing sites, Lei Yue Mun Phase 3, Yau Tong Inland Lot No.42 at Lei Yue Mun Path, Yau Tong, 3-11 Tung Yuen Street (Peninsula East), 13 and 15 Sze Shan Street, Yau Tong Bay Development, 5 and 8 Tung Yuen Street and adjoining Government Land ("CDA(1) zone"), Shung Shun Street and Yan Yue Wai site ("CDA(5) zone") and Ko Chiu Road Site are included in the assessment. The planned/committed developments in the vicinity of the proposed development has been confirmed with Housing Department and PlanD.
- 7.1.6 Traffic generation and attraction from the proposed development has been assessed. It is estimated that the proposed development will generate and attract about 124pcu/hr and 96pcu/hr in the AM peak hour, and generate and attract about 73pcu/hr and 89pcu/hr in the PM peak hour respectively.
- 7.1.7 Assessment of operational performance of the critical junctions revealed that all critical junctions will still operate within their capacities in design year 2027 except Junction E – Cha Kwo Ling/Ko Chiu Road will operate close to its capacities.
- 7.1.8 To tackle the junction capacity problem, the junction improvement scheme have been proposed for Junction E. The existing junction configuration will be remain unchanged and the method of control will be modified to improve junction capacities. The assessment result revealed that Junction E would be operating with ample capacities with the proposed method of control.

- 7.1.9 In view of the comprehensive coverage of the pedestrian facilities, public transport services and the available different choices on transport modes, the proposed development is considered to have good accessibility.

7.2 Conclusion

- 7.2.1 In conclusion, the traffic impact assessment has demonstrated that the traffic generated by the proposed development can be absorbed by the nearby road network. Hence it can be concluded that the proposed development is acceptable in traffic terms.

Appendix A – Junction Calculation Sheets

2015 Observed Flows

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Lei Yue Mun Road / Ko Chiu Road (N)

Design Year: 2015

Description: 2015 Observed Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		Pro. Turning (%)	Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak			
					Left	Right		(%) uphill Gradient	A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)
Ko Chiu Road WB	←	E	4	3.300	12.5	25	20% / 80% 100%	38% / 62% 100%	1815	1795	303	0.167	0.167	91	0.051	0.051
	↱	E	4	3.300		22.5			1955	1955	327	0.167		99	0.051	
Lei Yue Mun Road SB	↙	C	1,4	3.500	15		100%	100%	1785	1785	305	0.171	0.139	280	0.157	0.208
	↓	D	1	3.500					2105	2105	293	0.139		438	0.208	
	↘	D	1	3.500					2105	2105	293	0.139		438	0.208	
Lei Yue Mun Road NB	↑	A	1,2	3.700					1985	1985	331	0.167	0.030	278	0.140	
	↑	A	1,2	3.700					2125	2125	354	0.167		297	0.140	
	↗	B	2	3.700		25	100%	100%	2005	2005	60	0.030		35	0.017	
Pedestrian		Fp	3	Min	9	+	9		=	18						
		Gp	3,4	Min	10	+	10		=	20						
		Hp	2,3	Min	6	+	6		=	12						
		Ip	3	Min	7	+	7		=	14						
		Jp	2,3	Min	10	+	11		=	21						

Notes:	Traffic Flow (pcu/hr)	Group			Group		
		y	AFpE	DBFpE	y	AFpE	DBFpE
	585(875)						
	305(280)						
	570(155)						
	60(35)						
	685(575)						
	60(35)						
		L (sec)	35	39	L (sec)	35	45
		C (sec)	110	110	C (sec)	110	110
		y pract.	0.614	0.581	y pract.	0.614	0.532
		R.C. (%)	84%	73%	R.C. (%)	222%	106%

Stage / Phase Diagrams

1.	2.	3.	4.	5.
I/G= 5	I/G= 5	I/G= 11	I/G= 12	I/G=
I/G= 5	I/G= 5	I/G= 11	I/G= 12	I/G=

Date: 一月-16

Junction:

A

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Lei Yue Mun Road / Yau Tong Estate Southern Access

Design Year: 2015

Description: 2015 Observed Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient)	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak						
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y				
Yau Tong Est. Access EB	→	C	2	3.500	6			100%	100%	1570	1570	125	0.080	0.080	105	0.067	0.067				
	↘	C	2	3.500		15				1915	1915	15	0.008		30	0.016					
Lei Yue Mun Rd SB	↓	B	1	3.700						1985	1985	312	0.157		440	0.221	0.221				
	↓	B	1	3.700						2125	2125	333	0.157		470	0.221					
Lei Yue Mun Rd NB	↙	A	1	3.500	7.5			53%	69%	1775	1725	375	0.211	0.211	331	0.192					
	↗	A	1	3.500						2105	2105	445	0.211		404	0.192					
Pedestrian		Dp	1,3	Min	6	+	6			=	12										
		Ep	2,3	Min	9	+	9			=	18										
		Fp	3	Min	8	+	7			=	15			*			*				
Notes:					Traffic Flow (pcu/hr)					Group y L (sec) C (sec) y pract. R.C. (%)		BCFp 0.237 29 115 0.673 185%		ACFp 0.291 29 115 0.673 131%		Group y L (sec) C (sec) y pract. R.C. (%)		ACFp 0.259 29 115 0.673 160%		BCFp 0.288 29 115 0.673 133%	
Stage / Phase Diagrams																					
1.				2.				3.				4.				5.					
I/G= 9				I/G= 5				I/G= 9				I/G= 8				I/G=					
I/G= 9				I/G= 5				I/G= 9				I/G= 8				I/G=					
Date: 一月-16												Junction: B									

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

Visual ARCADY 4 ANALYSIS PROGRAM
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RUN TITLE

Lei Yue Mun Road/Ko Chiu Road (S) - 2015 Observed Flows (AM)

.INPUT DATA

ARM A - Ko Chiu Road EB
ARM B - Lei Yue Mun SB
ARM C - Ko Chiu Road WB

.GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I
			INTERCEPT (PCU/MIN)	I												
I	ARM A	I	6.50	I	8.50	I	11.00	I	28.00	I	40.00	I	35.0	I	0.770	I
39.078			I													
I	ARM B	I	7.50	I	9.00	I	17.00	I	40.00	I	40.00	I	45.0	I	0.804	I
42.574			I													
I	ARM C	I	6.50	I	8.00	I	10.00	I	20.00	I	40.00	I	60.0	I	0.678	I
33.993			I													

.TRAFFIC DEMAND DATA

.TIME PERIOD BEGINS 17.30 AND ENDS 19.00

.LENGTH OF TIME PERIOD - 90 MINUTES.

.LENGTH OF TIME SEGMENT - 15 MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	ARM	I	NUMBER OF MINUTES FROM START WHEN	I	RATE OF FLOW (VEH/MIN)	I
I	I	I	FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I	I	I	I
I	I	I	TO RISE I IS REACHED IF FALLING I PEAK I OF PEAK I PEAK I	I	I	I
I	ARM A	I	15.00	I	45.00	I
			I	75.00	I	6.38
			I	9.56	I	6.38
I	ARM B	I	15.00	I	45.00	I
			I	75.00	I	8.25
			I	12.38	I	8.25
I	ARM C	I	15.00	I	45.00	I
			I	75.00	I	6.25
			I	9.38	I	6.25

I	TIME	I	FROM/TO	I	ARM A	I	ARM B	I	ARM C	I
I	17.30 - 19.00	I		I		I		I		I
I		I	ARM A	I	0.069	I	0.696	I	0.235	I
I		I		I	35.0	I	355.0	I	120.0	I
I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM B	I	0.576	I	0.235	I	0.189	I
I		I		I	380.0	I	155.0	I	125.0	I
I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM C	I	0.370	I	0.620	I	0.010	I
I		I		I	185.0	I	310.0	I	5.0	I
I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I

I I I I I I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
ARM A	6.38	34.56	0.184		0.0	0.2	3.3	
ARM B	8.25	40.97	0.201		0.0	0.3	3.7	
ARM C	6.25	29.16	0.214		0.0	0.3	4.0	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
ARM A	7.61	33.68	0.226		0.2	0.3	4.3	
ARM B	9.85	40.65	0.242		0.3	0.3	4.7	
ARM C	7.46	28.23	0.264		0.3	0.4	5.3	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
ARM A	9.32	32.47	0.287		0.3	0.4	5.9	
ARM B	12.07	40.22	0.300		0.3	0.4	6.3	
ARM C	9.14	26.93	0.339		0.4	0.5	7.5	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
ARM A	9.32	32.47	0.287		0.4	0.4	6.0	
ARM B	12.07	40.22	0.300		0.4	0.4	6.4	
ARM C	9.14	26.93	0.339		0.5	0.5	7.7	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
ARM A	7.61	33.67	0.226		0.4	0.3	4.5	
ARM B	9.85	40.65	0.242		0.4	0.3	4.9	
ARM C	7.46	28.22	0.264		0.5	0.4	5.5	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
ARM A	6.38	34.54	0.185		0.3	0.2	3.4	
ARM B	8.25	40.96	0.201		0.3	0.3	3.8	
ARM C	6.25	29.15	0.214		0.4	0.3	4.2	

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.2
18.00	0.3
18.15	0.4
18.30	0.4
18.45	0.3
19.00	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.3
18.00	0.3
18.15	0.4

18.30	0.4
18.45	0.3
19.00	0.3

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
------------------------	--------------------------------

17.45	0.3
18.00	0.4
18.15	0.5 *
18.30	0.5 *
18.45	0.4
19.00	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	A	I	699.3	I 466.2	I 27.5	I 0.04	I 27.5	I 0.04
I	B	I	905.0	I 603.3	I 29.9	I 0.03	I 29.9	I 0.03
I	C	I	685.6	I 457.1	I 34.2	I 0.05	I 34.2	I 0.05
I	ALL	I	2289.9	I 1526.6	I 91.6	I 0.04	I 91.6	I 0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

Visual ARCADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (OCT 1998)ADAPTED FROM ARCADY/3 WHICH IS CROWN COPYRIGHT
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IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION.ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

Lei Yue Mun Road/Ko Chiu Road (S) - 2015 Observed Flows (PM)

.INPUT DATA

ARM A - Ko Chiu Road EB
ARM B - Lei Yue Mun SB
ARM C - Ko Chiu Road WB

.GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I
			INTERCEPT (PCU/MIN)	I												
I	ARM A	I	6.50	I	8.50	I	11.00	I	28.00	I	40.00	I	35.0	I	0.770	I
39.078			I													
I	ARM B	I	7.50	I	9.00	I	17.00	I	40.00	I	40.00	I	45.0	I	0.804	I
42.574			I													
I	ARM C	I	6.50	I	8.00	I	10.00	I	20.00	I	40.00	I	60.0	I	0.678	I
33.993			I													

.TRAFFIC DEMAND DATA

.TIME PERIOD BEGINS 17.30 AND ENDS 19.00

.LENGTH OF TIME PERIOD - 90 MINUTES.

.LENGTH OF TIME SEGMENT - 15 MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	ARM	I	NUMBER OF MINUTES FROM START WHEN	I	RATE OF FLOW (VEH/MIN)	I
I	I	I	FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I	I	I	I
I	I	I	TO RISE I IS REACHED IF FALLING I PEAK I OF PEAK I PEAK I	I	I	I
I	ARM A	I	15.00	I	45.00	I
			I	75.00	I	6.69
			I	10.03	I	6.69
I	ARM B	I	15.00	I	45.00	I
			I	75.00	I	11.75
			I	17.63	I	11.75
I	ARM C	I	15.00	I	45.00	I
			I	75.00	I	4.25
			I	6.38	I	4.25

I	TIME	I	FROM/TO	I	ARM A	I	ARM B	I	ARM C	I
I	17.30 - 19.00	I		I		I		I		I
I		I	ARM A	I	0.084	I	0.710	I	0.206	I
I		I		I	45.0	I	380.0	I	110.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM B	I	0.612	I	0.213	I	0.176	I
I		I		I	575.0	I	200.0	I	165.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM C	I	0.529	I	0.456	I	0.015	I
I		I		I	180.0	I	155.0	I	5.0	I

I (0.0) I (0.0) I (0.0) I
I I I I I I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.30-17.45									I
I	ARM A	6.69	35.62	0.188		0.0	0.2	3.4		I
I	ARM B	11.75	40.97	0.287		0.0	0.4	5.9		I
I	ARM C	4.25	27.06	0.157		0.0	0.2	2.7		I
I										I
I	17.45-18.00									I
I	ARM A	7.99	34.95	0.229		0.2	0.3	4.4		I
I	ARM B	14.03	40.65	0.345		0.4	0.5	7.8		I
I	ARM C	5.07	25.70	0.197		0.2	0.2	3.6		I
I										I
I	18.00-18.15									I
I	ARM A	9.78	34.02	0.288		0.3	0.4	6.0		I
I	ARM B	17.18	40.22	0.427		0.5	0.7	11.0		I
I	ARM C	6.22	23.84	0.261		0.2	0.4	5.2		I
I										I
I	18.15-18.30									I
I	ARM A	9.78	34.01	0.288		0.4	0.4	6.0		I
I	ARM B	17.18	40.22	0.427		0.7	0.7	11.1		I
I	ARM C	6.22	23.83	0.261		0.4	0.4	5.3		I
I										I
I	18.30-18.45									I
I	ARM A	7.99	34.94	0.229		0.4	0.3	4.5		I
I	ARM B	14.03	40.65	0.345		0.7	0.5	8.0		I
I	ARM C	5.07	25.68	0.198		0.4	0.2	3.8		I
I										I
I	18.45-19.00									I
I	ARM A	6.69	35.61	0.188		0.3	0.2	3.5		I
I	ARM B	11.75	40.96	0.287		0.5	0.4	6.1		I
I	ARM C	4.25	27.04	0.157		0.2	0.2	2.8		I
I										I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.2
18.00	0.3
18.15	0.4
18.30	0.4
18.45	0.3
19.00	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.4
18.00	0.5 *

18.15	0.7	*
18.30	0.7	*
18.45	0.5	*
19.00	0.4	

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.2
18.00	0.2
18.15	0.4
18.30	0.4
18.45	0.2
19.00	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I	(VEH)	I	(MIN)	I	(MIN)	I
I		I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I
I	A	I	733.6	I	489.1	I	27.8	I
I	B	I	1288.9	I	859.3	I	50.0	I
I	C	I	466.2	I	310.8	I	23.4	I
I	ALL	I	2488.7	I	1659.2	I	101.2	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Ko Fai Road - 2015 Observed Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 12.50 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 2.70 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 35.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 59.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 2.70 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 3.30 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	ARM A	I	15.00	I	45.00	I	75.00	I	5.44	I	8.16	I	5.44	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	5.06	I	7.59	I	5.06	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	7.00	I	10.50	I	7.00	I

		TURNING PROPORTIONS				
		TURNING COUNTS (VEH/HR)				
		(PERCENTAGE OF H.V.S)				
TIME	FROM/TO	ARM A	ARM B	ARM C		
07.30 - 09.00						
	ARM A	0.000	0.195	0.805		
		0.0	85.0	350.0		
		(0.0)	(0.0)	(0.0)		
	ARM B	0.000	0.000	1.000		
		0.0	0.0	405.0		
		(0.0)	(0.0)	(0.0)		
	ARM C	0.527	0.473	0.000		
		295.0	265.0	0.0		
		(0.0)	(0.0)	(0.0)		

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-C	5.06	9.83	0.515		0.0	1.0	14.4	
B-A	0.00	6.19	0.000		0.0	0.0	0.0	
C-A	3.69							
C-B	3.31	10.01	0.331		0.0	0.5	7.0	
A-B	1.06							
A-C	4.38							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.101	0.005			0.009			
B-A	0.066	0.013	0.020	0.004	0.006			
C-B	0.103	0.006		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-C	6.05	9.67	0.625		1.0	1.6	22.4	
B-A	0.00	5.81	0.000		0.0	0.0	0.0	
C-A	4.40							
C-B	3.96	9.81	0.403		0.5	0.7	9.6	
A-B	1.27							
A-C	5.22							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.100	0.006			0.009			
B-A	0.062	0.015	0.020	0.004	0.006			
C-B	0.101	0.007		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	7.40	9.44	0.785		1.6	3.2	42.4	
B-A	0.00	5.30	0.000		0.0	0.0	0.0	
C-A	5.39							
C-B	4.84	9.54	0.508		0.7	1.0	14.3	
A-B	1.55							
A-C	6.40							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.097	0.008			0.009			

I	B-A	0.057	0.019	0.020	0.004	0.006	I
I	C-B	0.098	0.009		0.009		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	7.40	9.44	0.785		3.2	3.4	49.9		I
I	B-A	0.00	5.29	0.000		0.0	0.0	0.0		I
I	C-A	5.39								I
I	C-B	4.84	9.54	0.508		1.0	1.0	15.2		I
I	A-B	1.55								I
I	A-C	6.40								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.097	0.008			0.009				I
I	B-A	0.057	0.019	0.020	0.004	0.006				I
I	C-B	0.098	0.009		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	6.05	9.67	0.625		3.4	1.7	28.5		I
I	B-A	0.00	5.80	0.000		0.0	0.0	0.0		I
I	C-A	4.40								I
I	C-B	3.96	9.81	0.403		1.0	0.7	10.8		I
I	A-B	1.27								I
I	A-C	5.22								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.100	0.006			0.009				I
I	B-A	0.062	0.015	0.020	0.004	0.006				I
I	C-B	0.101	0.007		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	5.06	9.83	0.515		1.7	1.1	17.3		I
I	B-A	0.00	6.18	0.000		0.0	0.0	0.0		I
I	C-A	3.69								I
I	C-B	3.31	10.01	0.331		0.7	0.5	7.8		I
I	A-B	1.06								I
I	A-C	4.38								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.101	0.005			0.009				I
I	B-A	0.066	0.013	0.020	0.004	0.006				I
I	C-B	0.103	0.006		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	1.0	*
08.00	1.6	**
08.15	3.2	***
08.30	3.4	***
08.45	1.7	**
09.00	1.1	*

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.5	
08.00	0.7	*
08.15	1.0	*
08.30	1.0	*
08.45	0.7	*
09.00	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I
I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I	555.3	I 370.2	I 175.0	I 0.32	I 175.1	I 0.32
I	B-A	I	0.0	I 0.0	I 0.0	I 0.00	I 0.0	I 0.00
I	C-A	I	404.5	I 269.7	I	I	I	I
I	C-B	I	363.4	I 242.2	I 64.6	I 0.18	I 64.6	I 0.18
I	A-B	I	116.6	I 77.7	I	I	I	I
I	A-C	I	479.9	I 319.9	I	I	I	I
I	ALL	I	1919.7	I 1279.8	I 239.6	I 0.12	I 239.7	I 0.12

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

RUN TITLE

Cha Kwo Ling Road/Ko Fai Road - 2015 Observed Flows (PM)

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 12.50 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 2.70 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 35.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 59.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 2.70 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 3.30 M.	I

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	7.40	9.28	0.798		1.7	3.4	44.9	
B-A	0.00	5.25	0.000		0.0	0.0	0.0	
C-A	4.48							
C-B	4.84	9.41	0.515		0.7	1.0	14.7	
A-B	1.28							
A-C	7.40							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL CHANGE:	LANE WIDTH (.1M)	WIDTH (.1M)	WIDTH (.1M)	(AHEAD FOR MAJOR) (M)	TO RIGHT (M)			
B-C	0.096	0.009					0.009	

I	B-A	0.056	0.019	0.020	0.004	0.005	I
I	C-B	0.097	0.010		0.009		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	7.40	9.28	0.798		3.4	3.7	53.5		I
I	B-A	0.00	5.24	0.000		0.0	0.0	0.0		I
I	C-A	4.48								I
I	C-B	4.84	9.41	0.515		1.0	1.0	15.6		I
I	A-B	1.28								I
I	A-C	7.40								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.096	0.009			0.009				I
I	B-A	0.056	0.019	0.020	0.004	0.005				I
I	C-B	0.097	0.010		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	6.05	9.54	0.634		3.7	1.8	29.9		I
I	B-A	0.00	5.76	0.000		0.0	0.0	0.0		I
I	C-A	3.66								I
I	C-B	3.96	9.70	0.408		1.0	0.7	11.0		I
I	A-B	1.04								I
I	A-C	6.05								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.098	0.007			0.009				I
I	B-A	0.062	0.016	0.020	0.004	0.006				I
I	C-B	0.100	0.008		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	5.06	9.72	0.521		1.8	1.1	17.8		I
I	B-A	0.00	6.14	0.000		0.0	0.0	0.0		I
I	C-A	3.06								I
I	C-B	3.31	9.91	0.334		0.7	0.5	7.9		I
I	A-B	0.88								I
I	A-C	5.06								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.100	0.006			0.009				I
I	B-A	0.066	0.013	0.020	0.004	0.006				I
I	C-B	0.102	0.007		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	1.1	*
08.00	1.7	**
08.15	3.4	***
08.30	3.7	****
08.45	1.8	**
09.00	1.1	*

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.5	
08.00	0.7	*
08.15	1.0	*
08.30	1.0	*
08.45	0.7	*
09.00	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *	I	* INCLUSIVE QUEUEING *		I
I	I	I	I		I	* DELAY *	I	* DELAY *		I
I	I	I	I		I	I	I	I		I
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)
I	B-C	I	555.3	I 370.2	I	183.9	I 0.33	I	184.0	I 0.33
I	B-A	I	0.0	I 0.0	I	0.0	I 0.00	I	0.0	I 0.00
I	C-A	I	335.9	I 224.0	I	I	I	I	I	I
I	C-B	I	363.4	I 242.2	I	66.0	I 0.18	I	66.0	I 0.18
I	A-B	I	96.0	I 64.0	I	I	I	I	I	I
I	A-C	I	555.3	I 370.2	I	I	I	I	I	I
I	ALL	I	1906.0	I 1270.7	I	249.9	I 0.13	I	250.0	I 0.13

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Cha Kwo Ling Road / Ko Chiu Road

Design Year: 2015

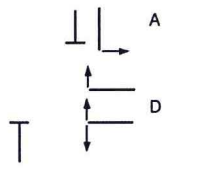
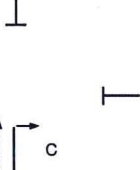
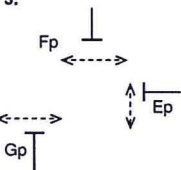
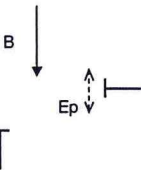
Description: 2015 Observed Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak			
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Cha Kwo Ling Road NB		C	2	3.375						1955	1955	260	0.133		305	0.156		
		C	2	3.375		17.5		100%	100%	1925	1925	315	0.164	0.164	330	0.171	0.171	
Cha Kwo Ling Road SB		A	1	3.625	15				100%	100%	1800	1800	180	0.100	0.100	155	0.086	0.086
		B	4	3.625						2120	2120	110	0.052	0.052	85	0.040	0.040	
Ko Chiu Road WB		D	1	3.800	9	20		56% / 44%	75% / 25%	1770	1745	116	0.066		127	0.073		
		D	1	3.800		17.5		100%	100%	1965	1965	129	0.066		143	0.073		
Pedestrian		Ep	3,4	Min	6	+	12			=	18							
		Fp	3	Min	8	+	15			=	23			*			*	
		Gp	3	Min	6	+	11			=	17							

Notes:	Traffic Flow (pcu/hr)	Group			Group		
		y	DCFpB	ACFpB	y	DCFpB	ACFpB
		L (sec)	41	43	L (sec)	41	43
		C (sec)	100	100	C (sec)	100	100
		y pract.	0.531	0.513	y pract.	0.531	0.513
		R.C. (%)	89%	63%	R.C. (%)	87%	72%

Stage / Phase Diagrams									
1. 		2. 		3. 		4. 		5.	
I/G= 7		I/G= 5		I/G= 8	8	I/G= 18		I/G=	
I/G= 7		I/G= 5		I/G= 8	8	I/G= 18		I/G=	
Date: 一月-16							Junction:		E

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Size Shan Street - 2015 Observed Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB

ARM B IS Ko Fai Road EB

ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 13.50 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 3.00 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 22.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 30.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 5.00 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 0.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I

I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I	I	I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I
I	ARM A	I	15.00	I	45.00	I	75.00	I	5.75	I	8.63	I	5.75	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	1.63	I	2.44	I	1.63	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	2.19	I	3.28	I	2.19	I

		TURNING PROPORTIONS				
		TURNING COUNTS (VEH/HR)				
		(PERCENTAGE OF H.V.S)				
TIME	FROM/TO	ARM A	ARM B	ARM C		
07.30 - 09.00						
	ARM A	0.000	0.022	0.978		
		0.0	10.0	450.0		
		(0.0)	(0.0)	(0.0)		
	ARM B	0.038	0.000	0.962		
		5.0	0.0	125.0		
		(0.0)	(0.0)	(0.0)		
	ARM C	0.629	0.371	0.000		
		110.0	65.0	0.0		
		(0.0)	(0.0)	(0.0)		

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-AC	1.63	11.55	0.141		0.0	0.2	2.4	
C-A	1.38							
C-B	0.81	10.32	0.079		0.0	0.1	1.2	
A-B	0.13							
A-C	5.63							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-AC	0.122	0.005	0.013	0.006	0.008			
C-B	0.103	0.007		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	1.94	11.33	0.171		0.2	0.2	3.0	
C-A	1.64							
C-B	0.97	10.12	0.096		0.1	0.1	1.5	
A-B	0.15							
A-C	6.72							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-AC	0.118	0.006	0.013	0.005	0.008			
C-B	0.101	0.008		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-AC	2.38	11.01	0.216		0.2	0.3	4.0	
C-A	2.01							
C-B	1.19	9.85	0.121		0.1	0.1	2.0	
A-B	0.18							
A-C	8.23							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-AC	0.113	0.008	0.013	0.005	0.008			
C-B	0.099	0.010		0.009				

I	B-AC	I	178.3	I	118.8	I	19.2	I	0.11	I	19.2	I	0.11	I
I	C-A	I	150.8	I	100.6	I		I		I		I		I
I	C-B	I	89.1	I	59.4	I	9.8	I	0.11	I	9.8	I	0.11	I
I	A-B	I	13.7	I	9.1	I		I		I		I		I
I	A-C	I	617.0	I	411.4	I		I		I		I		I

I	ALL	I	1049.0	I	699.3	I	29.0	I	0.03	I	29.0	I	0.03	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

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RUN TITLE

Cha Kwo Ling Road/Sze Shan Street - 2015 Observed Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	13.50 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	22.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	30.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	0.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I

I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I	I	I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I
I	ARM A	I	15.00	I	45.00	I	75.00	I	6.06	I	9.09	I	6.06	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	2.00	I	3.00	I	2.00	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	2.25	I	3.38	I	2.25	I

		TURNING PROPORTIONS				
		TURNING COUNTS (VEH/HR)				
		(PERCENTAGE OF H.V.S)				
TIME	FROM/TO	ARM A	ARM B	ARM C		
07.30 - 09.00						
	ARM A	0.000	0.010	0.990		
		0.0	5.0	480.0		
		(0.0)	(0.0)	(0.0)		
	ARM B	0.031	0.000	0.969		
		5.0	0.0	155.0		
		(0.0)	(0.0)	(0.0)		
	ARM C	0.583	0.417	0.000		
		105.0	75.0	0.0		
		(0.0)	(0.0)	(0.0)		

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-AC	2.00	11.51	0.174		0.0	0.2	3.0	
C-A	1.31							
C-B	0.94	10.27	0.091		0.0	0.1	1.5	
A-B	0.06							
A-C	6.00							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-AC	0.121	0.006	0.013	0.006	0.008			
C-B	0.103	0.007		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	2.39	11.27	0.212		0.2	0.3	3.9	
C-A	1.57							
C-B	1.12	10.06	0.111		0.1	0.1	1.8	
A-B	0.07							
A-C	7.16							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-AC	0.117	0.007	0.013	0.005	0.008			
C-B	0.101	0.008		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-AC	2.92	10.94	0.267		0.3	0.4	5.3	
C-A	1.92							
C-B	1.37	9.77	0.140		0.1	0.2	2.4	
A-B	0.09							
A-C	8.77							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-AC	0.111	0.008	0.013	0.005	0.008			
C-B	0.098	0.010		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-AC	2.00	11.51	0.174		0.3	0.2	3.2	
C-A	1.31							
C-B	0.94	10.27	0.091		0.1	0.1	1.5	
A-B	0.06							
A-C	6.00							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-AC	0.121	0.006	0.013	0.006	0.008			
C-B	0.103	0.007		0.009				

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I		I	* DELAY *	I	* DELAY *	I
I	I	I		I		I		I
I	I	(VEH)	(VEH/H)	I	(MIN)	I	(MIN)	I
					(MIN/VEH)		(MIN/VEH)	

I	B-AC	I	219.4	I	146.3	I	25.1	I	0.11	I	25.1	I	0.11	I
I	C-A	I	144.0	I	96.0	I		I		I		I		I
I	C-B	I	102.8	I	68.6	I	11.6	I	0.11	I	11.6	I	0.11	I
I	A-B	I	6.9	I	4.6	I		I		I		I		I
I	A-C	I	658.2	I	438.8	I		I		I		I		I

I	ALL	I	1131.2	I	754.2	I	36.6	I	0.03	I	36.6	I	0.03	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Yan Wing Street - 2015 Observed Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB
ARM B IS Yan Wing Street WB
ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	14.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	20.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	25.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	5.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)
08.00-08.15								
B-C	3.66	11.49	0.318		0.3	0.5	6.7	
B-A	2.56	8.90	0.288		0.3	0.4	5.8	
C-A	5.85							
C-B	0.00	9.98	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	2.10							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-C	0.096	0.003				0.011		

I	B-A	0.074	0.007	0.022	0.006	0.009	I
I	C-B	0.110	0.002		0.010		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	3.66	11.49	0.318		0.5	0.5	6.9		I
I	B-A	2.56	8.90	0.288		0.4	0.4	6.0		I
I	C-A	5.85								I
I	C-B	0.00	9.98	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.10								I
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:										I
			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.096	0.003					0.011		I
I	B-A	0.074	0.007	0.022	0.006			0.009		I
I	C-B	0.110	0.002		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	2.99	11.74	0.254		0.5	0.3	5.3		I
I	B-A	2.09	9.09	0.230		0.4	0.3	4.7		I
I	C-A	4.78								I
I	C-B	0.00	10.04	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	1.72								I
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:										I
			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.098	0.002					0.012		I
I	B-A	0.076	0.006	0.022	0.006			0.009		I
I	C-B	0.111	0.002		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	2.50	11.92	0.210		0.3	0.3	4.1		I
I	B-A	1.75	9.22	0.190		0.3	0.2	3.6		I
I	C-A	4.00								I
I	C-B	0.00	10.09	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	1.44								I
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:										I
			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.099	0.002					0.012		I
I	B-A	0.077	0.005	0.022	0.006			0.009		I
I	C-B	0.111	0.002		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.3
08.00	0.3
08.15	0.5
08.30	0.5
08.45	0.3
09.00	0.3

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.2
08.00	0.3
08.15	0.4
08.30	0.4
08.45	0.3
09.00	0.2

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I	I	I	I		I	I		I	I		I
I	I	I	I		I	I		I	I		I
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	274.2	I 182.8	I	31.8	I 0.12	I	31.8	I 0.12	I
I	B-A	I	192.0	I 128.0	I	27.8	I 0.14	I	27.8	I 0.14	I
I	C-A	I	438.8	I 292.5	I	I	I	I	I	I	I
I	C-B	I	0.0	I 0.0	I	0.0	I 0.00	I	0.0	I 0.00	I
I	A-B	I	0.0	I 0.0	I	I	I	I	I	I	I
I	A-C	I	157.7	I 105.1	I	I	I	I	I	I	I
I	ALL	I	1062.7	I 708.5	I	59.6	I 0.06	I	59.6	I 0.06	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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RUN TITLE

Cha Kwo Ling Road/Yan Wing Street - 2015 Observed Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB

ARM B IS Yan Wing Street WB

ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	14.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	20.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	25.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	5.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

			TURNING PROPORTIONS							
I		I	TURNING COUNTS (VEH/HR)						I	
I		I	(PERCENTAGE OF H.V.S.)						I	
I		I	-----						I	
I	TIME	I	FROM/TO	I	ARM A	I	ARM B	I	ARM C	I

I	07.30 - 09.00	I		I		I		I		I
I		I	ARM A	I	0.000	I	0.000	I	1.000	I
I		I		I	0.0	I	0.0	I	110.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM B	I	0.250	I	0.000	I	0.750	I
I		I		I	120.0	I	0.0	I	360.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM C	I	1.000	I	0.000	I	0.000	I
I		I		I	365.0	I	0.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-C	4.50	12.02	0.374		0.0	0.6	8.5	
B-A	1.50	9.17	0.164		0.0	0.2	2.8	
C-A	4.56							
C-B	0.00	10.10	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	1.38							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT				
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-C	0.100	0.002					0.012	
B-A	0.076	0.005	0.022	0.006			0.009	
C-B	0.111	0.002		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)
07.45-08.00								
B-C	5.37	11.85	0.453		0.6	0.8	11.8	
B-A	1.79	9.02	0.199		0.2	0.2	3.6	
C-A	5.45							
C-B	0.00	10.06	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	1.64							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
			MAJOR RD.	CENT RES	VIS TO LEFT		VISIBILITY	
MARGINAL	LANE WIDTH		WIDTH	WIDTH	(AHEAD FOR MAJOR)		TO RIGHT	
CHANGE:	(.1M)		(.1M)	(.1M)	(M)		(M)	
B-C	0.099	0.002					0.012	
B-A	0.075	0.006		0.022	0.006		0.009	
C-B	0.111	0.002			0.010			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)
08.00-08.15								
B-C	6.58	11.63	0.566		0.8	1.3	18.0	
B-A	2.19	8.82	0.249		0.2	0.3	4.8	
C-A	6.67							
C-B	0.00	10.00	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	2.01							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.		CENT RES	VIS TO LEFT	VISIBILITY		
MARGINAL	LANE WIDTH	WIDTH		WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
CHANGE:	(.1M)	(.1M)		(.1M)	(M)	(M)		
B-C	0.097	0.002				0.011		

I	B-A	0.074	0.007	0.022	0.006	0.009	I
I	C-B	0.110	0.002		0.010		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	6.58	11.63	0.566		1.3	1.3	19.2		I
I	B-A	2.19	8.82	0.249		0.3	0.3	4.9		I
I	C-A	6.67								I
I	C-B	0.00	10.00	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.01								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.097	0.002			0.011				I
I	B-A	0.074	0.007	0.022	0.006	0.009				I
I	C-B	0.110	0.002		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	5.37	11.85	0.453		1.3	0.8	13.2		I
I	B-A	1.79	9.02	0.199		0.3	0.3	3.9		I
I	C-A	5.45								I
I	C-B	0.00	10.06	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	1.64								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.099	0.002			0.012				I
I	B-A	0.075	0.006	0.022	0.006	0.009				I
I	C-B	0.111	0.002		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	4.50	12.01	0.375		0.8	0.6	9.4		I
I	B-A	1.50	9.17	0.164		0.3	0.2	3.0		I
I	C-A	4.56								I
I	C-B	0.00	10.10	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	1.38								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.100	0.002			0.012				I
I	B-A	0.076	0.005	0.022	0.006	0.009				I
I	C-B	0.111	0.002		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.6	*
08.00	0.8	*
08.15	1.3	*
08.30	1.3	*
08.45	0.8	*
09.00	0.6	*

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.2	
08.00	0.2	
08.15	0.3	
08.30	0.3	
08.45	0.3	
09.00	0.2	

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I
I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I	493.6	I 329.1	I 80.1	I 0.16	I 80.1	I 0.16
I	B-A	I	164.5	I 109.7	I 23.0	I 0.14	I 23.0	I 0.14
I	C-A	I	500.5	I 333.7	I	I	I	I
I	C-B	I	0.0	I 0.0	I 0.0	I 0.00	I 0.0	I 0.00
I	A-B	I	0.0	I 0.0	I	I	I	I
I	A-C	I	150.8	I 100.6	I	I	I	I
I	ALL	I	1309.5	I 873.0	I 103.1	I 0.08	I 103.1	I 0.08

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Access Road - 2015 Observed Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB

ARM B IS Access Road WB

ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 13.00 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 3.00 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 100.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 100.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 2.50 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 2.50 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	I	NUMBER OF MINUTES FROM START WHEN	I	RATE OF FLOW (VEH/MIN)	I
I	ARM	I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I	I		I
I	I	I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I	I		I

I	ARM A	I	15.00	I	45.00	I	75.00	I	3.94	I	5.91	I	3.94	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.13	I	0.19	I	0.13	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	4.00	I	6.00	I	4.00	I

		TURNING PROPORTIONS			
		TURNING COUNTS (VEH/HR)			
		(PERCENTAGE OF H.V.S)			
TIME	FROM/TO	ARM A	ARM B	ARM C	
07.30 - 09.00	ARM A	0.000	0.016	0.984	
		0.0	5.0	310.0	
		(0.0)	(0.0)	(0.0)	
	ARM B	0.500	0.000	0.500	
		5.0	0.0	5.0	
		(0.0)	(0.0)	(0.0)	
	ARM C	0.984	0.016	0.000	
		315.0	5.0	0.0	
		(0.0)	(0.0)	(0.0)	

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-C	0.06	10.17	0.006		0.0	0.0	0.1	
B-A	0.06	7.78	0.008		0.0	0.0	0.1	
C-A	3.94							
C-B	0.06	10.62	0.006		0.0	0.0	0.1	
A-B	0.06							
A-C	3.88							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.107	0.004			0.009			
B-A	0.082	0.007	0.020	0.005	0.007			
C-B	0.106	0.005		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-C	0.07	10.03	0.007		0.0	0.0	0.1	
B-A	0.07	7.56	0.010		0.0	0.0	0.1	
C-A	4.70							
C-B	0.07	10.48	0.007		0.0	0.0	0.1	
A-B	0.07							
A-C	4.63							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.106	0.005			0.009			
B-A	0.080	0.008	0.020	0.005	0.007			
C-B	0.105	0.005		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	0.09	9.84	0.009		0.0	0.0	0.1	
B-A	0.09	7.27	0.013		0.0	0.0	0.2	
C-A	5.76							
C-B	0.09	10.29	0.009		0.0	0.0	0.1	
A-B	0.09							
A-C	5.67							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.104	0.006			0.009			
B-A	0.077	0.010	0.020	0.004	0.007			

I	C-B	0.103	0.007	0.010	I
---	-----	-------	-------	-------	---

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	0.09	9.84	0.009		0.0	0.0	0.1		I
I	B-A	0.09	7.27	0.013		0.0	0.0	0.2		I
I	C-A	5.76								I
I	C-B	0.09	10.29	0.009		0.0	0.0	0.1		I
I	A-B	0.09								I
I	A-C	5.67								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.104	0.006			0.009				I
I	B-A	0.077	0.010	0.020	0.004	0.007				I
I	C-B	0.103	0.007		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	0.07	10.03	0.007		0.0	0.0	0.1		I
I	B-A	0.07	7.56	0.010		0.0	0.0	0.2		I
I	C-A	4.70								I
I	C-B	0.07	10.48	0.007		0.0	0.0	0.1		I
I	A-B	0.07								I
I	A-C	4.63								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.106	0.005			0.009				I
I	B-A	0.080	0.008	0.020	0.005	0.007				I
I	C-B	0.105	0.005		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	0.06	10.17	0.006		0.0	0.0	0.1		I
I	B-A	0.06	7.78	0.008		0.0	0.0	0.1		I
I	C-A	3.94								I
I	C-B	0.06	10.62	0.006		0.0	0.0	0.1		I
I	A-B	0.06								I
I	A-C	3.88								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.107	0.004			0.009				I
I	B-A	0.082	0.007	0.020	0.005	0.007				I
I	C-B	0.106	0.005		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I	I	I	I		I	* DELAY *		I	* DELAY *		I
I	I	I	I		I	I		I	I		I
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	6.9	I 4.6	I	0.7	I 0.10	I	0.7	I 0.10	I
I	B-A	I	6.9	I 4.6	I	0.9	I 0.13	I	0.9	I 0.13	I
I	C-A	I	431.9	I 288.0	I	I	I	I	I	I	I
I	C-B	I	6.9	I 4.6	I	0.7	I 0.10	I	0.7	I 0.10	I
I	A-B	I	6.9	I 4.6	I	I	I	I	I	I	I
I	A-C	I	425.1	I 283.4	I	I	I	I	I	I	I
I	ALL	I	884.4	I 589.6	I	2.3	I 0.00	I	2.3	I 0.00	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

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RUN TITLE

Cha Kwo Ling Road/Access Road - 2015 Observed Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB

ARM B IS Access Road WB

ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	13.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	100.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	100.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	2.50 M.	I
I	- LANE 2 WIDTH	I (WB-A)	2.50 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	ARM A	I	15.00	I	45.00	I	75.00	I	5.88	I	8.81	I	5.88	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.13	I	0.19	I	0.13	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	4.56	I	6.84	I	4.56	I

		TURNING PROPORTIONS					
		TURNING COUNTS (VEH/HR)					
		(PERCENTAGE OF H.V.S)					

TIME		FROM/TO	ARM A	ARM B	ARM C		
-----		-----	-----	-----	-----	-----	-----
07.30 - 09.00							
	ARM A	0.000	0.011	0.989			
		0.0	5.0	465.0			
		(0.0)	(0.0)	(0.0)			
	ARM B	0.500	0.000	0.500			
		5.0	0.0	5.0			
		(0.0)	(0.0)	(0.0)			
	ARM C	0.986	0.014	0.000			
		360.0	5.0	0.0			
		(0.0)	(0.0)	(0.0)			

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-C	0.06	9.83	0.006		0.0	0.0	0.1	
B-A	0.06	7.38	0.008		0.0	0.0	0.1	
C-A	4.50							
C-B	0.06	10.27	0.006		0.0	0.0	0.1	
A-B	0.06							
A-C	5.81							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-C	0.104	0.006				0.009	
	B-A	0.078	0.009	0.020	0.005		0.007	
	C-B	0.103	0.007		0.009			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-C	0.07	9.62	0.008		0.0	0.0	0.1	
B-A	0.07	7.09	0.011		0.0	0.0	0.2	
C-A	5.37							
C-B	0.07	10.06	0.007		0.0	0.0	0.1	
A-B	0.07							
A-C	6.94							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-C	0.101	0.008				0.009	
	B-A	0.075	0.011	0.020	0.004		0.007	
	C-B	0.101	0.008		0.009			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	0.09	9.34	0.010		0.0	0.0	0.1	
B-A	0.09	6.69	0.014		0.0	0.0	0.2	
C-A	6.58							
C-B	0.09	9.77	0.009		0.0	0.0	0.1	
A-B	0.09							
A-C	8.50							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-C	0.098	0.009				0.009	

I	B-A	0.071	0.014	0.020	0.004	0.006	I
I	C-B	0.098	0.010		0.009		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	0.09	9.34	0.010		0.0	0.0	0.1		I
I	B-A	0.09	6.69	0.014		0.0	0.0	0.2		I
I	C-A	6.58								I
I	C-B	0.09	9.77	0.009		0.0	0.0	0.1		I
I	A-B	0.09								I
I	A-C	8.50								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.098	0.009				0.009			I
I	B-A	0.071	0.014	0.020	0.004		0.006			I
I	C-B	0.098	0.010		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	0.07	9.62	0.008		0.0	0.0	0.1		I
I	B-A	0.07	7.09	0.011		0.0	0.0	0.2		I
I	C-A	5.37								I
I	C-B	0.07	10.06	0.007		0.0	0.0	0.1		I
I	A-B	0.07								I
I	A-C	6.94								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.101	0.008				0.009			I
I	B-A	0.075	0.011	0.020	0.004		0.007			I
I	C-B	0.101	0.008		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	0.06	9.83	0.006		0.0	0.0	0.1		I
I	B-A	0.06	7.38	0.008		0.0	0.0	0.1		I
I	C-A	4.50								I
I	C-B	0.06	10.27	0.006		0.0	0.0	0.1		I
I	A-B	0.06								I
I	A-C	5.81								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.104	0.006				0.009			I
I	B-A	0.078	0.009	0.020	0.005		0.007			I
I	C-B	0.103	0.007		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I
I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I	6.9	I 4.6	I 0.7	I 0.10	I 0.7	I 0.10
I	B-A	I	6.9	I 4.6	I 1.0	I 0.14	I 1.0	I 0.14
I	C-A	I	493.6	I 329.1	I	I	I	I
I	C-B	I	6.9	I 4.6	I 0.7	I 0.10	I 0.7	I 0.10
I	A-B	I	6.9	I 4.6	I	I	I	I
I	A-C	I	637.6	I 425.1	I	I	I	I
I	ALL	I	1158.7	I 772.4	I 2.4	I 0.00	I 2.4	I 0.00

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

2027 Reference Flows

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Lei Yue Mun Road / Ko Chiu Road (N)

Design Year: 2027

Description: 2027 Reference Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		Pro. Turning (%)	Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak				
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ko Chiu Road WB		E	4	3.300	12.5	25	16% / 84%	26% / 74%	1820	1810	439	0.241		154	0.085		
		E	4	3.300		22.5	100%	100%	1955	1955	471	0.241	0.241	166	0.085	0.085	
Lei Yue Mun Road SB		C	1,4	3.500	15		100%	100%	1785	1785	485	0.272		455	0.255		
		D	1	3.500					2105	2105	410	0.195	0.195	583	0.277	0.277	
		D	1	3.500					2105	2105	410	0.195		583	0.277		
Lei Yue Mun Road NB		A	1,2	3.700					1985	1985	432	0.218		345	0.174		
		A	1,2	3.700					2125	2125	463	0.218		370	0.174		
		B	2	3.700		25	100%	100%	2005	2005	70	0.035		40	0.020		
Pedestrian		Fp	3	Min	9	+	9		=	18							
		Gp	3,4	Min	10	+	10		=	20							
		Hp	2,3	Min	6	+	6		=	12							
		Ip	3	Min	7	+	7		=	14							
		Jp	2,3	Min	10	+	11		=	21							

Notes:	Traffic Flow (pcu/hr)	Group	AFpE	DBFpE	Group	CBFp	DBFpE
		y	0.459	0.436	y	0.255	0.362
	820(1165) 485(455) 840(280)	L (sec)	35	45	L (sec)	41	45
	895(715) 70(40)	C (sec)	110	110	C (sec)	110	110
		y pract.	0.614	0.532	y pract.	0.565	0.532
		R.C. (%)	34%	22%	R.C. (%)	121%	47%

Stage / Phase Diagrams							
1.	2.	3.	4.	5.			
I/G= 5	I/G= 5	I/G= 11	I/G= 12	I/G=			
I/G= 5	I/G= 5	I/G= 11	I/G= 12	I/G=			

Date: 一月-16 Junction: A

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Lei Yue Mun Road / Yau Tong Estate Southern Access

Design Year: 2027

Description: 2027 Reference Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		Pro. Turning (%)	Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak			
					Left	Right		(%) uphill Gradient	A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)
Yau Tong Est. Access EB	↷	C	2	3.500	6		100%	100%	1570	1570	140	0.089	0.089	120	0.076	0.076
	↘	C	2	3.500		15			1915	1915	15	0.008		35	0.018	
Lei Yue Mun Rd SB	↓	B	1	3.700					1985	1985	430	0.217		582	0.293	0.293
	↓	B	1	3.700					2125	2125	460	0.217		623	0.293	
Lei Yue Mun Rd NB	↶↷	A	1	3.500	7.5		47%	64%	1800	1740	484	0.269		405	0.233	
	↶	A	1	3.500					2105	2105	566	0.269	0.269	490	0.233	
Pedestrian		Dp	1,3	Min	6	+	6		=	12						
		Ep	2,3	Min	9	+	9		=	18						
		Fp	3	Min	8	+	7		=	15			*			*

Notes:	Traffic Flow (pcu/hr)	Group	BCFp	ACFp	Group	ACFp	BCFp
		y	0.306	0.358	y	0.309	0.370
		L (sec)	29	29	L (sec)	29	29
		C (sec)	115	115	C (sec)	115	115
		y pract.	0.673	0.673	y pract.	0.673	0.673
		R.C. (%)	120%	88%	R.C. (%)	118%	82%

Stage / Phase Diagrams				
1.	2.	3.	4.	5.
I/G= 9	I/G= 5	I/G= 9	I/G=	I/G=
I/G= 9	I/G= 5	I/G= 9	I/G=	I/G=

Date: 一月-16 Junction: B

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

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.ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

Lei Yue Mun Road/Ko Chiu Road (S) - 2027 Reference Flows (AM)

.INPUT DATA

ARM A - Ko Chiu Road EB

ARM B - Lei Yue Mun SB

ARM C - Ko Chiu Road WB

.GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I
INTERCEPT (PCU/MIN) I																
I	ARM A	I	6.50	I	8.50	I	11.00	I	28.00	I	40.00	I	35.0	I	0.770	I
39.078		I														
I	ARM B	I	7.50	I	9.00	I	17.00	I	40.00	I	40.00	I	45.0	I	0.804	I
42.574		I														
I	ARM C	I	6.50	I	8.00	I	10.00	I	20.00	I	40.00	I	60.0	I	0.678	I
33.993		I														

.TRAFFIC DEMAND DATA

.TIME PERIOD BEGINS 17.30 AND ENDS 19.00

.LENGTH OF TIME PERIOD - 90 MINUTES.

.LENGTH OF TIME SEGMENT - 15 MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	ARM	I	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	RATE OF FLOW (VEH/MIN)	I	BEFORE	I	AT TOP	I	AFTER	I
I		I	TO RISE	I	IS REACHED	I	IF FALLING	I	PEAK	I	OF PEAK	I	PEAK	I		I
I	ARM A	I	15.00	I	45.00	I	75.00	I	8.63	I	12.94	I	8.63	I		I
I	ARM B	I	15.00	I	45.00	I	75.00	I	11.31	I	16.97	I	11.31	I		I
I	ARM C	I	15.00	I	45.00	I	75.00	I	7.94	I	11.91	I	7.94	I		I

I	TIME	I	FROM/TO	I	ARM A	I	ARM B	I	ARM C	I
I	17.30 - 19.00	I		I		I		I		I
I		I	ARM A	I	0.065	I	0.710	I	0.225	I
I		I		I	45.0	I	490.0	I	155.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM B	I	0.630	I	0.193	I	0.177	I
I		I		I	570.0	I	175.0	I	160.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM C	I	0.386	I	0.606	I	0.008	I
I		I		I	245.0	I	385.0	I	5.0	I

I I I (0.0) I (0.0) I (0.0) I
I I I I I I I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.30-17.45									I
I	ARM A	8.63	33.66	0.256		0.0	0.3	5.1		I
I	ARM B	11.31	40.52	0.279		0.0	0.4	5.7		I
I	ARM C	7.94	27.31	0.291		0.0	0.4	6.0		I
I										I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.45-18.00									I
I	ARM A	10.30	32.59	0.316		0.3	0.5	6.8		I
I	ARM B	13.51	40.12	0.337		0.4	0.5	7.5		I
I	ARM C	9.48	26.00	0.365		0.4	0.6	8.4		I
I										I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.00-18.15									I
I	ARM A	12.61	31.14	0.405		0.5	0.7	10.0		I
I	ARM B	16.54	39.56	0.418		0.5	0.7	10.6		I
I	ARM C	11.61	24.21	0.480		0.6	0.9	13.3		I
I										I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.15-18.30									I
I	ARM A	12.61	31.13	0.405		0.7	0.7	10.2		I
I	ARM B	16.54	39.56	0.418		0.7	0.7	10.7		I
I	ARM C	11.61	24.20	0.480		0.9	0.9	13.7		I
I										I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.30-18.45									I
I	ARM A	10.30	32.57	0.316		0.7	0.5	7.1		I
I	ARM B	13.51	40.11	0.337		0.7	0.5	7.8		I
I	ARM C	9.48	25.99	0.365		0.9	0.6	8.9		I
I										I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.45-19.00									I
I	ARM A	8.63	33.64	0.256		0.5	0.3	5.3		I
I	ARM B	11.31	40.51	0.279		0.5	0.4	5.9		I
I	ARM C	7.94	27.29	0.291		0.6	0.4	6.3		I
I										I

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.3
18.00	0.5
18.15	0.7 *
18.30	0.7 *
18.45	0.5
19.00	0.3

.QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.4
18.00	0.5 *

18.15	0.7	*
18.30	0.7	*
18.45	0.5	*
19.00	0.4	

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
------------------------	--------------------------------

17.45	0.4	
18.00	0.6	*
18.15	0.9	*
18.30	0.9	*
18.45	0.6	*
19.00	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		
I		I		I	* DELAY *	I	* DELAY *	I		
I		I		I		I		I		
I		I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		
I	A	I	946.1	I	630.8	I	44.3	I	0.05	I
I	B	I	1240.9	I	827.3	I	48.2	I	0.04	I
I	C	I	870.7	I	580.5	I	56.6	I	0.06	I
I	ALL	I	3057.8	I	2038.5	I	149.1	I	0.05	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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RUN TITLE

Lei Yue Mun Road/Ko Chiu Road (S) - 2027 Reference Flows (PM)

.INPUT DATA

ARM A - Ko Chiu Road EB
ARM B - Lei Yue Mun SB
ARM C - Ko Chiu Road WB

.GEOMETRIC DATA

I ARM I V (M) I E (M) I L (M) I R (M) I D (M) I PHI (DEG) I SLOPE I
INTERCEPT (PCU/MIN) I

I ARM A I 6.50 I 8.50 I 11.00 I 28.00 I 40.00 I 35.0 I 0.770 I
39.078 I
I ARM B I 7.50 I 9.00 I 17.00 I 40.00 I 40.00 I 45.0 I 0.804 I
42.574 I
I ARM C I 6.50 I 8.00 I 10.00 I 20.00 I 40.00 I 60.0 I 0.678 I
33.993 I

.TRAFFIC DEMAND DATA

.TIME PERIOD BEGINS 17.30 AND ENDS 19.00

.LENGTH OF TIME PERIOD - 90 MINUTES.

.LENGTH OF TIME SEGMENT - 15 MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED IFALLING I PEAK I OF PEAK I PEAK I

I ARM A I 15.00 I 45.00 I 75.00 I 8.50 I 12.75 I 8.50 I
I ARM B I 15.00 I 45.00 I 75.00 I 15.50 I 23.25 I 15.50 I
I ARM C I 15.00 I 45.00 I 75.00 I 5.13 I 7.69 I 5.13 I

I I TURNING PROPORTIONS I
I I TURNING COUNTS (VEH/HR) I
I I (PERCENTAGE OF H.V.S) I
I
I TIME I FROM/TO I ARM A I ARM B I ARM C I

I 17.30 - 19.00 I I I I I
I I ARM A I 0.081 I 0.706 I 0.213 I
I I 55.0 I 480.0 I 145.0 I
I I (0.0) I (0.0) I (0.0) I
I I I I I
I I ARM B I 0.653 I 0.181 I 0.165 I
I I 810.0 I 225.0 I 205.0 I
I I (0.0) I (0.0) I (0.0) I
I I I I I
I I ARM C I 0.524 I 0.463 I 0.012 I
I I 215.0 I 190.0 I 5.0 I

I I (0.0) I (0.0) I (0.0) I
I I I I I I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.30-17.45									I
I	ARM A	8.50	35.05	0.243		0.0	0.3	4.7		I
I	ARM B	15.50	40.52	0.383		0.0	0.6	9.1		I
I	ARM C	5.13	24.78	0.207		0.0	0.3	3.8		I
I										I
I	17.45-18.00									I
I	ARM A	10.15	34.26	0.296		0.3	0.4	6.2		I
I	ARM B	18.51	40.11	0.461		0.6	0.9	12.6		I
I	ARM C	6.12	22.97	0.266		0.3	0.4	5.3		I
I										I
I	18.00-18.15									I
I	ARM A	12.43	33.18	0.375		0.4	0.6	8.8		I
I	ARM B	22.67	39.56	0.573		0.9	1.3	19.4		I
I	ARM C	7.50	20.50	0.366		0.4	0.6	8.4		I
I										I
I	18.15-18.30									I
I	ARM A	12.43	33.17	0.375		0.6	0.6	9.0		I
I	ARM B	22.67	39.56	0.573		1.3	1.3	20.0		I
I	ARM C	7.50	20.48	0.366		0.6	0.6	8.6		I
I										I
I	18.30-18.45									I
I	ARM A	10.15	34.24	0.296		0.6	0.4	6.4		I
I	ARM B	18.51	40.11	0.461		1.3	0.9	13.2		I
I	ARM C	6.12	22.94	0.267		0.6	0.4	5.6		I
I										I
I	18.45-19.00									I
I	ARM A	8.50	35.03	0.243		0.4	0.3	4.9		I
I	ARM B	15.50	40.51	0.383		0.9	0.6	9.5		I
I	ARM C	5.13	24.74	0.207		0.4	0.3	4.0		I
I										I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.3
18.00	0.4
18.15	0.6 *
18.30	0.6 *
18.45	0.4
19.00	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.6 *
18.00	0.9 *

18.15	1.3	*
18.30	1.3	*
18.45	0.9	*
19.00	0.6	*

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.3
18.00	0.4
18.15	0.6 *
18.30	0.6 *
18.45	0.4
19.00	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	A	I	932.4	I 621.6	I 40.0	I 0.04	I 40.0	I 0.04
I	B	I	1700.3	I 1133.5	I 83.8	I 0.05	I 83.8	I 0.05
I	C	I	562.2	I 374.8	I 35.7	I 0.06	I 35.7	I 0.06
I	ALL	I	3194.9	I 2129.9	I 159.5	I 0.05	I 159.5	I 0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Cha Kwo Ling Road / Ko Fai Road

Design Year: 2027

Description: 2027 Reference Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ko Fai Road	↷	C	1,3	4.000	12.5			100%	100%	1800	1800	725	0.403	0.403	575	0.319	
Cha Kwo Ling Rd SB	↓	A	1	3.000						1915	1915	410	0.214		360	0.188	
	↘	A	1	3.000		15		100%	100%	1870	1870	460	0.246		455	0.243	0.243
Cha Kwo Ling Rd NB	↶↷	B	2	3.400	15			28%	24%	1900	1910	338	0.178	0.178	331	0.173	
	↶	B	2	3.400						2095	2095	372	0.178		364	0.174	0.174
LRT/Pedestrian		Ep	2,3	Min	5	+	5			=	10						
		Fp	2	Min	5	+	5			=	10						
		Gp	3	Min	5	+	5			=	10						*
		Hp	1,3	Min	5	+	6			=	11						

Notes:	Traffic Flow (pcu/hr)	Group	ABGp	CB	Group	CB	ABGp
		y	0.424	0.581	y	0.493	0.417
		L (sec)	24	9	L (sec)	9	24
		C (sec)	100	100	C (sec)	100	100
		y pract.	0.684	0.819	y pract.	0.819	0.684
		R.C. (%)	61%	41%	R.C. (%)	66%	64%

Stage / Phase Diagrams				
1.	2.	3.	4.	5.
I/G=	I/G= 5	I/G= 6	I/G=	I/G=
I/G= 7	I/G= 5	I/G= 9	I/G=	I/G=

Date: 一月-16 Junction: D

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Cha Kwo Ling Road / Ko Chiu Road

Design Year: 2027

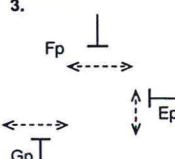
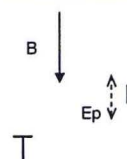
Description: 2027 Reference Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Cha Kwo Ling Road NB	↑ ↗	C C	2 2	3.375 3.375		17.5		100%	100%	1955 1925	1955 1925	385 445	0.197 0.231	0.231	395 420	0.202 0.218	0.218
Cha Kwo Ling Road SB	↘ ↓	A B	1 4	3.625 3.625	15			100%	100%	1800 2120	1800 2120	175 230	0.097 0.108	0.097 0.108	155 200	0.086 0.094	0.094
Ko Chiu Road WB	↖ ↙	D D	1 1	3.800 3.800	9	20 17.5		43% / 57%	60% / 40%	1790 1965	1765 1965	198 217	0.111 0.111		201 224	0.114 0.114	0.114
Pedestrian		Ep Fp Gp	3,4 3 3	Min Min Min	6 8 6	+ + +	12 15 11			= = =	18 23 17			*			*

Notes:	Traffic Flow (pcu/hr)	Group	DCFpB	ACFpB	Group	ACFpB	DCFpB
	230(200)	y	0.450	0.437	y	0.399	0.426
	175(155)	L (sec)	41	43	L (sec)	43	41
	330(305)	C (sec)	100	100	C (sec)	100	100
	85(120)	y pract.	0.531	0.513	y pract.	0.513	0.531
	385(395)	R.C. (%)	18%	17%	R.C. (%)	29%	25%
	445(420)						

Stage / Phase Diagrams				
1. 	2. 	3. 	4. 	5. 
I/G= 7	I/G= 5	I/G= 8	I/G= 18	I/G=
I/G= 5	I/G= 5	I/G= 8	I/G= 18	I/G=

Date: 一月-16 Junction: E

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Sze Shan Street - 2027 Reference Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB

ARM B IS Ko Fai Road EB

ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	13.50 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	22.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	30.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	0.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I

I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER
I	I	I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK
I	ARM A	I	15.00	I	45.00	I	75.00	I	8.38	I	12.56	I	8.38
I	ARM B	I	15.00	I	45.00	I	75.00	I	2.19	I	3.28	I	2.19
I	ARM C	I	15.00	I	45.00	I	75.00	I	3.25	I	4.88	I	3.25

		TURNING PROPORTIONS			
		TURNING COUNTS (VEH/HR)			
		(PERCENTAGE OF H.V.S)			
TIME	FROM/TO	ARM A	ARM B	ARM C	
07.30 - 09.00					
	ARM A	0.000	0.015	0.985	
		0.0	10.0	660.0	
		(0.0)	(0.0)	(0.0)	
	ARM B	0.029	0.000	0.971	
		5.0	0.0	170.0	
		(0.0)	(0.0)	(0.0)	
	ARM C	0.635	0.365	0.000	
		165.0	95.0	0.0	
		(0.0)	(0.0)	(0.0)	

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-AC	2.19	11.06	0.198		0.0	0.2	3.5	
C-A	2.06							
C-B	1.19	9.86	0.120		0.0	0.1	2.0	
A-B	0.13							
A-C	8.25							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-AC	0.113	0.008	0.013	0.005	0.008		
	C-B	0.099	0.010		0.009			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	2.61	10.72	0.244		0.2	0.3	4.7	
C-A	2.46							
C-B	1.42	9.57	0.148		0.1	0.2	2.5	
A-B	0.15							
A-C	9.85							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-AC	0.107	0.009	0.013	0.005	0.007		
	C-B	0.096	0.012		0.009			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-AC	3.20	10.27	0.312		0.3	0.4	6.5	
C-A	3.02							
C-B	1.74	9.17	0.189		0.2	0.2	3.4	
A-B	0.18							
A-C	12.07							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-AC	0.099	0.012	0.013	0.004	0.007		
	C-B	0.092	0.014		0.008			

I	B-AC	I	240.0	I	160.0	I	30.3	I	0.13	I	30.3	I	0.13	I
I	C-A	I	226.2	I	150.8	I		I		I		I		I
I	C-B	I	130.3	I	86.8	I	16.2	I	0.12	I	16.2	I	0.12	I
I	A-B	I	13.7	I	9.1	I		I		I		I		I
I	A-C	I	905.0	I	603.3	I		I		I		I		I

I	ALL	I	1515.2	I	1010.1	I	46.5	I	0.03	I	46.5	I	0.03	I

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* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Sze Shan Street - 2027 Reference Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB

ARM B IS Ko Fai Road EB

ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	13.50 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	22.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	30.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	0.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I

I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK
I	ARM A	I	15.00	I	45.00	I	75.00	I	7.81	I	11.72	I	7.81
I	ARM B	I	15.00	I	45.00	I	75.00	I	2.50	I	3.75	I	2.50
I	ARM C	I	15.00	I	45.00	I	75.00	I	3.44	I	5.16	I	3.44

		TURNING PROPORTIONS			
		TURNING COUNTS (VEH/HR)			
		(PERCENTAGE OF H.V.S)			
TIME	FROM/TO	ARM A	ARM B	ARM C	
07.30 - 09.00					
	ARM A	0.000	0.008	0.992	
		0.0	5.0	620.0	
		(0.0)	(0.0)	(0.0)	
	ARM B	0.025	0.000	0.975	
		5.0	0.0	195.0	
		(0.0)	(0.0)	(0.0)	
	ARM C	0.600	0.400	0.000	
		165.0	110.0	0.0	
		(0.0)	(0.0)	(0.0)	

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-AC	2.50	11.18	0.224		0.0	0.3	4.1	
C-A	2.06							
C-B	1.38	9.96	0.138		0.0	0.2	2.3	
A-B	0.06							
A-C	7.75							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-AC	0.114	0.008	0.013	0.005	0.008		
	C-B	0.100	0.009		0.009			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	2.99	10.86	0.275		0.3	0.4	5.5	
C-A	2.46							
C-B	1.64	9.69	0.170		0.2	0.2	3.0	
A-B	0.07							
A-C	9.25							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-AC	0.108	0.009	0.013	0.005	0.007		
	C-B	0.097	0.011		0.009			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-AC	3.66	10.44	0.350		0.4	0.5	7.7	
C-A	3.02							
C-B	2.01	9.31	0.216		0.2	0.3	4.0	
A-B	0.09							
A-C	11.33							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY		
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT		
			(.1M)	(.1M)	(M)	(M)		
	B-AC	0.100	0.011	0.013	0.005	0.007		
	C-B	0.093	0.013		0.009			

I	B-AC	I	274.2	I	182.8	I	35.7	I	0.13	I	35.7	I	0.13	I
I	C-A	I	226.2	I	150.8	I		I		I		I		I
I	C-B	I	150.8	I	100.6	I	19.0	I	0.13	I	19.0	I	0.13	I
I	A-B	I	6.9	I	4.6	I		I		I		I		I
I	A-C	I	850.2	I	566.8	I		I		I		I		I

I	ALL	I	1508.3	I	1005.6	I	54.7	I	0.04	I	54.7	I	0.04	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
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RUN TITLE

Cha Kwo Ling Road/Yan Wing Street - 2027 Reference Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB
ARM B IS Yan Wing Street WB
ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	14.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	20.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	25.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	5.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	4.84	10.98	0.441		0.5	0.8	11.2	
B-A	3.29	8.37	0.393		0.4	0.6	9.2	
C-A	8.96							
C-B	0.00	9.83	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	3.11							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL CHANGE:	LANE WIDTH (.1M)	WIDTH (.1M)	WIDTH (.1M)	(AHEAD FOR MAJOR) (M)	TO RIGHT (M)			
B-C	0.092	0.004				0.011		

I	B-A	0.070	0.010	0.022	0.005	0.008	I
I	C-B	0.108	0.004		0.010		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	4.84	10.98	0.441		0.8	0.8	11.7		I
I	B-A	3.29	8.37	0.393		0.6	0.6	9.6		I
I	C-A	8.96								I
I	C-B	0.00	9.83	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	3.11								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.092	0.004			0.011				I
I	B-A	0.070	0.010	0.022	0.005	0.008				I
I	C-B	0.108	0.004		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	3.96	11.33	0.349		0.8	0.5	8.4		I
I	B-A	2.69	8.65	0.311		0.6	0.5	7.1		I
I	C-A	7.31								I
I	C-B	0.00	9.92	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.54								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.094	0.003			0.011				I
I	B-A	0.072	0.009	0.022	0.006	0.009				I
I	C-B	0.109	0.003		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	3.31	11.59	0.286		0.5	0.4	6.2		I
I	B-A	2.25	8.86	0.254		0.5	0.3	5.3		I
I	C-A	6.13								I
I	C-B	0.00	9.98	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.13								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.097	0.003			0.011				I
I	B-A	0.074	0.007	0.022	0.006	0.009				I
I	C-B	0.110	0.002		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.4
08.00	0.5 *
08.15	0.8 *
08.30	0.8 *
08.45	0.5 *
09.00	0.4

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.3
08.00	0.4
08.15	0.6 *
08.30	0.6 *
08.45	0.5
09.00	0.3

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I	I	I	I		I	* DELAY *		I	* DELAY *		I
I	I	I	I		I	I		I	I		I
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	363.4	I 242.2	I	50.9	I 0.14	I	50.9	I 0.14	I
I	B-A	I	246.8	I 164.5	I	42.4	I 0.17	I	42.5	I 0.17	I
I	C-A	I	671.9	I 447.9	I	I	I	I	I	I	I
I	C-B	I	0.0	I 0.0	I	0.0	I 0.00	I	0.0	I 0.00	I
I	A-B	I	0.0	I 0.0	I	I	I	I	I	I	I
I	A-C	I	233.1	I 155.4	I	I	I	I	I	I	I
I	ALL	I	1515.2	I 1010.1	I	93.4	I 0.06	I	93.4	I 0.06	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Yan Wing Street - 2027 Reference Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB
ARM B IS Yan Wing Street WB
ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	14.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	20.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	25.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	5.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	8.23	11.22	0.733		1.4	2.6	34.7	
B-A	2.65	8.39	0.316		0.3	0.5	6.6	
C-A	8.77							
C-B	0.00	9.83	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	3.11							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL CHANGE:	LANE WIDTH (.1M)	WIDTH (.1M)	WIDTH (.1M)	(AHEAD FOR MAJOR) (M)	TO RIGHT (M)			
B-C	0.094	0.004			0.011			

I	B-A	0.070	0.010	0.022	0.005	0.008	I
I	C-B	0.108	0.004		0.010		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	8.23	11.22	0.733		2.6	2.6	39.1		I
I	B-A	2.65	8.39	0.316		0.5	0.5	6.9		I
I	C-A	8.77								I
I	C-B	0.00	9.83	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	3.11								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I			(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.094	0.004			0.011				I
I	B-A	0.070	0.010	0.022	0.005	0.008				I
I	C-B	0.108	0.004		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	6.72	11.53	0.583		2.6	1.4	23.1		I
I	B-A	2.16	8.67	0.250		0.5	0.3	5.2		I
I	C-A	7.16								I
I	C-B	0.00	9.92	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.54								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I			(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.096	0.003			0.011				I
I	B-A	0.072	0.008	0.022	0.006	0.009				I
I	C-B	0.109	0.003		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	5.63	11.74	0.479		1.4	0.9	14.7		I
I	B-A	1.81	8.87	0.204		0.3	0.3	4.0		I
I	C-A	6.00								I
I	C-B	0.00	9.98	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.13								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I			(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.098	0.003			0.012				I
I	B-A	0.074	0.007	0.022	0.006	0.009				I
I	C-B	0.110	0.002		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.9	*
08.00	1.4	*
08.15	2.6	***
08.30	2.6	***
08.45	1.4	*
09.00	0.9	*

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.3	
08.00	0.3	
08.15	0.5	
08.30	0.5	
08.45	0.3	
09.00	0.3	

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I
I	I	I	(VEH)	I	(MIN)	I	(MIN)	I
I	I	I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I
I	B-C	I	617.0	I	411.4	I	143.6	I
I	B-A	I	198.8	I	132.6	I	31.1	I
I	C-A	I	658.2	I	438.8	I	0.23	I
I	C-B	I	0.0	I	0.0	I	0.16	I
I	A-B	I	0.0	I	0.0	I	0.00	I
I	A-C	I	233.1	I	155.4	I	0.0	I
I	ALL	I	1707.2	I	1138.1	I	0.10	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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RUN TITLE

Cha Kwo Ling Road/Access Road - 2027 Reference Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB

ARM B IS Access Road WB

ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 13.00 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 3.00 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 100.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 100.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 2.50 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 2.50 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	B-A	0.069	0.015	0.020	0.004	0.006	I
I	C-B	0.099	0.009		0.009		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	0.09	9.45	0.010		0.0	0.0	0.1		I
I	B-A	0.09	6.56	0.014		0.0	0.0	0.2		I
I	C-A	8.87								I
I	C-B	0.09	9.88	0.009		0.0	0.0	0.1		I
I	A-B	0.09								I
I	A-C	7.86								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.100	0.009			0.009				I
I	B-A	0.069	0.015	0.020	0.004	0.006				I
I	C-B	0.099	0.009		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	0.07	9.72	0.008		0.0	0.0	0.1		I
I	B-A	0.07	6.98	0.011		0.0	0.0	0.2		I
I	C-A	7.24								I
I	C-B	0.07	10.15	0.007		0.0	0.0	0.1		I
I	A-B	0.07								I
I	A-C	6.42								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.102	0.007			0.009				I
I	B-A	0.074	0.012	0.020	0.004	0.006				I
I	C-B	0.102	0.007		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	0.06	9.90	0.006		0.0	0.0	0.1		I
I	B-A	0.06	7.29	0.009		0.0	0.0	0.1		I
I	C-A	6.06								I
I	C-B	0.06	10.35	0.006		0.0	0.0	0.1		I
I	A-B	0.06								I
I	A-C	5.38								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.104	0.006			0.009				I
I	B-A	0.077	0.010	0.020	0.005	0.007				I
I	C-B	0.104	0.006		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	6.9	4.6	I	0.7	0.10	I	0.7	0.10	I
I	B-A	I	6.9	4.6	I	1.0	0.15	I	1.0	0.15	I
I	C-A	I	665.0	443.4	I			I			I
I	C-B	I	6.9	4.6	I	0.7	0.10	I	0.7	0.10	I
I	A-B	I	6.9	4.6	I			I			I
I	A-C	I	589.6	393.1	I			I			I
I	ALL	I	1282.1	854.7	I	2.4	0.00	I	2.4	0.00	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Access Road - 2027 Reference Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

```

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
                        I
                        I
                        I
                        I
                        I
                        I
                        I
MINOR ROAD (ARM B)
  
```

ARM A IS Cha Kwo Ling Road SB
ARM B IS Access Road WB
ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 13.00 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 3.00 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 100.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 100.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 2.50 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 2.50 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	B-A	0.063	0.018	0.020	0.004	0.005	I
I	C-B	0.093	0.013		0.009		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	0.09	8.86	0.010		0.0	0.0	0.2		I
I	B-A	0.09	6.00	0.015		0.0	0.0	0.2		I
I	C-A	8.68								I
I	C-B	0.09	9.26	0.010		0.0	0.0	0.1		I
I	A-B	0.09								I
I	A-C	11.24								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.093	0.012					0.008		I
I	B-A	0.063	0.018	0.020	0.004			0.005		I
I	C-B	0.093	0.013		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	0.07	9.23	0.008		0.0	0.0	0.1		I
I	B-A	0.07	6.53	0.011		0.0	0.0	0.2		I
I	C-A	7.09								I
I	C-B	0.07	9.65	0.008		0.0	0.0	0.1		I
I	A-B	0.07								I
I	A-C	9.18								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.097	0.010					0.008		I
I	B-A	0.069	0.015	0.020	0.004			0.006		I
I	C-B	0.097	0.011		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	0.06	9.50	0.007		0.0	0.0	0.1		I
I	B-A	0.06	6.91	0.009		0.0	0.0	0.1		I
I	C-A	5.94								I
I	C-B	0.06	9.92	0.006		0.0	0.0	0.1		I
I	A-B	0.06								I
I	A-C	7.69								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.100	0.008					0.009		I
I	B-A	0.073	0.012	0.020	0.004			0.006		I
I	C-B	0.099	0.009		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	6.9	I 4.6	I	0.8	I 0.11	I	0.8	I 0.11	I
I	B-A	I	6.9	I 4.6	I	1.1	I 0.16	I	1.1	I 0.16	I
I	C-A	I	651.3	I 434.2	I	I	I	I	I	I	I
I	C-B	I	6.9	I 4.6	I	0.7	I 0.10	I	0.7	I 0.10	I
I	A-B	I	6.9	I 4.6	I	I	I	I	I	I	I
I	A-C	I	843.3	I 562.2	I	I	I	I	I	I	I
I	ALL	I	1522.0	I 1014.7	I	2.5	I 0.00	I	2.5	I 0.00	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

2027 Design Flows

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Lei Yue Mun Road / Ko Chiu Road (N)

Design Year: 2027

Description: 2027 Design Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ko Chiu Road WB	 	E E	4 4	3.300 3.300	12.5 22.5	25		16% / 84% 100%	26% / 74% 100%	1820 1955	1810 1955	439 471	0.241 0.241		154 166	0.085 0.085	
Lei Yue Mun Road SB	  	C D D	1,4 1 1	3.500 3.500 3.500	15			100% 100%	100% 100%	1785 2105 2105	1785 2105 2105	485 435 435	0.272 0.207 0.207		455 605 605	0.255 0.287 0.287	
Lei Yue Mun Road NB	  	A A B	1,2 1,2 2	3.700 3.700 3.700						1985 2125 2005	1985 2125 2005	464 496 70	0.234 0.234 0.035		365 390 40	0.184 0.184 0.020	
Pedestrian		Fp	3	Min	9	+	9			=	18			*			*
		Gp	3,4	Min	10	+	10			=	20						
		Hp	2,3	Min	6	+	6			=	12						
		Ip	3	Min	7	+	7			=	14						
		Jp	2,3	Min	10	+	11			=	21						

Notes:	Traffic Flow (pcu/hr)	Group	AFpE	DBFpE	Group	CBFp	DBFpE
		y	0.475	0.448	y	0.255	0.372
	870(1210)	L (sec)	35	45	L (sec)	41	45
	485(455)	C (sec)	110	110	C (sec)	110	110
	840(280)	y pract.	0.614	0.532	y pract.	0.565	0.532
	70(40)	R.C. (%)	29%	19%	R.C. (%)	121%	43%
	960(755)						

Stage / Phase Diagrams

1.	2.	3.	4.	5.
I/G= 5	I/G= 5	I/G= 11	I/G= 12	I/G=
I/G= 5	I/G= 5	I/G= 11	I/G= 12	I/G=

Date: 一月-16 Junction: A

TRAFFIC SIGNALS CALCULATION

Job No.: [REDACTED]

MVA ASIA LIMITED

Junction: Lei Yue Mun Road / Yau Tong Estate Southern Access

Design Year: 2027

Description: 2027 Design Traffic Flows

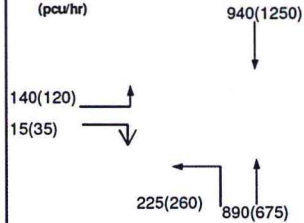
Designed By: [REDACTED]

Checked By: [REDACTED]

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(% uphill Gradient)	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Yau Tong Est. Access EB	↗ ↘	C C	2 2	3.500 3.500	6	15		100%	100%	1570 1915	1570 1915	140 15	0.089 0.008	0.089	120 35	0.076 0.018	0.076
Lei Yue Mun Rd SB	↓	B	1	3.700						1985	1985	454	0.229		604	0.304	0.304
	↓	B	1	3.700						2125	2125	486	0.229		646	0.304	
Lei Yue Mun Rd NB	↖ ↗	A A	1 1	3.500 3.500	7.5			44%	61%	1805 2105	1750 2105	515 600	0.285 0.285	0.285	425 510	0.243 0.243	
Pedestrian		Dp Ep Fp	1,3 2,3 3	Min Min Min	6 9 8	+ + +	6 9 7			= = =	12 18 15			*			*

Notes:

Traffic Flow (pcu/hr)



Group	BCFp	ACFp	Group	ACFp	BCFp
y	0.318	0.375	y	0.319	0.381
L (sec)	29	29	L (sec)	29	29
C (sec)	115	115	C (sec)	115	115
y pract.	0.673	0.673	y pract.	0.673	0.673
R.C. (%)	112%	80%	R.C. (%)	111%	77%

Stage / Phase Diagrams

1.	2.	3.	4.	5.
I/G= 9	I/G= 5	I/G= 9	I/G=	I/G=
I/G= 9	I/G= 5	I/G= 9	I/G=	I/G=

Date: 一月-16 Junction: (B)

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

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RUN TITLE

Lei Yue Mun Road/Ko Chiu Road (S) - 2027 Design Flows (AM)

.INPUT DATA

ARM A - Ko Chiu Road EB
ARM B - Lei Yue Mun SB
ARM C - Ko Chiu Road WB

.GEOMETRIC DATA

I ARM I V (M) I E (M) I L (M) I R (M) I D (M) I PHI (DEG) I SLOPE I
INTERCEPT (PCU/MIN) I

I ARM A I 6.50 I 8.50 I 11.00 I 28.00 I 40.00 I 35.0 I 0.770 I
39.078 I
I ARM B I 7.50 I 9.00 I 17.00 I 40.00 I 40.00 I 45.0 I 0.804 I
42.574 I
I ARM C I 6.50 I 8.00 I 10.00 I 20.00 I 40.00 I 60.0 I 0.678 I
33.993 I

.TRAFFIC DEMAND DATA

.TIME PERIOD BEGINS 17.30 AND ENDS 19.00
.LENGTH OF TIME PERIOD - 90 MINUTES.
.LENGTH OF TIME SEGMENT - 15 MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED IFALLING I PEAK I OF PEAK I PEAK I

I ARM A I 15.00 I 45.00 I 75.00 I 9.94 I 14.91 I 9.94 I
I ARM B I 15.00 I 45.00 I 75.00 I 11.94 I 17.91 I 11.94 I
I ARM C I 15.00 I 45.00 I 75.00 I 7.94 I 11.91 I 7.94 I

I I TURNING PROPORTIONS I
I I TURNING COUNTS (VEH/HR) I
I I (PERCENTAGE OF H.V.S) I
I
I TIME I FROM/TO I ARM A I ARM B I ARM C I

I 17.30 - 19.00 I I I I I
I I ARM A I 0.107 I 0.698 I 0.195 I
I I 85.0 I 555.0 I 155.0 I
I I (0.0) I (0.0) I (0.0) I
I I I I I
I I ARM B I 0.649 I 0.183 I 0.168 I
I I 620.0 I 175.0 I 160.0 I
I I (0.0) I (0.0) I (0.0) I
I I I I I
I I ARM C I 0.386 I 0.606 I 0.008 I
I I 245.0 I 385.0 I 5.0 I

I I I (0.0) I (0.0) I (0.0) I
I I I I I I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.30-17.45									I
I	ARM A	9.94	33.66	0.295		0.0	0.4	6.1		I
I	ARM B	11.94	40.12	0.298		0.0	0.4	6.2		I
I	ARM C	7.94	26.55	0.299		0.0	0.4	6.2		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.45-18.00									I
I	ARM A	11.87	32.59	0.364		0.4	0.6	8.4		I
I	ARM B	14.25	39.64	0.360		0.4	0.6	8.3		I
I	ARM C	9.48	25.09	0.378		0.4	0.6	8.9		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.00-18.15									I
I	ARM A	14.53	31.14	0.467		0.6	0.9	12.7		I
I	ARM B	17.46	38.98	0.448		0.6	0.8	11.9		I
I	ARM C	11.61	23.09	0.503		0.6	1.0	14.5		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.15-18.30									I
I	ARM A	14.53	31.13	0.467		0.9	0.9	13.1		I
I	ARM B	17.46	38.97	0.448		0.8	0.8	12.1		I
I	ARM C	11.61	23.08	0.503		1.0	1.0	15.0		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.30-18.45									I
I	ARM A	11.87	32.57	0.364		0.9	0.6	8.8		I
I	ARM B	14.25	39.63	0.360		0.8	0.6	8.6		I
I	ARM C	9.48	25.07	0.378		1.0	0.6	9.4		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.45-19.00									I
I	ARM A	9.94	33.64	0.295		0.6	0.4	6.4		I
I	ARM B	11.94	40.11	0.298		0.6	0.4	6.5		I
I	ARM C	7.94	26.53	0.299		0.6	0.4	6.5		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.4
18.00	0.6 *
18.15	0.9 *
18.30	0.9 *
18.45	0.6 *
19.00	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.4
18.00	0.6 *

18.15	0.8	*
18.30	0.8	*
18.45	0.6	*
19.00	0.4	

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.4
18.00	0.6 *
18.15	1.0 *
18.30	1.0 *
18.45	0.6 *
19.00	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I		I		I		I
I		I	(VEH) (VEH/H)	I	(MIN) (MIN/VEH)	I	(MIN) (MIN/VEH)	I
I	A	I	1090.1 I 726.7	I	55.6 I 0.05	I	55.6 I 0.05	I
I	B	I	1309.5 I 873.0	I	53.6 I 0.04	I	53.6 I 0.04	I
I	C	I	870.7 I 580.5	I	60.6 I 0.07	I	60.6 I 0.07	I
I	ALL	I	3270.3 I 2180.2	I	169.8 I 0.05	I	169.8 I 0.05	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

Visual ARCADY 4 ANALYSIS PROGRAM
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RUN TITLE

Lei Yue Mun Road/Ko Chiu Road (S) - 2027 Design Flows (PM)

.INPUT DATA

ARM A - Ko Chiu Road EB

ARM B - Lei Yue Mun SB

ARM C - Ko Chiu Road WB

.GEOMETRIC DATA

I ARM	I V (M)	I E (M)	I L (M)	I R (M)	I D (M)	I PHI (DEG)	I SLOPE
INTERCEPT (PCU/MIN)	I						
I ARM A	I 6.50	I 8.50	I 11.00	I 28.00	I 40.00	I 35.0	I 0.770
39.078	I						
I ARM B	I 7.50	I 9.00	I 17.00	I 40.00	I 40.00	I 45.0	I 0.804
42.574	I						
I ARM C	I 6.50	I 8.00	I 10.00	I 20.00	I 40.00	I 60.0	I 0.678
33.993	I						

.TRAFFIC DEMAND DATA

.TIME PERIOD BEGINS 17.30 AND ENDS 19.00

.LENGTH OF TIME PERIOD - 90 MINUTES.

.LENGTH OF TIME SEGMENT - 15 MINUTES.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I ARM	I NUMBER OF MINUTES FROM START WHEN I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I I TO RISE I IS REACHED IF FALLING I PEAK I OF PEAK I PEAK I	I RATE OF FLOW (VEH/MIN) I
I ARM A	I 15.00 I 45.00 I 75.00 I 9.50 I 14.25 I 9.50 I	
I ARM B	I 15.00 I 45.00 I 75.00 I 16.06 I 24.09 I 16.06 I	
I ARM C	I 15.00 I 45.00 I 75.00 I 5.13 I 7.69 I 5.13 I	

I	I	TURNING PROPORTIONS			I
I	I	TURNING COUNTS (VEH/HR)			I
I	I	(PERCENTAGE OF H.V.S)			I
I	I				I
I	TIME	I FROM/TO	I ARM A	I ARM B	I ARM C
I	17.30 - 19.00	I	I	I	I
I		I ARM A	I 0.125 I 0.684 I 0.191 I		
I		I	I 95.0 I 520.0 I 145.0 I		
I		I (0.0) I (0.0) I (0.0) I			
I		I	I	I	I
I		I ARM B	I 0.665 I 0.175 I 0.160 I		
I		I	I 855.0 I 225.0 I 205.0 I		
I		I (0.0) I (0.0) I (0.0) I			
I		I	I	I	I
I		I ARM C	I 0.524 I 0.463 I 0.012 I		

I	I	I	215.0	I	190.0	I	5.0	I
I	I	I	(0.0)	I	(0.0)	I	(0.0)	I
I	I	I	I	I	I	I	I	I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.30-17.45									I
I	ARM A	9.50	35.05	0.271		0.0	0.4	5.5		I
I	ARM B	16.06	40.12	0.400		0.0	0.7	9.8		I
I	ARM C	5.13	24.06	0.213		0.0	0.3	4.0		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	17.45-18.00									I
I	ARM A	11.34	34.26	0.331		0.4	0.5	7.3		I
I	ARM B	19.18	39.64	0.484		0.7	0.9	13.7		I
I	ARM C	6.12	22.11	0.277		0.3	0.4	5.6		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.00-18.15									I
I	ARM A	13.89	33.18	0.419		0.5	0.7	10.6		I
I	ARM B	23.49	38.98	0.603		0.9	1.5	21.9		I
I	ARM C	7.50	19.45	0.385		0.4	0.6	9.1		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.15-18.30									I
I	ARM A	13.89	33.17	0.419		0.7	0.7	10.8		I
I	ARM B	23.49	38.97	0.603		1.5	1.5	22.6		I
I	ARM C	7.50	19.43	0.386		0.6	0.6	9.4		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.30-18.45									I
I	ARM A	11.34	34.24	0.331		0.7	0.5	7.6		I
I	ARM B	19.18	39.63	0.484		1.5	0.9	14.5		I
I	ARM C	6.12	22.08	0.277		0.6	0.4	5.9		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	18.45-19.00									I
I	ARM A	9.50	35.03	0.271		0.5	0.4	5.7		I
I	ARM B	16.06	40.11	0.400		0.9	0.7	10.2		I
I	ARM C	5.13	24.02	0.213		0.4	0.3	4.2		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.4
18.00	0.5
18.15	0.7 *
18.30	0.7 *
18.45	0.5
19.00	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.7 *

18.00	0.9	*
18.15	1.5	**
18.30	1.5	**
18.45	0.9	*
19.00	0.7	*

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
------------------------	--------------------------------

17.45	0.3
18.00	0.4
18.15	0.6 *
18.30	0.6 *
18.45	0.4
19.00	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	
I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)
I	A	I	1042.1	I	694.7	I	47.3	I	0.05
I	B	I	1762.0	I	1174.7	I	92.7	I	0.05
I	C	I	562.2	I	374.8	I	38.1	I	0.07
I	ALL	I	3366.3	I	2244.2	I	178.1	I	0.05

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END OF JOB

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Cha Kwo Ling Road / Ko Fai Road

Design Year: 2027

Description: 2027 Design Traffic Flows

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ko Fai Road	↷	C	1,3	4.000	12.5			100%	100%	1800	1800	725	0.403	0.403	575	0.319	
Cha Kwo Ling Rd SB	↓	A	1	3.000						1915	1915	455	0.238		405	0.211	
	↘	A	1	3.000		15		100%	100%	1870	1870	460	0.246		455	0.243	0.243
Cha Kwo Ling Rd NB	↶↷	B	2	3.400	15			26%	23%	1905	1910	367	0.193	0.193	348	0.182	0.182
	↶	B	2	3.400						2095	2095	403	0.192		382	0.182	
LRT/Pedestrian																	
		Ep	2,3	Min	5	+	5			=	10						
		Fp	2	Min	5	+	5			=	10						
		Gp	3	Min	5	+	5			=	10						*
		Hp	1,3	Min	5	+	6			=	11						

Notes:	Traffic Flow (pcu/hr)	Group	ABGp	CB	Group	CB	ABGp
		y	0.439	0.595	y	0.502	0.426
		L (sec)	24	9	L (sec)	9	24
		C (sec)	100	100	C (sec)	100	100
		y pract.	0.684	0.819	y pract.	0.819	0.684
		R.C. (%)	56%	38%	R.C. (%)	63%	61%

Stage / Phase Diagrams				
1.	2.	3.	4.	5.
I/G=	I/G= 5	I/G= 6	I/G=	I/G=
I/G= 7	I/G= 5	I/G= 9	I/G=	I/G=

Date: 一月-16 Junction: D

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Cha Kwo Ling Road / Ko Chiu Road

Design Year: 2027

Description: 2027 Design Traffic Flows

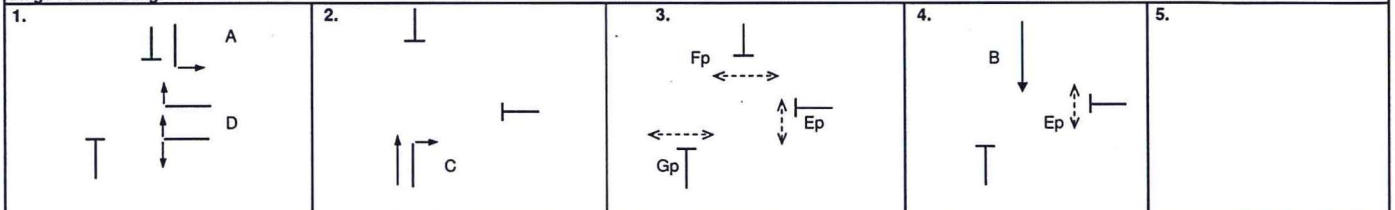
Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Cha Kwo Ling Road NB	↑	C	2	3.375						1955	1955	445	0.228		430	0.220	
	↘	C	2	3.375		17.5		100%	100%	1925	1925	510	0.265	0.265	460	0.239 0.239	
Cha Kwo Ling Road SB	↘	A	1	3.625	15			100%	100%	1800	1800	270	0.150	0.150	240	0.133 0.133	
	↓	B	4	3.625						2120	2120	180	0.085	0.085	160	0.075 0.075	
Ko Chiu Road WB	↘	D	1	3.800	9	20		45% / 55%	61% / 39%	1785	1765	200	0.112		203	0.115	
	↙	D	1	3.800		17.5		100%	100%	1965	1965	220	0.112		227	0.115	
Pedestrian		Ep	3,4	Min	6	+	12			=	18						
		Fp	3	Min	8	+	15			=	23			*		*	
		Gp	3	Min	6	+	11			=	17						

Notes:	Traffic Flow (pcu/hr)	Group	DCFpB	ACFpB	Group	DCFpB	ACFpB
		y	0.462	0.500	y	0.430	0.448
	180(160) 270(240) 330(305) 90(125) 445(430) 510(460)	L (sec)	41	43	L (sec)	41	43
		C (sec)	100	100	C (sec)	100	100
		y pract.	0.531	0.513	y pract.	0.531	0.513
		R.C. (%)	15%	3%	R.C. (%)	24%	15%

Stage / Phase Diagrams



I/G= 7	I/G= 5	I/G= 8	8	I/G= 18	I/G=
I/G= 7	I/G= 5	I/G= 8	8	I/G= 18	I/G=
Date: 一月-16				Junction: E	

TRAFFIC SIGNALS CALCULATION

Job No.: XXXXXXXXXX

MVA ASIA LIMITED

Junction: Cha Kwo Ling Road / Ko Chiu Road

Design Year: 2027

Description: 2027 Design Traffic Flows (improvement)

Designed By: XXXXXXXXXX

Checked By: XXXXXXXXXX

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m)		(%) uphill Gradient	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
					Left	Right		A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Cha Kwo Ling Road NB		C	2	3.375						1955	1955	445	0.228		430	0.220	
		C	2	3.375		17.5		100%	100%	1925	1925	510	0.265	0.265	460	0.239	0.239
Cha Kwo Ling Road SB		A	1,4	3.625	15			100%	100%	1800	1800	270	0.150		240	0.133	
		B	4	3.625						2120	2120	180	0.085	0.085	160	0.075	0.075
Ko Chiu Road WB		D	1	3.800	9	20		45% / 55%	61% / 39%	1785	1765	200	0.112	0.112	203	0.115	
		D	1	3.800		17.5		100%	100%	1965	1965	220	0.112		227	0.115	0.115
Pedestrian		Ep	3	Min	6	+	12			=	18						
		Fp	3	Min	8	+	15			=	23			*			*
		Gp	3	Min	6	+	11			=	17						

Notes:	Traffic Flow (pcu/hr)	Group			Group		
		y		DCFpB	y		DCFpB
	180(160)			0.462			0.430
	270(240)	L (sec)	41		L (sec)	41	
	330(305)	C (sec)	100		C (sec)	100	
	90(125)	y pract.	0.531		y pract.	0.531	
	445(430)	R.C. (%)	15%		R.C. (%)	24%	
	510(460)						

Stage / Phase Diagrams							
1.	2.	3.	4.	5.			
I/G= 5	I/G= 5	I/G= 8	I/G= 18	I/G=			
I/G= 5	I/G= 5	I/G= 8	I/G= 18	I/G=			

Date: 一月-16 Junction: E

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Size Shan Street - 2027 Design Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 13.50 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 3.00 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 22.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 30.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 5.00 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 0.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I

ARM	FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	9.94	14.91	9.94
ARM B	15.00	45.00	75.00	2.19	3.28	2.19
ARM C	15.00	45.00	75.00	3.38	5.06	3.38

		TURNING PROPORTIONS		
		TURNING COUNTS (VEH/HR)		
		(PERCENTAGE OF H.V.S)		
TIME	FROM/TO	ARM A	ARM B	ARM C
07.30 - 09.00	ARM A	0.000	0.013	0.987
		0.0	10.0	785.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.029	0.000	0.971
		5.0	0.0	170.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.648	0.352	0.000
		175.0	95.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-AC	2.19	10.74	0.204		0.0	0.3	3.7	
C-A	2.19							
C-B	1.19	9.58	0.124		0.0	0.1	2.0	
A-B	0.12							
A-C	9.81							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-AC	0.108	0.009	0.013	0.005	0.007			
C-B	0.096	0.011		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	2.61	10.35	0.252		0.3	0.3	4.9	
C-A	2.61							
C-B	1.42	9.24	0.154		0.1	0.2	2.6	
A-B	0.15							
A-C	11.72							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-AC	0.102	0.011	0.013	0.005	0.007			
C-B	0.092	0.014		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-AC	3.20	9.80	0.326		0.3	0.5	6.9	
C-A	3.20							
C-B	1.74	8.76	0.198		0.2	0.2	3.6	
A-B	0.18							
A-C	14.35							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-AC	0.093	0.013	0.013	0.004	0.006			
C-B	0.088	0.017		0.008				

I	B-AC	I	240.0	I	160.0	I	31.9	I	0.13	I	31.9	I	0.13	I
I	C-A	I	240.0	I	160.0	I		I		I		I		I
I	C-B	I	130.3	I	86.8	I	16.9	I	0.13	I	16.9	I	0.13	I
I	A-B	I	13.7	I	9.1	I		I		I		I		I
I	A-C	I	1076.4	I	717.6	I		I		I		I		I

I	ALL	I	1700.3	I	1133.5	I	48.8	I	0.03	I	48.9	I	0.03	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Size Shan Street - 2027 Design Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 13.50 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 3.00 M.	I
I	- VISIBILITY	I	(VC-B) 90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 22.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 30.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 5.00 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 0.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I

ARM	FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	8.75	13.13	8.75
ARM B	15.00	45.00	75.00	2.50	3.75	2.50
ARM C	15.00	45.00	75.00	3.56	5.34	3.56

		TURNING PROPORTIONS		
		TURNING COUNTS (VEH/HR)		
		(PERCENTAGE OF H.V.S)		
TIME	FROM/TO	ARM A	ARM B	ARM C
07.30 - 09.00	ARM A	0.000	0.007	0.993
		0.0	5.0	695.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.025	0.000	0.975
		5.0	0.0	195.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.614	0.386	0.000
		175.0	110.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-AC	2.50	10.99	0.228		0.0	0.3	4.2	
C-A	2.19							
C-B	1.38	9.79	0.140		0.0	0.2	2.3	
A-B	0.06							
A-C	8.69							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-AC	0.111	0.008	0.013	0.005	0.008			
C-B	0.098	0.010		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	2.99	10.64	0.281		0.3	0.4	5.6	
C-A	2.61							
C-B	1.64	9.49	0.173		0.2	0.2	3.0	
A-B	0.07							
A-C	10.37							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-AC	0.105	0.010	0.013	0.005	0.007			
C-B	0.095	0.012		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-AC	3.66	10.16	0.360		0.4	0.6	8.0	
C-A	3.20							
C-B	2.01	9.07	0.222		0.2	0.3	4.1	
A-B	0.09							
A-C	12.71							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-AC	0.096	0.012	0.013	0.004	0.007			
C-B	0.091	0.015		0.008				

I	B-AC	I	274.2	I	182.8	I	36.9	I	0.13	I	36.9	I	0.13	I
I	C-A	I	240.0	I	160.0	I		I		I		I		I
I	C-B	I	150.8	I	100.6	I	19.5	I	0.13	I	19.5	I	0.13	I
I	A-B	I	6.9	I	4.6	I		I		I		I		I
I	A-C	I	953.0	I	635.3	I		I		I		I		I

I	ALL	I	1624.9	I	1083.3	I	56.4	I	0.03	I	56.4	I	0.03	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
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RUN TITLE

Cha Kwo Ling Road/Yan Wing Street - 2027 Design Flows (AM)

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB

ARM B IS Yan Wing Street WB

ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	14.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	20.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	25.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	5.00 M.	I

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	ARM A	I	15.00	I	45.00	I	75.00	I	2.25	I	3.38	I	2.25	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	7.00	I	10.50	I	7.00	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	6.25	I	9.38	I	6.25	I

TIME	TURNING PROPORTIONS				
	TURNING COUNTS (VEH/HR)				
	(PERCENTAGE OF H.V.S)				
	FROM/TO	ARM A	ARM B	ARM C	
07.30 - 09.00	ARM A	0.000	0.000	1.000	
		0.0	0.0	180.0	
		(0.0)	(0.0)	(0.0)	
	ARM B	0.527	0.000	0.473	
		295.0	0.0	265.0	
		(0.0)	(0.0)	(0.0)	
	ARM C	1.000	0.000	0.000	
		500.0	0.0	0.0	
		(0.0)	(0.0)	(0.0)	

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-C	3.31	11.07	0.299		0.0	0.4	6.1	
B-A	3.69	8.82	0.418		0.0	0.7	9.9	
C-A	6.25							
C-B	0.00	9.96	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	2.25							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR)	VISIBILITY TO RIGHT			
				(M)	(M)			
B-C	0.092	0.003			0.011			
B-A	0.074	0.007	0.022	0.006	0.009			
C-B	0.110	0.003		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-C	3.96	10.69	0.370		0.4	0.6	8.4	
B-A	4.40	8.61	0.511		0.7	1.0	14.5	
C-A	7.46							
C-B	0.00	9.89	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	2.69							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR)	VISIBILITY TO RIGHT			
				(M)	(M)			
B-C	0.089	0.003			0.011			
B-A	0.072	0.009	0.022	0.006	0.008			
C-B	0.109	0.003		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	4.84	10.16	0.477		0.6	0.9	12.8	
B-A	5.39	8.31	0.649		1.0	1.7	24.1	
C-A	9.14							
C-B	0.00	9.80	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	3.29							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR)	VISIBILITY TO RIGHT			
				(M)	(M)			
B-C	0.085	0.004			0.010			
B-A	0.069	0.011	0.022	0.005	0.008			

I	C-B	0.108	0.004	0.010	I
---	-----	-------	-------	-------	---

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	4.84	10.14	0.478		0.9	0.9	13.5		I
I	B-A	5.39	8.31	0.649		1.7	1.8	26.6		I
I	C-A	9.14								I
I	C-B	0.00	9.80	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	3.29								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.085	0.004			0.010				I
I	B-A	0.069	0.011	0.022	0.005	0.008				I
I	C-B	0.108	0.004		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	3.96	10.66	0.371		0.9	0.6	9.3		I
I	B-A	4.40	8.61	0.511		1.8	1.1	17.2		I
I	C-A	7.46								I
I	C-B	0.00	9.89	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.69								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.089	0.003			0.010				I
I	B-A	0.072	0.009	0.022	0.006	0.008				I
I	C-B	0.109	0.003		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	3.31	11.04	0.300		0.6	0.4	6.7		I
I	B-A	3.69	8.82	0.418		1.1	0.7	11.5		I
I	C-A	6.25								I
I	C-B	0.00	9.96	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.25								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.092	0.003			0.011				I
I	B-A	0.074	0.007	0.022	0.006	0.009				I
I	C-B	0.110	0.003		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.4	
08.00	0.6	*
08.15	0.9	*
08.30	0.9	*
08.45	0.6	*
09.00	0.4	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.7	*
08.00	1.0	*
08.15	1.7	**
08.30	1.8	**
08.45	1.1	*
09.00	0.7	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I	(VEH)	I	(MIN)	I	(MIN)	I
I		I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I
I	B-C	I	363.4	I	242.2	I	56.8	I
I	B-A	I	404.5	I	269.7	I	103.8	I
I	C-A	I	685.6	I	457.1	I		I
I	C-B	I	0.0	I	0.0	I	0.0	I
I	A-B	I	0.0	I	0.0	I		I
I	A-C	I	246.8	I	164.5	I		I
I	ALL	I	1700.3	I	1133.5	I	160.5	I
							0.09	

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

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END OF JOB

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RUN TITLE

Cha Kwo Ling Road/Yan Wing Street - 2027 Design Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB
ARM B IS Yan Wing Street WB
ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	14.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	20.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	25.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	5.00 M.	I
I	- LANE 2 WIDTH	I (WB-A)	5.00 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	B-A	0.069	0.011	0.022	0.005	0.008	I
I	C-B	0.108	0.004		0.010		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	8.23	10.74	0.766		3.0	3.1	45.8		I
I	B-A	3.84	8.33	0.461		0.8	0.8	12.6		I
I	C-A	8.96								I
I	C-B	0.00	9.80	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	3.29								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.090	0.004			0.011				I
I	B-A	0.069	0.011	0.022	0.005	0.008				I
I	C-B	0.108	0.004		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	6.72	11.14	0.603		3.1	1.6	25.5		I
I	B-A	3.13	8.63	0.363		0.8	0.6	9.1		I
I	C-A	7.31								I
I	C-B	0.00	9.89	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.69								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.093	0.003			0.011				I
I	B-A	0.072	0.009	0.022	0.006	0.008				I
I	C-B	0.109	0.003		0.010					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	5.63	11.43	0.492		1.6	1.0	15.6		I
I	B-A	2.63	8.84	0.297		0.6	0.4	6.6		I
I	C-A	6.13								I
I	C-B	0.00	9.96	0.000		0.0	0.0	0.0		I
I	A-B	0.00								I
I	A-C	2.25								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.095	0.003			0.011				I
I	B-A	0.074	0.007	0.022	0.006	0.009				I
I	C-B	0.110	0.003		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.9	*
08.00	1.5	*
08.15	3.0	***
08.30	3.1	***
08.45	1.6	**
09.00	1.0	*

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.4	
08.00	0.6	*
08.15	0.8	*
08.30	0.8	*
08.45	0.6	*
09.00	0.4	

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I			I			I			I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	617.0	I 411.4	I	160.6	I 0.26	I	160.6	I 0.26	I
I	B-A	I	288.0	I 192.0	I	54.3	I 0.19	I	54.3	I 0.19	I
I	C-A	I	671.9	I 447.9	I		I	I		I	I
I	C-B	I	0.0	I 0.0	I	0.0	I 0.00	I	0.0	I 0.00	I
I	A-B	I	0.0	I 0.0	I		I	I		I	I
I	A-C	I	246.8	I 164.5	I		I	I		I	I
I	ALL	I	1823.7	I 1215.8	I	214.8	I 0.12	I	214.9	I 0.12	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Access Road - 2027 Design Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB
ARM B IS Access Road WB
ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	13.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	100.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	100.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	2.50 M.	I
I	- LANE 2 WIDTH	I (WB-A)	2.50 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	ARM A	I	15.00	I	45.00	I	75.00	I	5.56	I	8.34	I	5.56	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.25	I	0.38	I	0.25	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	6.13	I	9.19	I	6.13	I

TIME	FROM/TO	TURNING PROPORTIONS		
		TURNING COUNTS (VEH/HR)		
		(PERCENTAGE OF H.V.S)		
		ARM A	ARM B	ARM C
07.30 - 09.00	ARM A	0.000	0.034	0.966
		0.0	15.0	430.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.750	0.000	0.250
		15.0	0.0	5.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.990	0.010	0.000
		485.0	5.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.30-07.45								
B-C	0.06	9.85	0.006		0.0	0.0	0.1	
B-A	0.19	7.28	0.026		0.0	0.0	0.4	
C-A	6.06							
C-B	0.06	10.32	0.006		0.0	0.0	0.1	
A-B	0.19							
A-C	5.38							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.104	0.006			0.009			
B-A	0.077	0.010	0.020	0.005	0.007			
C-B	0.103	0.006		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-C	0.07	9.65	0.008		0.0	0.0	0.1	
B-A	0.22	6.97	0.032		0.0	0.0	0.5	
C-A	7.24							
C-B	0.07	10.13	0.007		0.0	0.0	0.1	
A-B	0.22							
A-C	6.42							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.102	0.007			0.009			
B-A	0.073	0.012	0.020	0.004	0.006			
C-B	0.101	0.008		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	0.09	9.37	0.010		0.0	0.0	0.1	
B-A	0.27	6.55	0.042		0.0	0.0	0.6	
C-A	8.87							
C-B	0.09	9.85	0.009		0.0	0.0	0.1	
A-B	0.27							
A-C	7.86							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)			
B-C	0.099	0.009			0.009			
B-A	0.069	0.015	0.020	0.004	0.006			

I C-B 0.099 0.009 0.009 I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	0.09	9.37	0.010		0.0	0.0	0.1		I
I	B-A	0.27	6.55	0.042		0.0	0.0	0.7		I
I	C-A	8.87								I
I	C-B	0.09	9.85	0.009		0.0	0.0	0.1		I
I	A-B	0.27								I
I	A-C	7.86								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.099	0.009			0.009				I
I	B-A	0.069	0.015	0.020	0.004	0.006				I
I	C-B	0.099	0.009		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	0.07	9.65	0.008		0.0	0.0	0.1		I
I	B-A	0.22	6.97	0.032		0.0	0.0	0.5		I
I	C-A	7.24								I
I	C-B	0.07	10.13	0.007		0.0	0.0	0.1		I
I	A-B	0.22								I
I	A-C	6.42								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.102	0.007			0.009				I
I	B-A	0.073	0.012	0.020	0.004	0.006				I
I	C-B	0.101	0.008		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	0.06	9.85	0.006		0.0	0.0	0.1		I
I	B-A	0.19	7.28	0.026		0.0	0.0	0.4		I
I	C-A	6.06								I
I	C-B	0.06	10.32	0.006		0.0	0.0	0.1		I
I	A-B	0.19								I
I	A-C	5.38								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.104	0.006			0.009				I
I	B-A	0.077	0.010	0.020	0.005	0.007				I
I	C-B	0.103	0.006		0.010					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I	I	I	I		I	I		I	I		I
I	I	I	I		I	I		I	I		I
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	6.9	I 4.6	I	0.7	I 0.10	I	0.7	I 0.10	I
I	B-A	I	20.6	I 13.7	I	3.1	I 0.15	I	3.1	I 0.15	I
I	C-A	I	665.0	I 443.4	I		I	I		I	I
I	C-B	I	6.9	I 4.6	I	0.7	I 0.10	I	0.7	I 0.10	I
I	A-B	I	20.6	I 13.7	I		I	I		I	I
I	A-C	I	589.6	I 393.1	I		I	I		I	I
I	ALL	I	1309.5	I 873.0	I	4.5	I 0.00	I	4.5	I 0.00	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

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RUN TITLE

Cha Kwo Ling Road/Access Road - 2027 Design Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road SB
ARM B IS Access Road WB
ARM C IS Cha Kwo Ling Road NB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	13.00 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	100.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	100.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	2.50 M.	I
I	- LANE 2 WIDTH	I (WB-A)	2.50 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-C	0.09	8.78	0.010		0.0	0.0	0.2	
B-A	0.27	5.99	0.046		0.0	0.0	0.7	
C-A	8.68							
C-B	0.09	9.23	0.010		0.0	0.0	0.1	
A-B	0.27							
A-C	11.24							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
		MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)			
B-C	0.092	0.012			0.008			

I	B-A	0.063	0.018	0.020	0.004	0.005	I
I	C-B	0.092	0.013		0.009		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	0.09	8.78	0.010		0.0	0.0	0.2		I
I	B-A	0.27	5.99	0.046		0.0	0.0	0.7		I
I	C-A	8.68								I
I	C-B	0.09	9.23	0.010		0.0	0.0	0.2		I
I	A-B	0.27								I
I	A-C	11.24								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.092	0.012			0.008				I
I	B-A	0.063	0.018	0.020	0.004	0.005				I
I	C-B	0.092	0.013		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	0.07	9.17	0.008		0.0	0.0	0.1		I
I	B-A	0.22	6.52	0.034		0.0	0.0	0.6		I
I	C-A	7.09								I
I	C-B	0.07	9.62	0.008		0.0	0.0	0.1		I
I	A-B	0.22								I
I	A-C	9.18								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.097	0.010			0.008				I
I	B-A	0.069	0.015	0.020	0.004	0.006				I
I	C-B	0.096	0.011		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	0.06	9.44	0.007		0.0	0.0	0.1		I
I	B-A	0.19	6.90	0.027		0.0	0.0	0.4		I
I	C-A	5.94								I
I	C-B	0.06	9.90	0.006		0.0	0.0	0.1		I
I	A-B	0.19								I
I	A-C	7.69								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.099	0.008			0.009				I
I	B-A	0.073	0.012	0.020	0.004	0.006				I
I	C-B	0.099	0.009		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I
I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I	6.9	I 4.6	I 0.8	I 0.11	I 0.8	I 0.11
I	B-A	I	20.6	I 13.7	I 3.3	I 0.16	I 3.3	I 0.16
I	C-A	I	651.3	I 434.2	I	I	I	I
I	C-B	I	6.9	I 4.6	I 0.7	I 0.11	I 0.7	I 0.11
I	A-B	I	20.6	I 13.7	I	I	I	I
I	A-C	I	843.3	I 562.2	I	I	I	I
I	ALL	I	1549.5	I 1033.0	I 4.8	I 0.00	I 4.8	I 0.00

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Ko Fai Road - 2027 Reference Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I

I

I

I

I

I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB

ARM B IS Ko Fai Road EB

ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	12.50 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	2.70 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	35.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	59.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	2.70 M.	I
I	- LANE 2 WIDTH	I (WB-A)	3.30 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.

LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	ARM A	I	15.00	I	45.00	I	75.00	I	7.75	I	11.63	I	7.75	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	6.81	I	10.22	I	6.81	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	9.56	I	14.34	I	9.56	I

		TURNING PROPORTIONS						
		TURNING COUNTS (VEH/HR)						
		(PERCENTAGE OF H.V.S)						
TIME		FROM/TO	ARM A	ARM B	ARM C			
07.30 - 09.00								
	ARM A	0.000	0.153	0.847				
		0.0	95.0	525.0				
		(0.0)	(0.0)	(0.0)				
	ARM B	0.000	0.000	1.000				
		0.0	0.0	545.0				
		(0.0)	(0.0)	(0.0)				
	ARM C	0.536	0.464	0.000				
		410.0	355.0	0.0				
		(0.0)	(0.0)	(0.0)				

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	07.30-07.45									I
I	B-C	6.81	9.43	0.722		0.0	2.4	31.2		I
I	B-A	0.00	5.43	0.000		0.0	0.0	0.0		I
I	C-A	5.13								I
I	C-B	4.44	9.58	0.463		0.0	0.8	11.8		I
I	A-B	1.19								I
I	A-C	6.56								I
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:										I
I	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I			(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.097	0.008			0.009				I
I	B-A	0.058	0.018	0.020	0.004	0.006				I
I	C-B	0.099	0.009		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	07.45-08.00									I
I	B-C	8.13	9.19	0.885		2.4	5.6	68.4		I
I	B-A	0.00	4.90	0.000		0.0	0.0	0.0		I
I	C-A	6.12								I
I	C-B	5.30	9.30	0.569		0.8	1.3	18.1		I
I	A-B	1.42								I
I	A-C	7.84								I
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:										I
I	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I			(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.095	0.009			0.009				I
I	B-A	0.052	0.021	0.020	0.003	0.005				I
I	C-B	0.096	0.010		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.00-08.15									I
I	B-C	9.96	8.85	1.125		5.6	25.0	236.4		I
I	B-A	0.00	4.18	0.000		0.0	0.0	0.0		I
I	C-A	7.50								I
I	C-B	6.49	8.92	0.727		1.3	2.4	33.0		I
I	A-B	1.74								I
I	A-C	9.60								I
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:										I
I	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I			(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.091	0.011			0.008				I
I	B-A	0.045	0.026	0.020	0.003	0.004				I

I C-B 0.092 0.013 0.008 I

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-C	9.96	8.85	1.125		25.0	42.4	506.3	
B-A	0.00	4.16	0.000		0.0	0.0	0.0	
C-A	7.50							
C-B	6.49	8.92	0.727		2.4	2.5	37.6	
A-B	1.74							
A-C	9.60							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
		(.1M)	(.1M)	(M)	(M)			
B-C	0.091	0.011			0.008			
B-A	0.044	0.026	0.020	0.003	0.004			
C-B	0.092	0.013		0.008				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-C	8.13	9.19	0.885		42.4	29.7	540.6	
B-A	0.00	4.87	0.000		0.0	0.0	0.0	
C-A	6.12							
C-B	5.30	9.30	0.569		2.5	1.4	22.1	
A-B	1.42							
A-C	7.84							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
		(.1M)	(.1M)	(M)	(M)			
B-C	0.095	0.009			0.009			
B-A	0.052	0.021	0.020	0.003	0.005			
C-B	0.096	0.010		0.009				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-C	6.81	9.43	0.722		29.7	3.1	200.7	
B-A	0.00	5.41	0.000		0.0	0.0	0.0	
C-A	5.13							
C-B	4.44	9.58	0.463		1.4	0.9	13.9	
A-B	1.19							
A-C	6.56							
EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:								
MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY			
CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT			
		(.1M)	(.1M)	(M)	(M)			
B-C	0.097	0.008			0.009			
B-A	0.058	0.018	0.020	0.004	0.006			
C-B	0.099	0.009		0.009				

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	2.4 ***
08.00	5.6 *****
08.15	25.0 *****
08.30	42.4 *****
08.45	29.7 *****
09.00	3.1 ***

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.8	*
08.00	1.3	*
08.15	2.4	**
08.30	2.5	***
08.45	1.4	*
09.00	0.9	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I			I			I			I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	747.3	I 498.2	I	1583.6	I 2.12	I	1584.1	I 2.12	I
I	B-A	I	0.0	I 0.0	I	0.0	I 0.00	I	0.0	I 0.00	I
I	C-A	I	562.2	I 374.8	I		I	I		I	I
I	C-B	I	486.8	I 324.5	I	136.5	I 0.28	I	136.6	I 0.28	I
I	A-B	I	130.3	I 86.8	I		I	I		I	I
I	A-C	I	719.9	I 479.9	I		I	I		I	I
I	ALL	I	2646.4	I 1764.3	I	1720.1	I 0.65	I	1720.7	I 0.65	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

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RUN TITLE

Cha Kwo Ling Road/Ko Fai Road - 2027 Reference Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	12.50 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	2.70 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	35.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	59.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	2.70 M.	I
I	- LANE 2 WIDTH	I (WB-A)	3.30 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	B-A	0.046	0.025	0.020	0.003	0.004	I
I	C-B	0.093	0.012		0.008		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	9.14	8.89	1.028		14.0	20.8	263.3		I
I	B-A	0.00	4.26	0.000		0.0	0.0	0.0		I
I	C-A	6.58								I
I	C-B	6.58	8.99	0.732		2.5	2.6	38.5		I
I	A-B	1.46								I
I	A-C	9.51								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.092	0.011			0.008				I
I	B-A	0.046	0.026	0.020	0.003	0.004				I
I	C-B	0.093	0.012		0.008					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	7.46	9.22	0.809		20.8	5.5	171.2		I
I	B-A	0.00	4.95	0.000		0.0	0.0	0.0		I
I	C-A	5.37								I
I	C-B	5.37	9.36	0.574		2.6	1.4	22.6		I
I	A-B	1.19								I
I	A-C	7.76								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.095	0.009			0.009				I
I	B-A	0.053	0.021	0.020	0.004	0.005				I
I	C-B	0.097	0.010		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	6.25	9.46	0.661		5.5	2.1	36.1		I
I	B-A	0.00	5.48	0.000		0.0	0.0	0.0		I
I	C-A	4.50								I
I	C-B	4.50	9.63	0.467		1.4	0.9	14.2		I
I	A-B	1.00								I
I	A-C	6.50								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.098	0.007			0.009				I
I	B-A	0.059	0.017	0.020	0.004	0.006				I
I	C-B	0.099	0.008		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	1.8	**
08.00	3.7	****
08.15	14.0	*****
08.30	20.8	*****
08.45	5.5	*****
09.00	2.1	**

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.9	*
08.00	1.3	*
08.15	2.5	***
08.30	2.6	***
08.45	1.4	*
09.00	0.9	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I	I	I	I	I	I	* DELAY *		I	* DELAY *		I
I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	685.6	I 457.1	I	686.1	I 1.00	I	686.3	I 1.00	I
I	B-A	I	0.0	I 0.0	I	0.0	I 0.00	I	0.0	I 0.00	I
I	C-A	I	493.6	I 329.1	I		I	I		I	I
I	C-B	I	493.6	I 329.1	I	139.3	I 0.28	I	139.3	I 0.28	I
I	A-B	I	109.7	I 73.1	I		I	I		I	I
I	A-C	I	713.0	I 475.4	I		I	I		I	I
I	ALL	I	2495.6	I 1663.7	I	825.4	I 0.33	I	825.7	I 0.33	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

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RUN TITLE

Cha Kwo Ling Road/Ko Fai Road - 2027 Design Flows (AM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	12.50 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	2.70 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	35.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	59.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	2.70 M.	I
I	- LANE 2 WIDTH	I (WB-A)	3.30 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	B-A	0.042	0.028	0.020	0.003	0.004	I
I	C-B	0.090	0.014		0.008		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	9.96	8.66	1.151		27.9	48.0	570.3		I
I	B-A	0.00	3.90	0.000		0.0	0.0	0.0		I
I	C-A	8.32								I
I	C-B	6.49	8.72	0.744		2.6	2.8	40.6		I
I	A-B	1.74								I
I	A-C	10.69								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.089	0.012			0.008				I
I	B-A	0.042	0.028	0.020	0.003	0.004				I
I	C-B	0.090	0.014		0.008					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	8.13	9.03	0.901		48.0	37.3	640.1		I
I	B-A	0.00	4.66	0.000		0.0	0.0	0.0		I
I	C-A	6.79								I
I	C-B	5.30	9.14	0.580		2.8	1.4	23.2		I
I	A-B	1.42								I
I	A-C	8.73								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.093	0.010			0.009				I
I	B-A	0.050	0.023	0.020	0.003	0.005				I
I	C-B	0.094	0.011		0.008					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	6.81	9.30	0.732		37.3	4.2	307.5		I
I	B-A	0.00	5.23	0.000		0.0	0.0	0.0		I
I	C-A	5.69								I
I	C-B	4.44	9.44	0.470		1.4	0.9	14.4		I
I	A-B	1.19								I
I	A-C	7.31								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.096	0.008			0.009				I
I	B-A	0.056	0.019	0.020	0.004	0.005				I
I	C-B	0.097	0.009		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	2.5	***
08.00	6.1	*****
08.15	27.9	*****
08.30	48.0	*****
08.45	37.3	*****
09.00	4.2	***

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.9	*
08.00	1.3	*
08.15	2.6	***
08.30	2.8	***
08.45	1.4	*
09.00	0.9	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I
I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I	747.3	I 498.2	I 1885.4	I 2.52	I 1886.4	I 2.52
I	B-A	I	0.0	I 0.0	I 0.0	I 0.00	I 0.0	I 0.00
I	C-A	I	623.9	I 415.9	I	I	I	I
I	C-B	I	486.8	I 324.5	I 144.2	I 0.30	I 144.3	I 0.30
I	A-B	I	130.3	I 86.8	I	I	I	I
I	A-C	I	802.2	I 534.8	I	I	I	I
I	ALL	I	2790.4	I 1860.3	I 2029.7	I 0.73	I 2030.7	I 0.73

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRANSPORT RESEARCH LABORATORY

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

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RUN TITLE

Cha Kwo Ling Road/Ko Fai Road - 2027 Design Flows (PM)

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

I
I
I
I
I
I
I

MINOR ROAD (ARM B)

ARM A IS Cha Kwo Ling Road NB
ARM B IS Ko Fai Road EB
ARM C IS Cha Kwo Ling Road SB

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	12.50 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	2.70 M.	I
I	- VISIBILITY	I (VC-B)	90.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	35.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	59.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	2.70 M.	I
I	- LANE 2 WIDTH	I (WB-A)	3.30 M.	I

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I NUMBER OF MINUTES FROM START WHEN I RATE OF FLOW (VEH/MIN) I
I ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP I AFTER I
I I TO RISE I IS REACHED I FALLING I PEAK I OF PEAK I PEAK I

I	B-A	0.043	0.027	0.020	0.003	0.004	I
I	C-B	0.092	0.013		0.008		I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.15-08.30									I
I	B-C	9.14	8.78	1.042		15.2	23.1	288.8		I
I	B-A	0.00	3.95	0.000		0.0	0.0	0.0		I
I	C-A	6.58								I
I	C-B	7.40	8.87	0.834		4.1	4.5	65.2		I
I	A-B	1.46								I
I	A-C	10.15								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.091	0.012			0.008				I
I	B-A	0.042	0.028	0.020	0.003	0.004				I
I	C-B	0.092	0.013		0.008					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.30-08.45									I
I	B-C	7.46	9.13	0.818		23.1	6.1	204.1		I
I	B-A	0.00	4.69	0.000		0.0	0.0	0.0		I
I	C-A	5.37								I
I	C-B	6.05	9.26	0.653		4.5	2.0	33.6		I
I	A-B	1.19								I
I	A-C	8.28								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.094	0.009			0.009				I
I	B-A	0.050	0.023	0.020	0.003	0.005				I
I	C-B	0.096	0.011		0.009					I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I
I	08.45-09.00									I
I	B-C	6.25	9.38	0.666		6.1	2.1	38.2		I
I	B-A	0.00	5.27	0.000		0.0	0.0	0.0		I
I	C-A	4.50								I
I	C-B	5.06	9.55	0.530		2.0	1.2	18.6		I
I	A-B	1.00								I
I	A-C	6.94								I
I	EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:									
I			MAJOR RD.	CENT RES	VIS TO LEFT	VISIBILITY				I
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT				I
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)				I
I	B-C	0.097	0.008			0.009				I
I	B-A	0.056	0.019	0.020	0.004	0.006				I
I	C-B	0.098	0.009		0.009					I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	1.9	**
08.00	3.8	****
08.15	15.2	*****
08.30	23.1	*****
08.45	6.1	*****
09.00	2.1	**

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	1.1	*
08.00	1.8	**
08.15	4.1	****
08.30	4.5	****
08.45	2.0	**
09.00	1.2	*

I	STREAM	TOTAL DEMAND		* QUEUEING *		* INCLUSIVE QUEUEING *	
		I	I	I	I	I	I
I				* DELAY *		* DELAY *	
I		(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I 685.6	I 457.1	I 758.1	I 1.11	I 758.3	I 1.11
I	B-A	I 0.0	I 0.0	I 0.0	I 0.00	I 0.0	I 0.00
I	C-A	I 493.6	I 329.1	I	I	I	I
I	C-B	I 555.3	I 370.2	I 209.6	I 0.38	I 209.7	I 0.38
I	A-B	I 109.7	I 73.1	I	I	I	I
I	A-C	I 761.0	I 507.3	I	I	I	I
I	ALL	I 2605.3	I 1736.9	I 967.7	I 0.37	I 968.0	I 0.37

END OF JOB

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