

**DOCUMENT STATUS CONTROL RECORD**

**Proposed Development  
at 33 Sheung Heung Road, Kowloon**

**Traffic Impact Assessment Report**

|  |                  |     |                              |
|--|------------------|-----|------------------------------|
|  |                  |     |                              |
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## 1 INTRODUCTION

### 1.1 Background

- 1.1.1 The owner intends to develop the site at 33 Sheung Heung Road (hereinafter, referred to as “the Site”) into a building with residential flats cum shop and services.
- 1.1.2 The Site is located at the area zoned “Residential (Group E)” on the Draft Ma Tau Kok Outline Zoning Plan No. S/K10/29. According to the Notes of the OZP, the proposed use falls within Column 2 uses, which a Section 16 planning application to Town Planning Board is required.
- 1.1.3 LLA Consultancy Limited was commissioned to undertake a traffic impact assessment study to support this S16A planning application. This TIA report presents the findings of the study.

### 1.2 Objectives

- 1.2.1 The objectives of this study can be summarized as follows:
- to reveal the existing traffic conditions in vicinity of the Site;
  - to project the future traffic situation of the surrounding network in vicinity of the Site;
  - to estimate the traffic generated from the proposed development;
  - to appraise the potential traffic impact of the proposed development and propose suitable traffic improvement measure, if necessary; and
  - to recommend the transport facilities provisions for the proposed development.

## 2 THE PROPOSED DEVELOPMENT

### 2.1 The Site

- 2.1.1 As shown in **Figure 2.1**, the Site is a corner site located at the northeast corner of Sheung Heung Road and Ha Heung Road junction. It is a small site with an area of 390 m<sup>2</sup> only.

### 2.2 The Development Schedule

- 2.2.1 The key development parameters of the proposed development are shown in **Table 2.1**.

**Table 2.1 Proposed Development Schedule**

| Item  | Parameters              |
|---|-------------------------|
| Site Area   | 390.192 m <sup>2</sup>  |
| Domestic GFA  | 2,926.44 m <sup>2</sup> |
| Total Number of Residential Unit<br>(Flat size smaller than 40 m <sup>2</sup> ) | 76                      |
| Non-domestic GFA for Shop and Services  | 585.28 m <sup>2</sup>   |

### **3 EXISTING TRAFFIC SITUATION**

#### **3.1 Existing Traffic Conditions**

- 3.1.1 Sheung Heung Road is a local distributor which connects Ma Tau Wai Road and To Kwa Wan Road. The section of Sheung Heung Road along the frontage of the Site is a one way eastbound road with 2 traffic lanes.
- 3.1.2 The section of Ha Heung Road along the frontage of the Site connects with Sheung Heung Road at both ends. It is a local distributor with a few parking spaces provided on both sides of the kerb.
- 3.1.3 The section of Ma Tau Wai Road between Chi Kiang Street and Tin Kwong Road is a dual-3 carriageway which is classified as primary distributor. In 2021, it carried an annual average daily traffic (AADT) of 28,890 vehicles.
- 3.1.4 The section of To Kwa Wan Road between Chi Kiang Street and Kwei Chow Street is also a dual-3 carriageway. It is classified as district distributor. In 2021, it carried an annual average daily traffic (AADT) of 17,450 vehicles.

#### **3.2 Traffic Count Survey**

- 3.2.1 In order to assess the existing traffic conditions, a traffic count survey was carried out at the following locations in the vicinity of the Site on 26 October 2022 (Wednesday) during the peak hour period from 07:30 to 09:30 and 17:00 to 19:00. The locations of the surveyed junctions are as follows and presented in **Figure 3.1**.

J1 – Sheung Heung Road / To Kwa Wan Road;

J2 – Lok Shan Road / To Kwa Wan Road;

J3 – San Shan Road / To Kwa Wan Road;

J4 – Ha Heung Road / Lok Shan Road;

J5 – Sheung Heung Road / Ma Tau Wai Road; and

J6 – Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road.

- 3.2.2 The identified AM and PM peak hours are 08:30 – 09:30 and 17:45 – 18:45, respectively. The recorded peak hour traffic flows are presented in **Figure 3.2**.

#### **3.3 Existing Junction Capacity Assessment**

- 3.3.1 Based on the existing weekday traffic flows, the performance of the key junctions during the AM and PM peak hours were assessed. The results are summarized and presented in **Table 3.1** and detailed junction capacity calculation sheets are presented in **Appendix A**.

**Table 3.1 Existing Junction Performance**

| No. | Junction Location  | Type/Capacity Index <sup>(1)</sup> | AM Peak Hour | PM Peak Hour |
|-----|--|------------------------------------|--------------|--------------|
| J1  | Sheung Heung Road / To Kwa Wan Road                                    | Signalized/RC                      | 213%         | 212%         |
| J2  | Lok Shan Road / To Kwa Wan Road  | Signalized/RC                      | 168%         | 150%         |
| J3  | San Shan Road / To Kwa Wan Road  | Signalized/RC                      | 98%          | 127%         |
| J4  | Ha Heung Road / Lok Shan Road  | Priority/DFC                       | 0.29         | 0.42         |
| J5  | Sheung Heung Road / Ma Tau Wai Road                                    | Priority/DFC                       | 0.39         | 0.33         |
| J6  | Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road | Signalized/RC                      | 29%          | 31%          |

Note: (1) RC = Reserve Capacity for signalized junction; DFC = Design Flow to Capacity ratio for priority junction.

3.3.2 From **Table 3.1**, it is noted that the concerned junctions are operating with spare capacity in the existing scenario.

### 3.4 Existing Public Transport Services

3.4.1 At present, there are numerous bus routes and minibus route travelling in the vicinity of the Site. The details of the bus/minibus routes and the locations of various public transport services are marked on **Table 3.2** and **Figure 3.3**.

**Table 3.2 Existing Public Transport Routes**

| Mode | Route No.  | Origin-Destination                                      | Frequency (min)                           |
|------|--|---|---|
| Bus  | 2E   | Pak Tin (North) - Kowloon City Ferry                    | 20 - 25                                   |
|      | 3B   | Tsz Wan Shan (Central) - Hung Hom (Hung Luen Road)      | 20 - 30                                   |
|      | 5  | Fu Shan Estate - Star Ferry                             | 9 - 20                                    |
|      | 5A   | Kai Tak (Kai Ching Estate) - Star Ferry                 | 20 - 30                                   |
|      | 5C   | Tsz Wan Shan (Central) - Star Ferry                     | 6 - 12                                    |
|      | 5D <sup>(1)</sup>                                  | Telford Gardens - Hung Hom                              | 12 - 30                                   |
|      | 5P <sup>(2)</sup>                                  | Tsz Wan Shan (Central) - Star Ferry                     | 15  |
|      | 6C   | Kowloon City Ferry - Mei Foo                            | 9 - 20                                    |
|      | 6F   | Kowloon City Ferry - Lai Kok                            | 20 - 30                                   |
|      | 11   | Diamond Hill Station - Kowloon Station                  | 11 - 25                                   |
|      | 11B  | Kwun Tong (Tsui Ping Road) - Kowloon City Ferry         | 10 - 25                                   |
|      | 11K  | Chuk Yuen Estate - Hung Hom Station                     | 20 - 30                                   |
|      | 11X  | On Tai (North) - Hung Hom Station                       | 9 - 25                                    |
|      | 12A  | Whampoa Garden - Cheung Sha Wan (Sham Mong Road)        | 8 - 20                                    |
|      | 14   | Lei Yue Mun Estate - China Ferry Terminal               | 12 - 30                                   |
|      | 15   | Ping Tin - Hung Hom (Hung Luen Road)                    | 11 - 25                                   |
|      | 15X <sup>(2)</sup>                                 | Lam Tin Bus Terminus - Hung Hom Station                 | 20  |
|      | 17   | Kwun Tong (Yue Man Square) - Ho Man Tin (Oi Man Estate) | 5 - 20                                    |
|      | 21   | Choi Wan - Hung Hom Station                             | 20 - 30                                   |
|      | 22M <sup>(1)</sup>                                 | Kai Tak Cruise Terminal - To Kwa Wan                    | 20 - 30                                   |
|      | 26   | Shun Tin - Tsim Sha Tsui East                           | 7 - 25                                    |
|      | 28   | Lok Wah - Star Ferry                                    | 10 - 20                                   |
|      | 41   | Tsing Yi (Cheung Ching Estate) - Kowloon City Ferry     | 25 - 35                                   |
|      | 45   | Kowloon City Ferry - Lai Yiu                            | 20 - 30                                   |
|      | 61X  | Tuen Mun Central - Kowloon City Ferry                   | 10 - 25                                   |
|      | 75X  | Tai Po (Fu Shin) - Kowloon City Ferry                   | 8 - 25                                    |
|      | 85   | Fo Tan (Shan Mei St) - Kowloon City Ferry               | 20 - 30                                   |
|      | 85A  | Kwong Yuen - Kowloon City Ferry                         | 20 - 30                                   |
|      | 85B <sup>(2)</sup>                                 | Chun Shek - Kowloon City Ferry                          | 3 trips at AM peak;<br>2 trips at PM peak |
|      | 85S <sup>(3)</sup>                                 | Yiu On - Hung Hom (Hung Luen Road)                      | 2 trips at AM peak                        |
| 85X  | Ma On Shan Town Centre - Hung Hom (Hung Luen Road) | 9 - 25  |   |
| 93K  | Po Lam - Mong Kok East Station                     | 17 - 30   |   |
| 101  | Kwun Tong (Yue Man Square) - Kennedy Town          | 4 - 20  |   |

| Mode | Route No.           | Origin-Destination  | Frequency (min)                           |
|------|---------------------|---|---|
|      | 106                 | Wong Tai Sin - Siu Sai Wan (Island Resort)  | 6 - 20                                    |
|      | 106A <sup>(3)</sup> | Wong Tai Sin - Tai Koo (Kornhill Plaza)   | 4 trips at AM peak                        |
|      | 106P <sup>(2)</sup> | Siu Sai Wan (Island Resort) - Wong Tai Sin  | 6 trips at AM peak;<br>4 trips at PM peak |
|      | 107                 | Kowloon Bay - Wah Kwai  | 6 - 20                                    |
|      | 108                 | Kai Yip - Braemar Hill  | 10 - 25                                   |
|      | 111                 | Ping Shek / Choi Hung Station - Central (Macau Ferry)                                   | 4 - 25                                    |
|      | 111P <sup>(2)</sup> | Choi Fook - Central (Macau Ferry)   | 4 trips at AM peak;<br>2 trips at PM peak |
|      | 115                 | Kowloon City Ferry - Central (Macau Ferry)  | 6 - 30                                    |
|      | 116                 | Tsz Wan Shan (Central) - Quarry Bay   | 4 - 18                                    |
|      | 297                 | Po Lam - Hung Hom (Hung Luen Road)  | 13 - 30                                   |
|      | 297P <sup>(3)</sup> | Tseung Kwan O Hospital - Hung Hom (Hung Luen Road)                                      | 2 trips at AM peak                        |
|      | 608                 | Kowloon City (Shing Tak Street) - Shau Kei Wan  | 10 - 30                                   |
|      | 608P <sup>(3)</sup> | Siu Sai Wan (Island Resort) - Kowloon City  | 2 trips at AM peak                        |
|      | 796X                | Tseung Kwan O Station - Tsim Sha Tsui East  | 12 - 25                                   |
|      | A22                 | Lam Tin Station - Airport   | 30 - 60                                   |
|      | A23                 | Tsz Wan Shan (North) - Airport  | 30  |
|      | E23                 | Tsz Wan Shan (South) - Airport  | 12 - 30                                   |
|      | E23A                | Tsz Wan Shan (South) - Airport (Via Tung Chung North)                                   | 20 - 30                                   |
|      | N121 <sup>(4)</sup> | Central (Macau Ferry) - Ngau Tau Kok  | 15 - 30                                   |
|      | N23 <sup>(4)</sup>  | Tsz Wan Shan (North) - Tung Chung Station   | 5 trips                                   |
| GMB  | 2                   | Hung Hom (Whampoa Garden) - Festival Walk Public Transport Interchange                  | 15 - 25                                   |
|      | 2A                  | Hung Hom (Whampoa Garden) - Festival Walk Public Transport Interchange                  | 15 - 25                                   |
|      | 13                  | Kowloon Tong (Broadcast Drive) - Hung Hom (Hung Luen Road) Public Transport Interchange | 15 - 30                                   |
|      | 27M                 | Lok Man Sun Chuen (Maidstone Road) - Mong Kok Station                                   | 7 - 15                                    |
|      | 28M                 | Kowloon City (Wyler Gardens) - Mong Kok Station   | 5 - 15                                    |
|      | 28MS                | Kowloon City (Wyler Gardens) - Ho Man Tin Station <sup>(1)</sup>                        | 20 - 35                                   |
|      | 49 <sup>(1)</sup>   | Shun Tin - Kowloon City Ferry   | 25  |
|      | 105                 | To Kwa Wan - Hong Sing Garden   | 5 - 15                                    |
|      | 105S <sup>(4)</sup> | To Kwa Wan - Hong Sing Garden   | 60  |

- Notes: (1) Circular Services.  
(2) Operates during AM and PM peak only.  
(3) Operates during AM peak only.  
(4) Operates during mid-night only.

## 4 FUTURE TRAFFIC SITUATION

### 4.1 Design Year

4.1.1 The proposed development will be completed in 2027. Therefore, the design year for the following traffic impact assessment will be 2030, i.e. 3 years after the completion.

### 4.2 Future Traffic Flows

#### ATC Historical Data

4.2.1 Reference was made to the 2017 to 2021 Annual Traffic Census Reports, published by the Transport Department, to determine the traffic growth. The traffic data recorded at the counting stations in the vicinity of the Site is shown in **Table 4.1**.

**Table 4.1 Annual Traffic Census Data**

| Stn. No.     | Road Section    |                  |                  | AADT <sup>(1)</sup> |                                |                                 |                                 |                                | Avg. Growth% |
|--------------|-----------------|------------------|------------------|---------------------|--------------------------------|---------------------------------|---------------------------------|--------------------------------|--------------|
|              | Road            | From             | To               | 2017                | 2018                           | 2019                            | 2020                            | 2021                           |              |
| 3245         | To Kwa Wan Road | Kwei Chow Street | Chi Kiang Street | 21,250              | 22,400<br>(5.4%)               | 17,620<br>(-21.3%)              | 16,980<br>(-3.6%)               | 17,450<br>(2.8%)               | -4.8%        |
| 3620         | Ma Tau Wai Road | Chi Kiang Street | Tin Kwong Road   | 30,280              | 29,880<br>(-1.3%)              | 29,470<br>(-1.4%)               | 27,960<br>(-5.1%)               | 28,890<br>(3.3%)               | -1.2%        |
| <b>Total</b> |                 |                  |                  | <b>51,530</b>       | <b>52,280</b><br><b>(1.5%)</b> | <b>47,090</b><br><b>(-9.9%)</b> | <b>44,940</b><br><b>(-4.6%)</b> | <b>46,340</b><br><b>(3.1%)</b> | <b>-2.6%</b> |

Note: (1) Figures in bracket indicated the % increase/decrease between two years.

4.2.2 **Table 4.1** shows that the AADT at the concerned ATC stations has an overall annual growth of negative 2.6% in between the years 2017 to 2021.

#### TPEDM Projection Data

4.2.3 Reference was also made to the 2019–based TPEDM published by Planning Department. The population and employment data of year 2019 and 2031 in Kowloon City District are summarized in **Table 4.2**.

**Table 4.2 Population and Employment Data in Kowloon City District**

| Year                    | 2019    | 2026                        | 2031                        |
|-------------------------|---------|-----------------------------|-----------------------------|
| Population              | 429,300 | 451,100                     | 420,050                     |
| Employment              | 212,000 | 237,900                     | 227,850                     |
| Total                   | 641,300 | 689,000                     | 647,900                     |
| <b>Average Growth %</b> |         | <b>+1.0% (2019 to 2026)</b> | <b>-1.2% (2026 to 2031)</b> |

4.2.4 As shown in **Table 4.2**, the average annual growth rates of Kowloon City district are +1.0% and negative 1.2% in the years 2019 to 2026 and 2026 to 2031, respectively. Having considered the growth rates derived from ATC and TPEDM data, to be conservative, the larger growth rate of +1.0% will be adopted for the subsequent traffic forecasting.

### 4.3 Proposed Development Traffic Generation

#### Traffic Generation for the Site

- 4.3.1 Reference was made to the latest set of traffic generation and attraction rates documented in Chapter 3 “Transport Considerations of Town Plans” of the Transport Planning and Design Manual (TPDM), for the estimation of the traffic generated by the residential and retail component of proposed development.
- 4.3.2 Taking into consideration of the above, the development traffic generation and attraction are estimated in **Table 4.3**.

**Table 4.3 Proposed Development Traffic Generation**

| Type                       | Unit/Content             | AM Peak Hour |          |           | PM Peak Hour |          |           |
|----------------------------|--------------------------|--------------|----------|-----------|--------------|----------|-----------|
|                            |                          | Gen.         | Att.     | 2-way     | Gen.         | Att.     | 2-way     |
| <b>Trip Rates</b>          |                          |              |          |           |              |          |           |
| Residential <sup>(1)</sup> | pcu/hr/flat              | 0.0718       | 0.0425   | -         | 0.0286       | 0.0370   | -         |
| Retail <sup>(2)</sup>      | pcu/hr/100m <sup>2</sup> | 0.2296       | 0.2434   | -         | 0.3100       | 0.3563   | -         |
| <b>Traffic Generation</b>  |                          |              |          |           |              |          |           |
| Residential                | 76 flats                 | 6            | 4        | 10        | 3            | 3        | 6         |
| Retail                     | 585.28m <sup>2</sup>     | 2            | 2        | 4         | 2            | 3        | 5         |
| <b>Total</b>               |                          | <b>8</b>     | <b>6</b> | <b>14</b> | <b>5</b>     | <b>6</b> | <b>11</b> |

Note: (1) Mean trip rate of Private Residential: R(A) with average flat size of 60 m<sup>2</sup> are adopted from TPDM.  
(2) Mean trip rates for retail are adopted from TPDM.

- 4.3.3 As shown in **Table 4.3**, the proposed development will generate a two-way traffic of 14 and 11 pcu/hr during AM and PM peak hour, respectively. The development traffic flows are distributed onto the road network as shown in **Figure 4.1**.

#### Other Planned and Approved Developments

- 4.3.4 To estimate the future traffic flows generated and attracted by the nearby planned and approved developments, updated information has been obtained from available information regarding the planned and approved developments in the vicinity of the proposed development site, the details of these developments are listed in **Table 4.4**.



**Table 4.4 Planned and Approved Developments**

| Site | Location  | Parameters   |
|------|---|--|
| S1   | 5 & 7 Mok Cheong Street and 70 – 78 Sung Wong Toi Road, Ma Tau Kok, Kowloon<br>(Planning Application No. A/K10/259) | Portion 1: 48 residential flats with 3,150m <sup>2</sup> GFA for retail use.<br>Portion 2: 777 residential flats with 6,111m <sup>2</sup> GFA for retail use |
| S2   | 3 – 5 San Ma Tau Street, Ma Tau Kok, Kowloon<br>(Planning Application No. A/K22/18)                                 | 1,831m <sup>2</sup> GFA for office use   |
| S3   | 103 – 107 Tam Kung Road, Ma Tau Wai<br>(Planning Application No. A/K10/252-1)                                       | 99 hotel guestrooms  |
| S4   | 17 Yuk Yat Street, To Kwa Wan, Kowloon<br>(Planning Application No. A/K10/266)                                      | 208 residential flats with 700m <sup>2</sup> GFA for retail use  |
| S5   | 21-31 Sheung Heung Road, To Kwa Wan, Kowloon<br>(Planning Application No. A/K10/267)                                | 201 residential flats with 1,268.127m <sup>2</sup> GFA for retail use  |
| S6   | 21 Yuk Yat Street, To Kwa Wan, Kowloon<br>(Planning Application No. A/K10/269)                                      | 110 residential flats with 808.95m <sup>2</sup> GFA for retail use   |
| S7   | Bailey Street / Wing Kwong Street Development Project (KC-009)  | 1,152 residential flats with 11,105m <sup>2</sup> GFA for retail use   |
| S8   | Hung Fook Street / Ngan Hon St Development Scheme (KC-010)  | 750 residential flats with 6,843m <sup>2</sup> GFA for retail use  |
| S9   | Hung Fook Street / Kai Ming Street Development Project (KC-011)   | 400 residential flats with 3,660m <sup>2</sup> GFA for retail use  |
| S10  | Wing Kwong Street Development Project (KC-012)  | 414 residential flats with 3,722m <sup>2</sup> GFA for retail use  |
| S11  | Kai Ming Street / Wing Kwong St Development Project (KC-013)  |  |
| S12  | Wing Kwong Street / Sung On Street Project (KC-014)   | 560 residential flats with 4,286m <sup>2</sup> GFA for retail use  |
| S13  | To Kwa Wan Road / Wing Kwong Street Development Scheme (KC-016)   | 900 residential flats with 8,320m <sup>2</sup> GFA for retail use  |
| S14  | Kai Ming Street Demand-Led Redevelopment Project (DL-8:KC)  | 72 residential flats with 308m <sup>2</sup> GFA for retail use   |
| S15  | Shing Tak Street / Ma Tau Chung Road Development Project (CBS-1: KC)  | 640 residential flats with 6449m <sup>2</sup> GFA for retail use   |
| S16  | Kau Pui Lung Road / Chi Kiang Street Development Scheme (CBS-2:KC)  | 2,500 residential flats with 12,232m <sup>2</sup> GFA for retail use   |
| S17  | Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) <sup>(1)</sup>  | 1,280 residential flats with 10,500m <sup>2</sup> GFA for retail use   |
| S18  | To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019) <sup>(1)</sup>  | 950 residential flats with 7,820m <sup>2</sup> GFA for retail use  |

Note: (1) The anticipated completion year of the development is 2033.

4.3.5 Having considered that some of the developments are anticipated to be completed beyond the design year of 2030, they will be excluded from the traffic forecast. Based on the latest set of traffic generation and attraction rates documented in Chapter 3 “Transport Considerations of Town Plans” of the Transport Planning and Design Manual (TPDM), the traffic generated by these developments were estimated and are taken into account in the following assessments.

#### 4.4 Reference and Design Flows

4.4.1 The 2030 Reference Flows (**Figure 4.2**), i.e. the traffic flows in the local road were estimated based on the following equation.

$$2030 \text{ Reference Flows} = 2022 \text{sting Flows} \times (1 + 1.0\%)^8 + \text{Traffic Flows Generated by the Planned and Approved Developments}$$

4.4.2 The 2030 Design Flows (**Figure 4.3**), i.e. the traffic flows in the local road network with the additional traffic generated by the proposed development were estimated based on the following equation:

$$2030 \text{ Design Flows} = 2030 \text{ Reference Flows} + \text{Traffic Flows Generated by the Proposed Development}$$

#### 4.5 Future Junction Capacity Assessment

4.5.1 Based on the 2027 traffic flows, the performance of the key junctions during the AM and PM peak hours were assessed. The results are summarized and presented in **Table 4.6**. The detailed junction capacity calculation sheets are presented in **Appendix B**.

**Table 4.6 Future Junction Performance**

| No. | Junction Location  | Type/Capacity Index <sup>(1)</sup> | 2030 Reference |              | 2030 Design  |              |
|-----|--|------------------------------------|----------------|--------------|--------------|--------------|
|     |  |                                    | AM Peak Hour   | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| J1  | Sheung Heung Road / To Kwa Wan Road                                    | Signalized/RC                      | 154%           | 162%         | 153%         | 161%         |
| J2  | Lok Shan Road / To Kwa Wan Road  | Signalized/RC                      | 113%           | 107%         | 112%         | 107%         |
| J3  | San Shan Road / To Kwa Wan Road  | Signalized/RC                      | 53%            | 58%          | 52%          | 58%          |
| J4  | Ha Heung Road / Lok Shan Road  | Priority/DFC                       | 0.33           | 0.48         | 0.33         | 0.48         |
| J5  | Sheung Heung Road / Ma Tau Wai Road                                    | Priority/DFC                       | 0.47           | 0.39         | 0.47         | 0.39         |
| J6  | Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road | Signalized/RC                      | 15%            | 19%          | 15%          | 19%          |

Note: (1) RC = Reserve Capacity for signalized junction; DFC = Design Flow to Capacity ratio for priority junction.

4.5.2 From **Table 4.6**, it is noted that all junctions will operate with capacity for both reference and design scenarios. Therefore, it is anticipated that the proposed development will not induce additional traffic impact to the surrounding road network.

## 5 PROPOSED TRANSPORT FACILITIES

### 5.1 Vehicular Access

5.1.1 The vehicular access of the proposed development will be located at Sheung Heung Road.

### 5.2 Internal Transport Facilities Requirements

5.2.1 **Tables 5.1** summarized the car parking and loading/unloading requirements of the proposed development according to the Hong Kong Planning Standards and Guidelines (HKPSG).

**Table 5.1 Car Parking and Loading/Unloading Requirements**

| Development Type                |  | HKPSG Requirements  |             |     |      |                | Required Nos. under HKPSG |
|---------------------------------|--|---|-------------|-----|------|----------------|---------------------------|
| Car parking                     | Residential  | Parking Requirements = GPS x R1 x R2 x R3 where<br>GPS = 1 space per 4 - 7 units  |             |     |      |                | 4 – 7                     |
|                                 |  | Unit Size (Y)   | No. of Unit | R1  | R2   | R3             |                           |
|                                 |  | Y <= 40 m <sup>2</sup>  | 76          | 0.5 | 0.75 | 0.9            |                           |
|                                 | For Visitors<br>For private residential developments with more than 75 units per block should include 5 visitor spaces per block |   |             |     |      | 5              |                           |
|                                 | Retail   | 1 car space per 150 - 300m <sup>2</sup> GFA   |             |     |      |                | 2 – 4                     |
| <b>TOTAL CAR PARKING</b>        |  |   |             |     |      | <b>11 – 16</b> |                           |
| Loading /unloading              | Residential  | Minimum of 1 loading / unloading bay for goods vehicles within the site for every 800 flats or part thereof, subject to a minimum of 1 bay for each housing block |             |     |      |                | 1                         |
|                                 | Retail   | 1 loading/ unloading bay for goods vehicles for every 800 to 1,200m <sup>2</sup> , or part thereof, GF  |             |     |      |                | 1                         |
| <b>TOTAL LOADING/UNLOADING</b>  |  |   |             |     |      | <b>2</b>       |                           |
| Motorcycle Parking              | Residential  | 1 space per 100-150 flats   |             |     |      |                | 1                         |
|                                 | Retail   | 10% of the total provision for private cars   |             |     |      |                | 1                         |
| <b>TOTAL MOTORCYCLE PARKING</b> |  |   |             |     |      | <b>2</b>       |                           |

5.2.2 As shown in **Tables 5.1**, a total of 11 – 16 nos. of private car parking spaces (including 1 no. of parking space for disabled users), 2 nos. goods vehicle loading/unloading bays and 2 nos. of motorcycle parking spaces should be provided to meet the requirements of the HKPSG.

**Table 5.2 Proposed Car Parking and Loading/Unloading Provision**

| Facilities                      | Required No. | Proposed No. | Proposed Size   |
|---------------------------------|--------------|--------------|---|
| Car Parking                     | 11 – 16      | 13           | 2 nos. of 3.5m x 5.0m [for disabled users]<br>11 nos. of 2.5 x 5.0m |
| Goods Vehicle Loading/Unloading | 2            | 2            | 2 nos. of 3.5m x 7.0m   |
| Motorcycle Parking              | 2            | 2            | 2 nos. of 1.0m x 2.0m   |

5.2.3 **Table 5.2** shows the proposed development will provide 13 nos. of car parking spaces, 2 nos. of goods vehicle loading/unloading bays and 2 nos. of motorcycle parking spaces to meet the HKPSG requirement. The proposed car park layout plan is enclosed in **Appendix C**.

### 5.3 Justifications for Loading/Unloading Provisions

5.3.1 Since the Site has small site area of 390m<sup>2</sup> and a narrow site frontage of about 18.2m only. After providing the necessary floor space to accommodate entrance lobby, staircases, lift core and M&E facilities etc., the remaining area is not sufficient for HGV manoeuvring, hence, only 2 LGV loading/unloading spaces are provided.

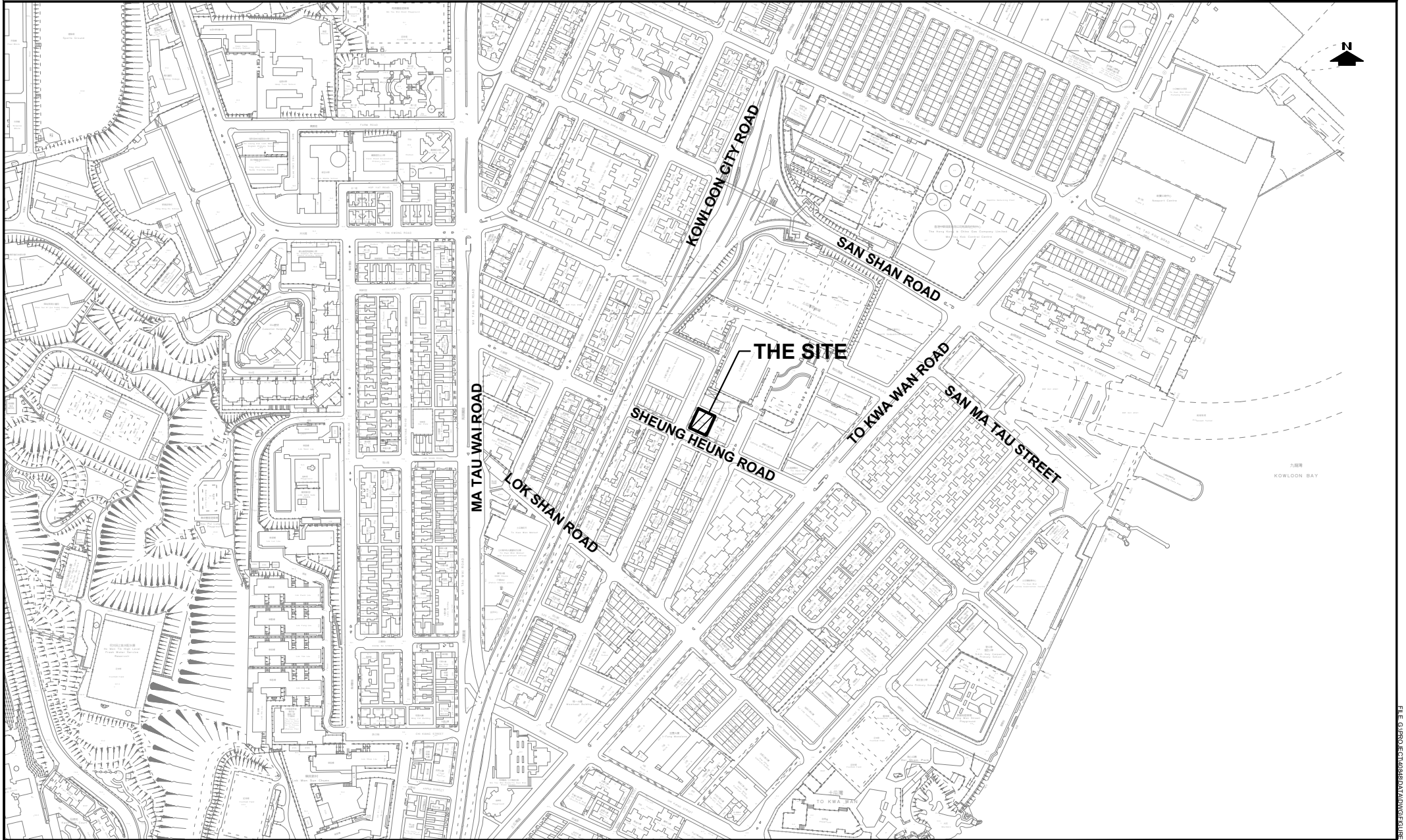
## **6 SUMMARY AND CONCLUSION**

### **6.1 Summary**

- 6.1.1 The owner intends to develop the site at 33 Sheung Heung Road into a new building with residential flats cum shop and services. The Building will comprise of 76 residential units and 585.28 m<sup>2</sup> retail GFA.
- 6.1.2 In order to assess the existing traffic conditions, a traffic count survey was carried out at the key junctions in the vicinity of the Site on 26 January 2022 (Wednesday) during the peak hour period. The identified AM and PM peak hours are 08:30 – 09:30 and 17:45 – 18:45, respectively.
- 6.1.3 Taking into consideration of the usages in the proposed development, it will generate a two-way traffic of 14 and 11 pcu/hr during AM and PM peak hour, respectively.
- 6.1.4 Junction capacity assessments were carried out for the key junctions in the vicinity for the year 2030. The results indicated that all junctions will operate with positive RCs for both reference and design scenarios. Therefore, it is anticipated that the proposed development will not induce additional traffic impact to the surrounding road network.
- 6.1.5 The vehicular access of the proposed development will be located at Sheung Heung Road.
- 6.1.6 The proposed development will provide 13 nos. of car parking spaces (including 2 accessible spaces), 2 nos. of goods vehicle loading/unloading bays and 2 nos. of motorcycle parking spaces to meet the HKPSG requirement.

### **6.2 Conclusion**

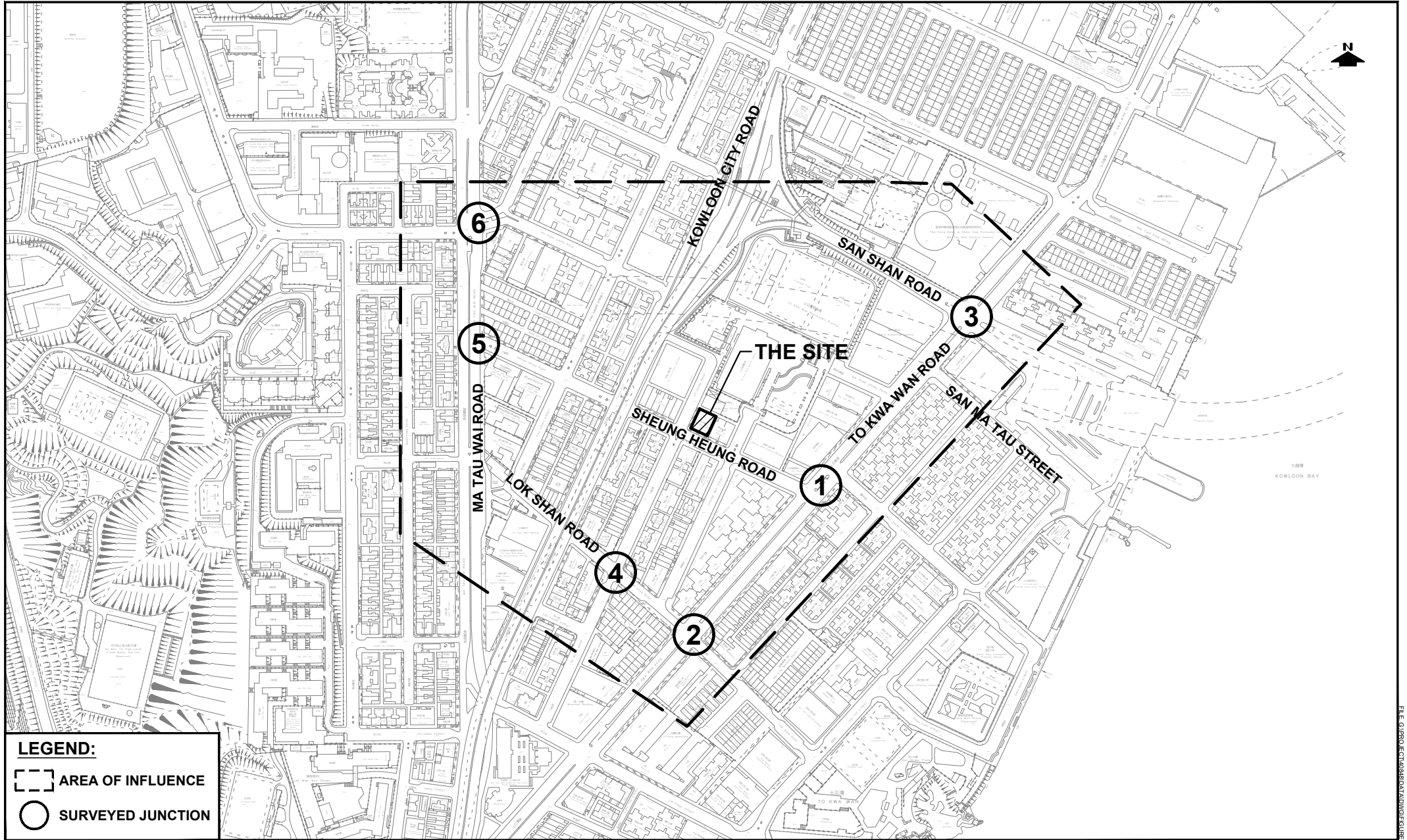
- 6.2.1 The findings of the traffic impact assessment indicated that the adjacent road network would be able to cope with the traffic generated by the proposed development and it is considered acceptable in traffic viewpoint.



|             |       |               |
|-------------|-------|---------------|
| PROJECT NO. | 40848 |               |
| DESIGNED    | SLN   | DATE NOV 2022 |
| DRAWN       | CLL   | SCALE 1:5000  |
| CHECKED     | SLN   |               |

|               |   |  |
|---------------|---|--|
| PROJECT TITLE | PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON |  |
| DRAWING TITLE | <b>LOCATION PLAN</b>                                  |  |

|                   |            |                     |   |
|-------------------|------------|---------------------|---|
| DRAWING NO.       | FIGURE 2.1 | REV.                | - |
| <b>LLA</b> 顧問有限公司 |            | Consultancy Limited |   |



**LEGEND:**

- AREA OF INFLUENCE
- SURVEYED JUNCTION

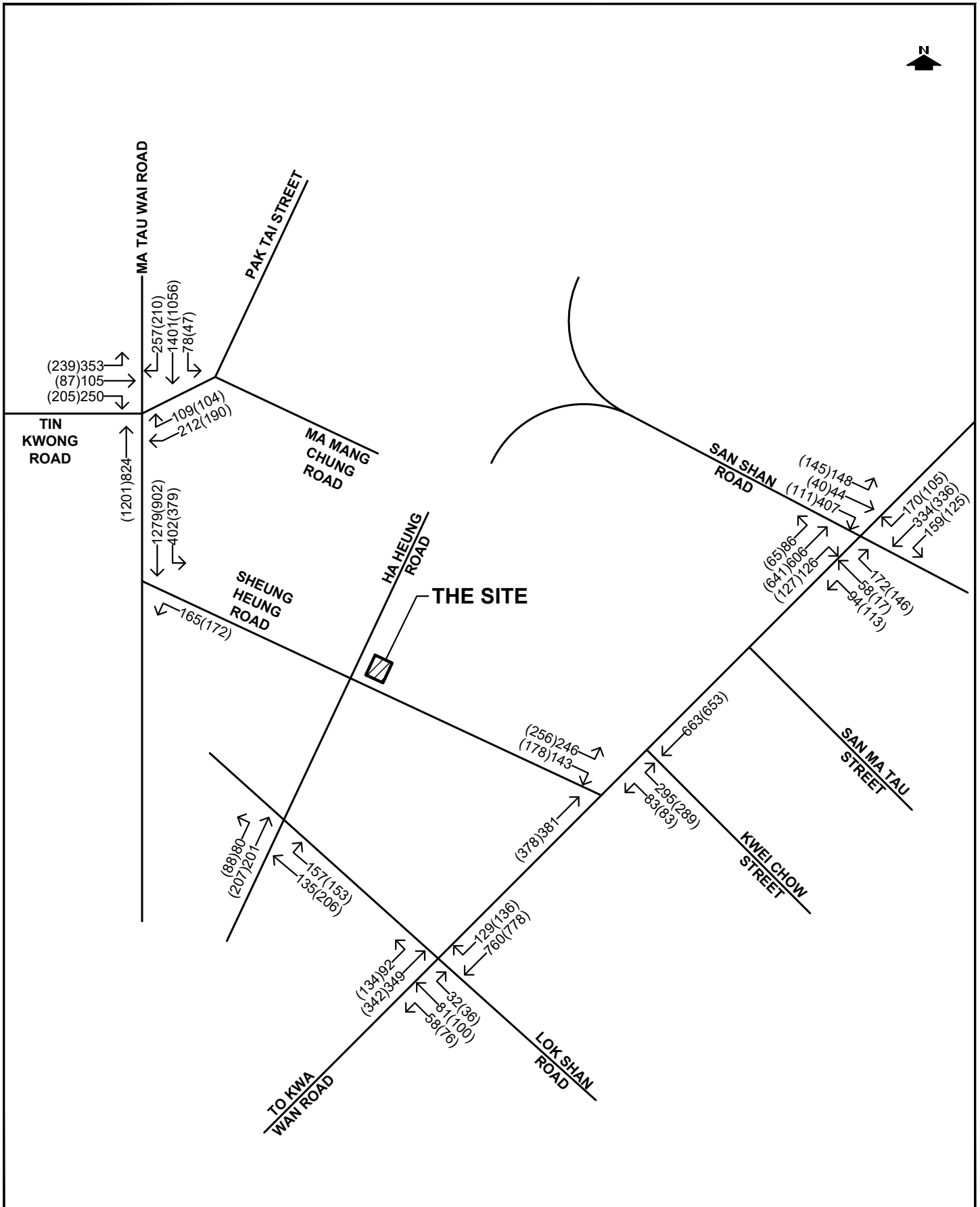
|                   |               |
|-------------------|---------------|
| PROJECT NO. 40848 |               |
| DESIGNED SLN      | DATE NOV 2022 |
| DRAWN CLL         | SCALE 1:5000  |
| CHECKED SLN       |               |

PROJECT TITLE: PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON

|   |  |
|---|--|
| DRAWING TITLE: LOCATION OF SURVEYED JUNCTIONS AND AREA OF INFLUENCE (AOI) |  |
|---|--|

|                        |        |
|------------------------|--------|
| DRAWING NO. FIGURE 3.1 | REV. - |
|------------------------|--------|

**LLA** 顧問有限公司  
Consultancy Limited



**LEGEND:**

312 (158) ← PM PEAK HOUR TRAFFIC FLOWS  
 ↑ AM PEAK HOUR TRAFFIC FLOWS

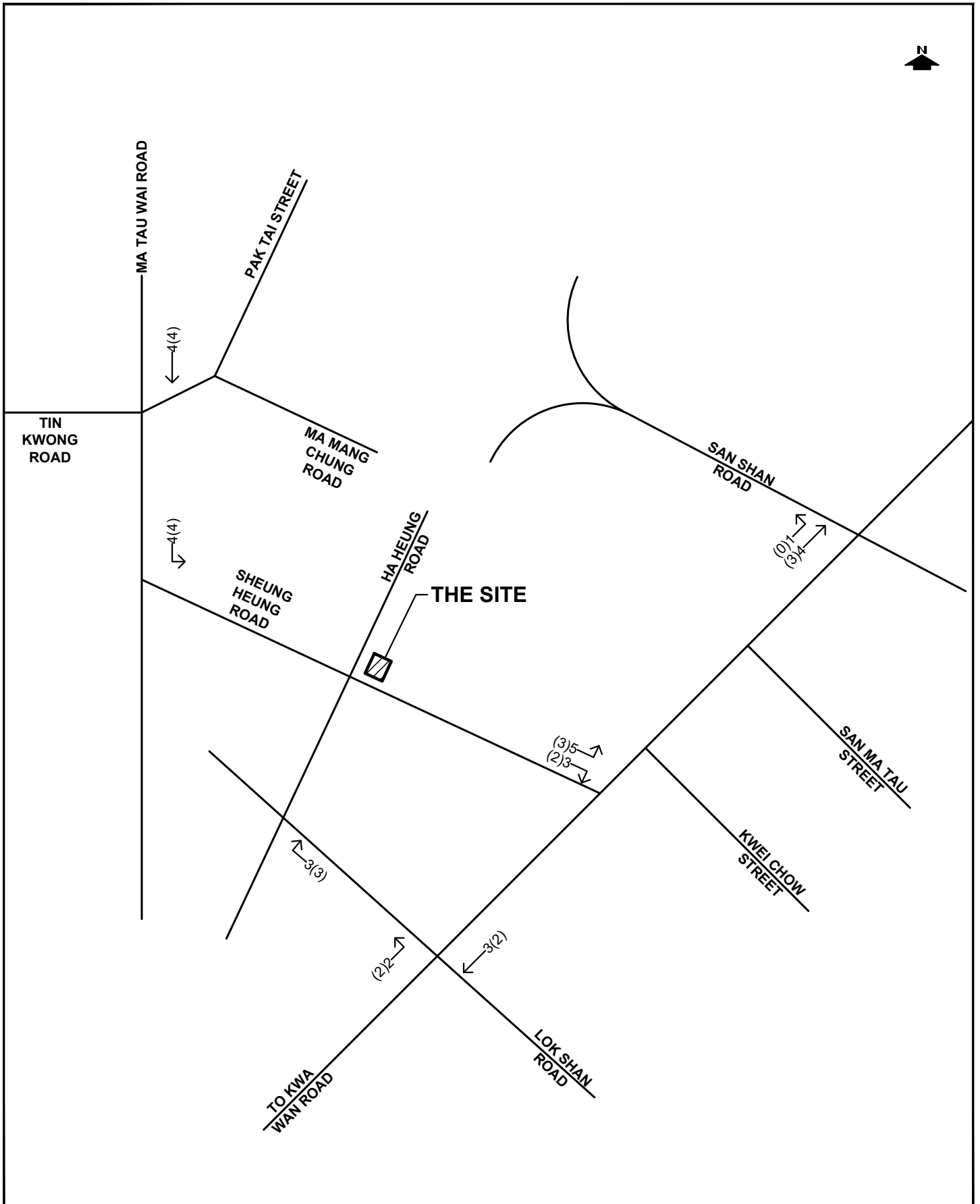
**NOTE:**

1. ALL TRAFFIC FLOWS ARE IN PCU/HOUR
2. MINOR ROADS ARE NOT SHOWN FOR CLARITY

|                          |                         |   |  |                               |  |               |  |
|--------------------------|-------------------------|---|--|-------------------------------|--|---------------|--|
| PROJECT NO. <b>40848</b> |                         | PROJECT TITLE<br><b>PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON</b> |  | DRAWING NO. <b>FIGURE 3.2</b> |  | REV. <b>.</b> |  |
| DESIGNED<br><b>SLN</b>   | DATE<br><b>NOV 2022</b> | DRAWING TITLE<br><b>2022 EXISTING TRAFFIC FLOWS</b>                           |  |                               |  |               |  |
| DRAWN<br><b>CLL</b>      | SCALE<br><b>N.T.S.</b>  |   |  |                               |  |               |  |
| CHECKED<br><b>SLN</b>    |                         |   |  |                               |  |               |  |







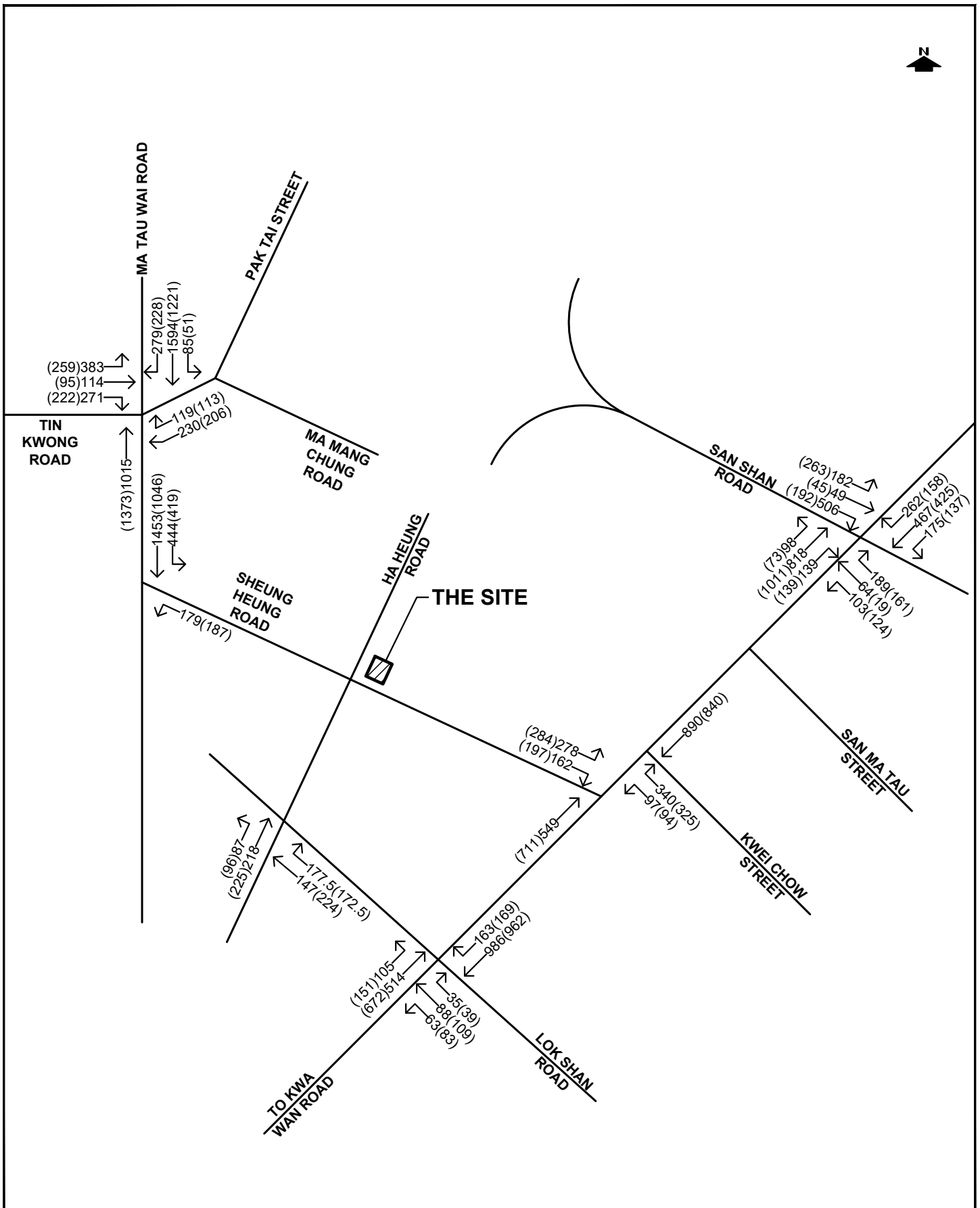
**LEGEND:**

312 (158) ← PM PEAK HOUR TRAFFIC FLOWS  
 ↑ AM PEAK HOUR TRAFFIC FLOWS

**NOTE:**

1. ALL TRAFFIC FLOWS ARE IN PCU/HOUR
2. MINOR ROADS ARE NOT SHOWN FOR CLARITY

|                             |                         |   |  |                                  |                  |
|-----------------------------|-------------------------|---|--|----------------------------------|------------------|
| PROJECT NO.<br><b>40848</b> |                         | PROJECT TITLE<br><b>PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON</b> |  | DRAWING NO.<br><b>FIGURE 4.1</b> | REV.<br><b>.</b> |
| DESIGNED<br><b>SLN</b>      | DATE<br><b>NOV 2022</b> | DRAWING TITLE<br><b>DEVELOPMENT TRAFFIC FLOWS</b>                             |  |                                  |                  |
| DRAWN<br><b>CLL</b>         | SCALE<br><b>N.T.S.</b>  |   |  |                                  |                  |
| CHECKED<br><b>SLN</b>       |                         |   |  |                                  |                  |



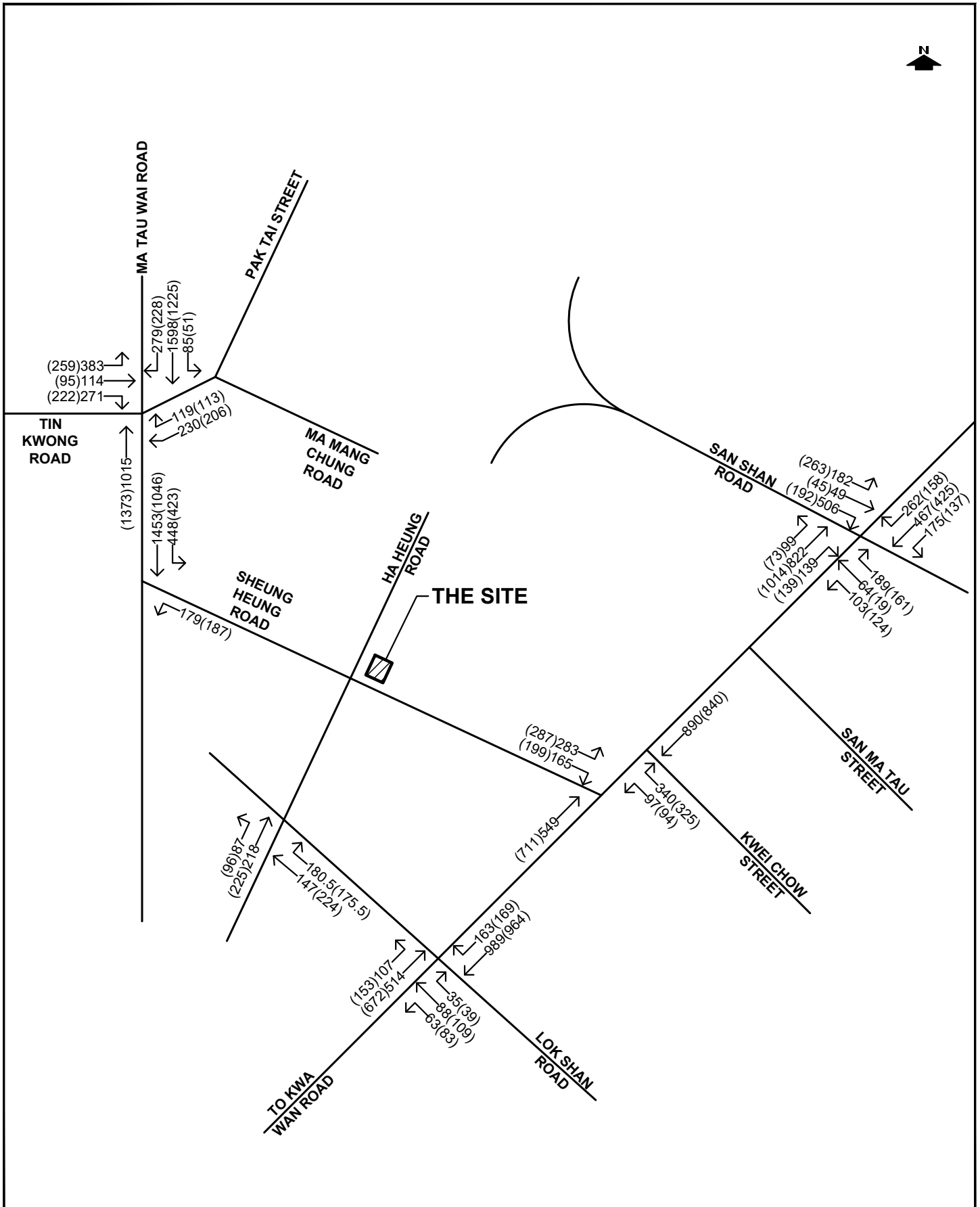
**LEGEND:**

312 (158) ← PM PEAK HOUR TRAFFIC FLOWS  
 ↑ AM PEAK HOUR TRAFFIC FLOWS

**NOTE:**

1. ALL TRAFFIC FLOWS ARE IN PCU/HOUR
2. MINOR ROADS ARE NOT SHOWN FOR CLARITY

|                             |                         |   |  |                                  |                  |
|-----------------------------|-------------------------|---|--|----------------------------------|------------------|
| PROJECT NO.<br><b>40848</b> |                         | PROJECT TITLE<br><b>PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON</b> |  | DRAWING NO.<br><b>FIGURE 4.2</b> | REV.<br><b>.</b> |
| DESIGNED<br><b>SLN</b>      | DATE<br><b>NOV 2022</b> | DRAWING TITLE<br><b>2030 REFERENCE TRAFFIC FLOWS</b>                          |  |                                  |                  |
| DRAWN<br><b>CLL</b>         | SCALE<br><b>N.T.S.</b>  |   |  |                                  |                  |
| CHECKED<br><b>SLN</b>       |                         |   |  |                                  |                  |



**LEGEND:**

312 (158) ← PM PEAK HOUR TRAFFIC FLOWS  
 ↑ AM PEAK HOUR TRAFFIC FLOWS

**NOTE:**

1. ALL TRAFFIC FLOWS ARE IN PCU/HOUR
2. MINOR ROADS ARE NOT SHOWN FOR CLARITY

|                             |                         |   |  |                                  |  |                  |  |
|-----------------------------|-------------------------|---|--|----------------------------------|--|------------------|--|
| PROJECT NO.<br><b>40848</b> |                         | PROJECT TITLE<br><b>PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON</b> |  | DRAWING NO.<br><b>FIGURE 4.3</b> |  | REV.<br><b>.</b> |  |
| DESIGNED<br><b>SLN</b>      | DATE<br><b>NOV 2022</b> | DRAWING TITLE<br><b>2030 DESIGN TRAFFIC FLOWS</b>                             |  |                                  |  |                  |  |
| DRAWN<br><b>CLL</b>         | SCALE<br><b>N.T.S.</b>  |   |  |                                  |  |                  |  |
| CHECKED<br><b>SLN</b>       |                         |   |  |                                  |  |                  |  |

**Appendix A**

**Junction Calculation Sheets**  
**- Existing Scenario**



# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

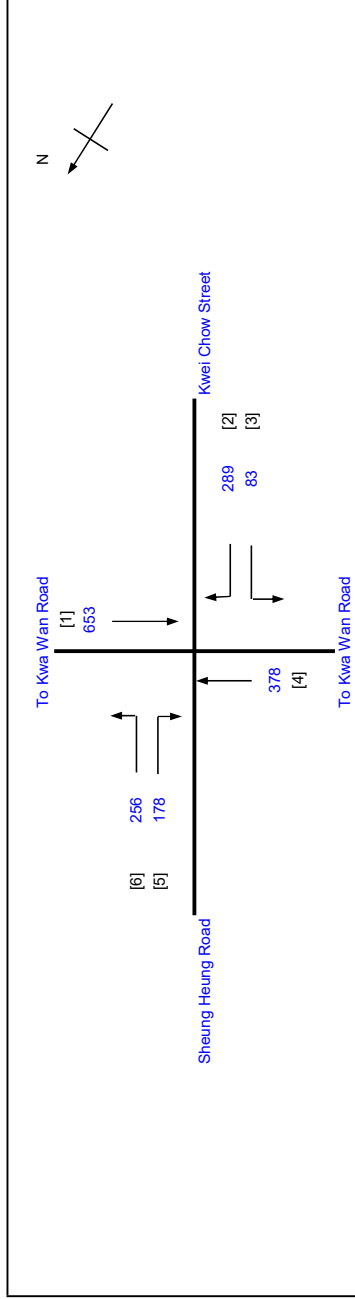
2022 Existing PM

J1 Sheung Heung Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J1\_SHR\_TKWR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

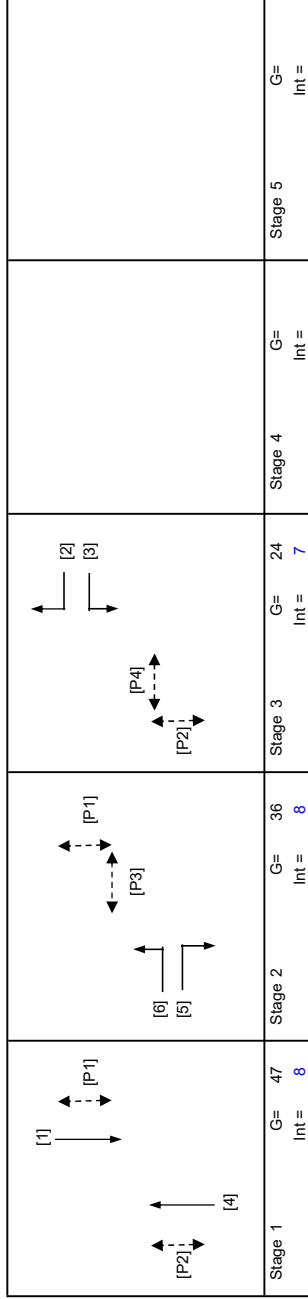
INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



No. of stages per cycle = 3

Cycle time = 130 sec  
 Sum(y) = 0.244  
 Loss time = 20 sec  
 Total Flow = 1837 pcu  
 Co = 46.3 sec  
 Crm = 26.5 sec  
 Yult = 0.750  
 R.C.ult = 207.0 %  
 Cp = 27.5 sec  
 Ymax = 0.846

**R.C.(C) = 0.9\*Ymax-y)\*100% = 212 %**



| Pedestrian Phase | Stage | Width (m) | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|---------------|---------------|-------|------------------------|------------------------|
| P1               | 1,2   | 12        | 6             | 10            | 2     | 87                     | 10                     |
| P2               | 1,3   | 13.2      | 6             | 12            | 2     | 72                     | 12                     |
| P3               | 2     | 10        | 5             | 10            | 2     | 32                     | 10                     |
| P4               | 3     | 10        | 5             | 10            | 2     | 19                     | 10                     |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 1         | 1     | 3.30          | 3           |           |   | N | 6115                     | 653                 | 653                     |                      | 653              | 0.00                           | 6115            |               |                     | 0.6         | -778               |            | 6115                   | 0.107                   | 0.107 | 20        | 48    | 48               | 0.289         | 28                     | 26                     |                         |
| 4         | 1     | 3.30          | 1           |           |   | N | 1945                     | 83                  | 83                      |                      | 83               | 0.00                           | 1945            |               |                     |             |                    |            | 1167                   | 0.071                   | 0.071 |           | 32    | 48               | 0.289         | 12                     | 38                     |                         |
| 4         | 1     | 3.30          | 2           | 15        |   | N | 4170                     | 295                 | 295                     | 178                  | 295              | 0.00                           | 4170            |               |                     |             |                    |            | 4170                   | 0.071                   | 0.071 |           | 32    | 48               | 0.289         | 24                     | 37                     |                         |
| 5         | 2     | 3.30          | 2           | 5         |   | N | 4030                     |                     | 178                     |                      | 178              | 1.00                           | 3664            |               |                     |             |                    |            | 3664                   | 0.049                   | 0.049 |           | 22    | 37               | 0.289         | 15                     | 44                     |                         |
| 6         | 2     | 3.30          | 2           | 5         |   | N | 4030                     | 256                 | 256                     |                      | 256              | 1.00                           | 3100            |               |                     |             |                    |            | 3100                   | 0.083                   | 0.083 |           | 37    | 37               | 0.289         | 18                     | 33                     |                         |
| 2         | 3     | 3.00          | 2           | 15        |   | N | 3970                     | 197                 | 197                     |                      | 197              | 1.00                           | 3609            |               |                     |             |                    |            | 3609                   | 0.055                   | 0.055 |           | 25    | 25               | 0.289         | 15                     | 42                     |                         |
| 2,3       | 3     | 3.00          | 1           | 8         |   | N | 2055                     | 92                  | 95                      | 3                    | 95               | 1.00                           | 1731            |               |                     |             |                    |            | 1731                   | 0.055                   | 0.055 |           | 25    | 25               | 0.289         | 12                     | 43                     |                         |
| 3         | 3     | 3.00          | 1           | 5         |   | N | 1915                     | 80                  | 80                      |                      | 80               | 1.00                           | 1473            |               |                     |             |                    |            | 1473                   | 0.054                   | 0.054 |           | 24    | 25               | 0.289         | 12                     | 43                     |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

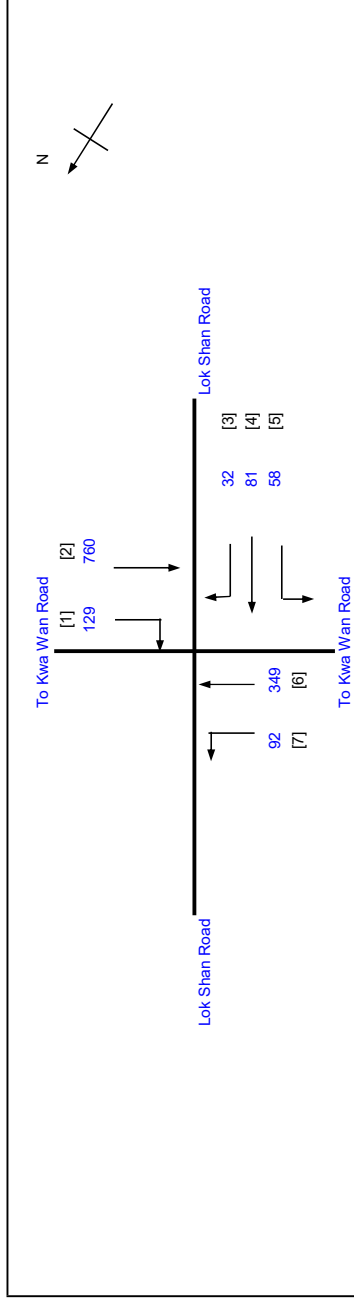
2022 Existing AM

J2 Lok Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J2\_LSR\_TWKR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

Nov-22  
 Nov-22  
 Nov-22



No. of stages per cycle: **4**

Cycle time: **130 sec**

Sum(y): **0.227**

Loss time: **42 sec**

Total Flow: **1501 pcu**

Co =  $(1.5 \cdot L + 5) / (1 - Y)$  = **88.0 sec**

Cm =  $L / (1 - Y)$  = **54.3 sec**

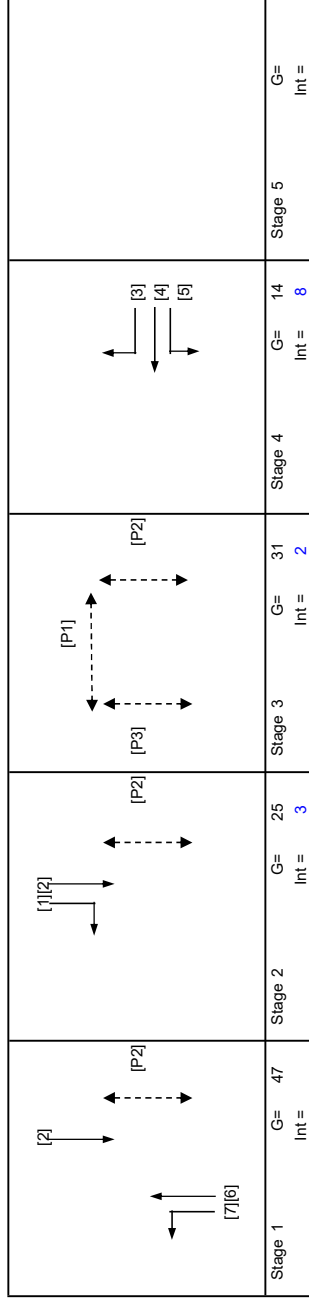
Yult = **0.585**

R.C.ult =  $(Yult - Y) * 100\%$  = **157.5 %**

Cp =  $0.9 * L / (0.9 - Y)$  = **56.2 sec**

Ymax =  $1 - L / C$  = **0.677**

**R.C.(C) =  $0.9 * Ymax - Y * 100\%$  = 168 %**



| Pedestrian Phase | Stage | Width (m) | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|---------------|---------------|-------|------------------------|------------------------|
| P1               | 3     |           | 5             | 12            | 2     | 19                     | 12                     |
| P2               | 1,2,3 |           | 5             | 9             | 2     | 97                     | 9                      |
| P3               | 3     |           | 5             | 7             | 8     | 18                     | 7                      |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
| 2         | 1,2   | 3.30          | 2           |           |   | N | 4030                     | 760                 | 760                     |                      | 760              | 0.00                           | 4030            |                     |             |                    |            |                        | 4030                    | 0.189     | 11    | 73               | 73            | 0.335                  | 36                      | 14                      |
| 6         | 1     | 3.30          | 2           |           |   | N | 4170                     | 320                 | 320                     |                      | 320              | 0.00                           | 4170            |                     |             |                    |            |                        | 4170                    | 0.077     |       | 30               | 30            | 0.335                  | 24                      | 39                      |
| 6,7       | 1     | 3.30          | 1           | 5         |   | N | 1945                     | 92                  | 29                      | 121                  | 121              | 0.76                           | 1584            |                     |             |                    |            |                        | 1584                    | 0.076     |       | 30               | 30            | 0.335                  | 18                      | 40                      |
| 1         | 2     | 3.30          | 1           | 15        |   | N | 2085                     |                     | 129                     | 129                  | 129              | 1.00                           | 1895            |                     |             |                    |            |                        | 1895                    | 0.068     |       | 26               | 26            | 0.335                  | 18                      | 42                      |
| 3,4       | 4     | 3.40          | 1           | 15        |   | N | 1955                     |                     | 21                      | 32                   | 53               | 0.60                           | 1844            |                     |             |                    |            |                        | 1844                    | 0.029     |       | 11               | 15            | 0.335                  | 6                       | 56                      |
| 4         | 4     | 3.40          | 1           | 5         |   | N | 2095                     |                     | 60                      | 60                   | 60               | 0.00                           | 2095            |                     |             |                    |            |                        | 2095                    | 0.029     |       | 15               | 15            | 0.335                  | 6                       | 55                      |
| 5         | 4     | 3.40          | 1           | 5         |   | N | 1955                     |                     | 58                      | 58                   | 58               | 1.00                           | 1504            |                     |             |                    |            |                        | 1504                    | 0.039     | 31    | 15               | 15            | 0.335                  | 6                       | 52                      |
| PED       | 3     |               |             |           |   |   |                          |                     |                         |                      |                  |                                |                 |                     |             |                    |            |                        |                         |           |       |                  |               |                        |                         |                         |

NOTE : O - OPPOSING TRAFFIC      N - NEAR SIDE LANE      SG - STEADY GREEN      FG - FLASHING GREEN      PEDESTRAIN WALKING SPEED = 1.2m/s      QUEUING LENGTH = AVERAGE QUEUE \* 6m



# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

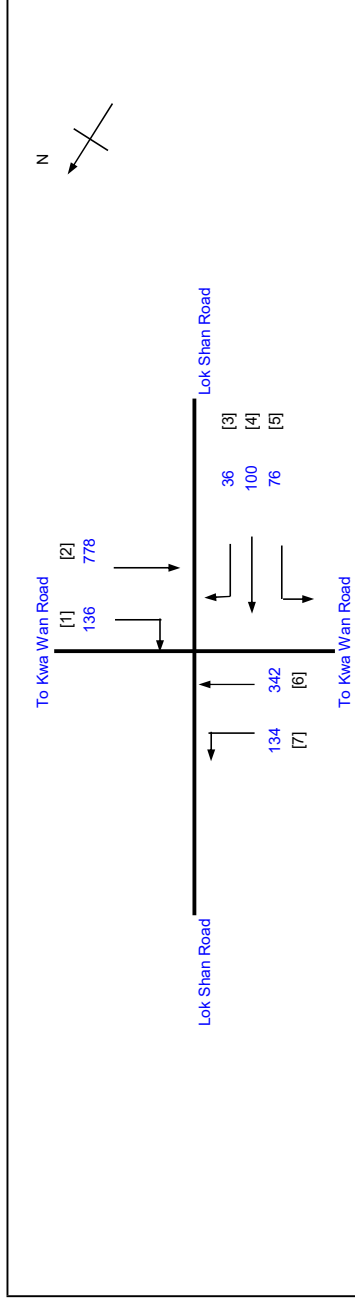
2022 Existing PM

J2 Lok Shan Road / To Kwa Wan Road

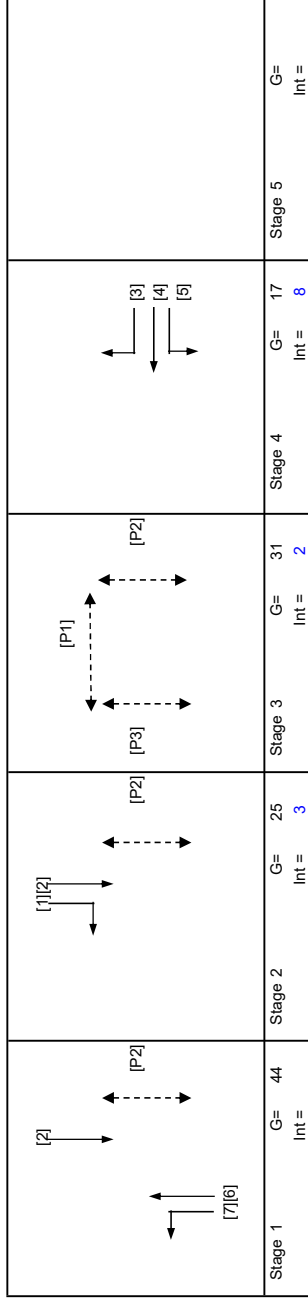
PROJECT NO.: 40848  
 FILENAME : J2\_LSR\_TWKR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

| INITIALS | DATE   |
|----------|--------|
| SKL      | Nov-22 |
| SLN      | Nov-22 |
| SLN      | Nov-22 |



|                         |                                   |
|-------------------------|-----------------------------------|
| No. of stages per cycle | N = 4                             |
| Cycle time              | C = 130 sec                       |
| Sum(y)                  | Y = 0.244                         |
| Loss time               | L = 42 sec                        |
| Total Flow              | = 1602 pcu                        |
| Co                      | = 89.9 sec                        |
| Cm                      | = 55.5 sec                        |
| Yult                    | = 0.585                           |
| R.C.ult                 | = (Yult-Y)*100%                   |
| Cp                      | = 0.9*L/(0.9-Y)                   |
| Ymax                    | = 1-L/C                           |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-Y)*100% = 150 %</b> |



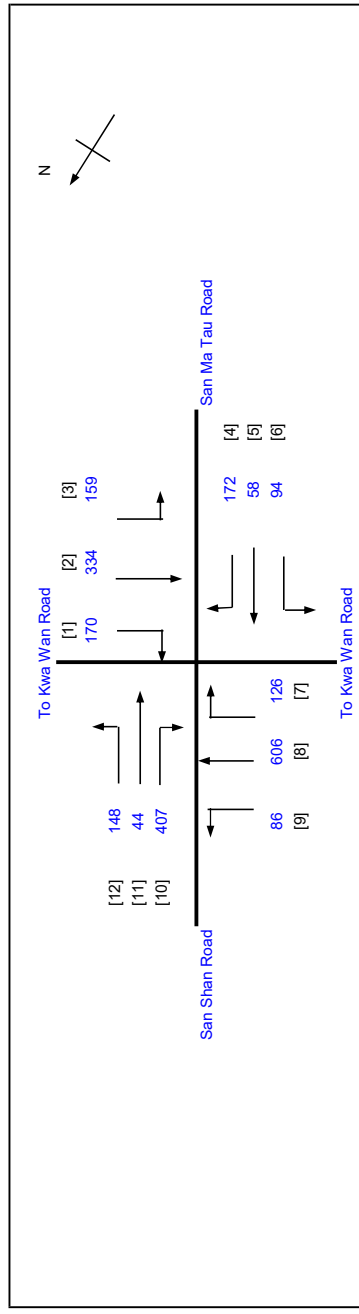
| Pedestrian Phase | Stage | Width (m) | Green Time Required SG | Green Time Provided SG |
|------------------|-------|-----------|------------------------|------------------------|
| P1               | 3     |           | 5                      | 19                     |
| P2               | 1,2,3 |           | 5                      | 94                     |
| P3               | 3     |           | 5                      | 18                     |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|---|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
| 2         | 1,2   | 3.30          | 2           |           |   | N | 4030                     | 778                 | 778                     | 0.00                 | 0.00             | 4030                           | 0.193           | 0.193               | 11          | 70                 | 39         | 16                     |                         |   |           |       |                  |               |                        |                         |                         |
| 6         | 1     | 3.30          | 2           |           |   | N | 4170                     | 342                 | 342                     | 0.00                 | 0.00             | 4170                           | 0.082           | 0.082               |             | 30                 | 27         | 39                     |                         |   |           |       |                  |               |                        |                         |                         |
| 6,7       | 1     | 3.30          | 1           | 5         |   | N | 1945                     | 134                 | 0                       | 134                  | 1.00             | 1496                           | 0.090           | 0.090               |             | 32                 | 18         | 39                     |                         |   |           |       |                  |               |                        |                         |                         |
| 1         | 2     | 3.30          | 1           | 15        |   | N | 2085                     | 136                 | 136                     | 1.00                 | 1.00             | 1895                           | 0.072           | 0.072               |             | 26                 | 18         | 43                     |                         |   |           |       |                  |               |                        |                         |                         |
| 3,4       | 4     | 3.40          | 1           | 15        |   | N | 1955                     | 28                  | 36                      | 0.56                 | 0.56             | 1851                           | 0.035           | 0.035               |             | 12                 | 12         | 55                     |                         |   |           |       |                  |               |                        |                         |                         |
| 4         | 4     | 3.40          | 1           | 5         |   | N | 2095                     | 72                  | 72                      | 0.00                 | 0.00             | 2095                           | 0.034           | 0.034               |             | 12                 | 12         | 54                     |                         |   |           |       |                  |               |                        |                         |                         |
| 5         | 4     | 3.40          | 1           | 5         |   | N | 1955                     | 76                  | 76                      | 1.00                 | 1.00             | 1504                           | 0.051           | 0.051               |             | 18                 | 12         | 50                     |                         |   |           |       |                  |               |                        |                         |                         |
| PED       | 3     |               |             |           |   |   |                          |                     |                         |                      |                  |                                |                 |                     | 31          |                    |            |                        |                         |   |           |       |                  |               |                        |                         |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

No. of stages per cycle N = 4  
 Cycle time C = 130 sec  
 Sum(y) Y = 0.368  
 Loss time L = 25 sec  
 Total Flow = 2404 pcu  
 Co = (1.5\*L+5)/(1-Y) = 67.2 sec  
 Crm = L/(1-Y) = 39.5 sec  
 Yult = 0.713  
 R.C.ult = (Yult-Y)\*100% = 93.7 %  
 Cp = 0.9\*L/(0.9-Y) = 42.3 sec  
 Ymax = 1-L/C = 0.808

**R.C.(C) = 0.9\*Ymax-Y\*100% = 98 %**



| Stage   | Width (m) | Green Time Required (SG) | Delay (FG) | Green Time Provided (SG) | Green Time Provided (FG) |
|---------|-----------|--------------------------|------------|--------------------------|--------------------------|
| Stage 1 | 9.1       | 5                        | 9          | 26                       | 9                        |
| Stage 2 | 13.7      | 8                        | 15         | 80                       | 15                       |
| Stage 3 | 7.2       | 5                        | 7          | 17                       | 7                        |
| Stage 4 | 10.2      | 5                        | 9          | 97                       | 9                        |
| Stage 5 | 9.3       | 5                        | 9          | 79                       | 9                        |
| Stage 6 | 6.8       | 5                        | 8          | 34                       | 8                        |

| Move-ment | Stage | Lane Width (m) | No. of lane | Radius (m) | O | N | Straight-Ahead Sat. Flow | Movement | Total Flow | Proportion of Turning Vehicles | Sat. Flow | Flare Lane (m) | Flare Effect (pcu/hr) | Site Factor | Site Effect (pcu/hr) | Gradient % | Gradient Effect (pcu/hr) | Revised Sat. Flow (pcu/h) | Greater (y) | L (sec) | g (required) (sec) | g (input) (sec) | Degree of Saturation (X) | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|----------------|-------------|------------|---|---|--------------------------|----------|------------|--------------------------------|-----------|----------------|-----------------------|-------------|----------------------|------------|--------------------------|---------------------------|-------------|---------|--------------------|-----------------|--------------------------|-------------------------|-------------------------|
| 1         | 3     | 3.00           | 1           | 30         |   |   | 2055                     | Left     | 170        | 1.00                           | 1957      |                |                       |             |                      |            |                          | 1957                      | 0.087       | 25      | 25                 | 25              | 0.455                    | 24                      | 46                      |
| 2         | 3     | 3.00           | 2           |            |   |   | 4110                     | Straight | 334        | 0.00                           | 4110      |                |                       |             |                      |            |                          | 4110                      | 0.081       | 23      | 23                 | 25              | 0.455                    | 27                      | 45                      |
| 2,3       | 3     | 4.50           | 1           | 10         |   | N | 2065                     | Right    | 159        | 1.00                           | 1796      |                |                       |             |                      |            |                          | 1796                      | 0.089       | 25      | 25                 | 25              | 0.455                    | 24                      | 46                      |
| 4         | 4     | 3.40           | 1           | 24         |   |   | 2095                     | Left     | 114        | 1.00                           | 1972      |                |                       |             |                      |            |                          | 1972                      | 0.058       | 17      | 17                 | 17              | 0.455                    | 18                      | 53                      |
| 4,5,6     | 4     | 3.40           | 1           | 16         |   |   | 2095                     | Straight | 116        | 0.50                           | 2001      |                |                       |             |                      |            |                          | 2001                      | 0.058       | 17      | 17                 | 17              | 0.455                    | 18                      | 53                      |
| 6         | 4     | 3.40           | 1           | 10         |   | N | 1955                     | Right    | 94         | 1.00                           | 1700      |                |                       |             |                      |            |                          | 1700                      | 0.055       | 16      | 16                 | 17              | 0.455                    | 12                      | 54                      |
| 7,8       | 1     | 3.00           | 1           | 25         |   |   | 2055                     | Left     | 206        | 0.61                           | 1982      |                |                       |             |                      |            |                          | 1982                      | 0.104       | 30      | 30                 | 30              | 0.455                    | 30                      | 42                      |
| 8         | 1     | 3.00           | 2           |            |   |   | 4110                     | Straight | 427        | 0.00                           | 4110      |                |                       |             |                      |            |                          | 4110                      | 0.104       | 30      | 30                 | 30              | 0.455                    | 33                      | 40                      |
| 8,9       | 1     | 3.00           | 1           | 10         |   | N | 1915                     | Right    | 185        | 0.46                           | 1790      |                |                       |             |                      |            |                          | 1790                      | 0.103       | 30      | 30                 | 30              | 0.455                    | 30                      | 42                      |
| 10        | 2     | 3.00           | 1           | 24         |   |   | 2055                     | Left     | 227        | 1.00                           | 1934      |                |                       |             |                      |            |                          | 1934                      | 0.117       | 34      | 34                 | 34              | 0.455                    | 36                      | 39                      |
| 10,11     | 2     | 3.00           | 1           | 16         |   |   | 2055                     | Straight | 224        | 0.80                           | 1911      |                |                       |             |                      |            |                          | 1911                      | 0.117       | 33      | 33                 | 34              | 0.455                    | 36                      | 39                      |
| 11,12     | 2     | 3.00           | 1           | 10         |   | N | 1915                     | Right    | 148        | 1.00                           | 1665      |                |                       |             |                      |            |                          | 1665                      | 0.089       | 25      | 25                 | 34              | 0.455                    | 24                      | 46                      |

**NOTE :** O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

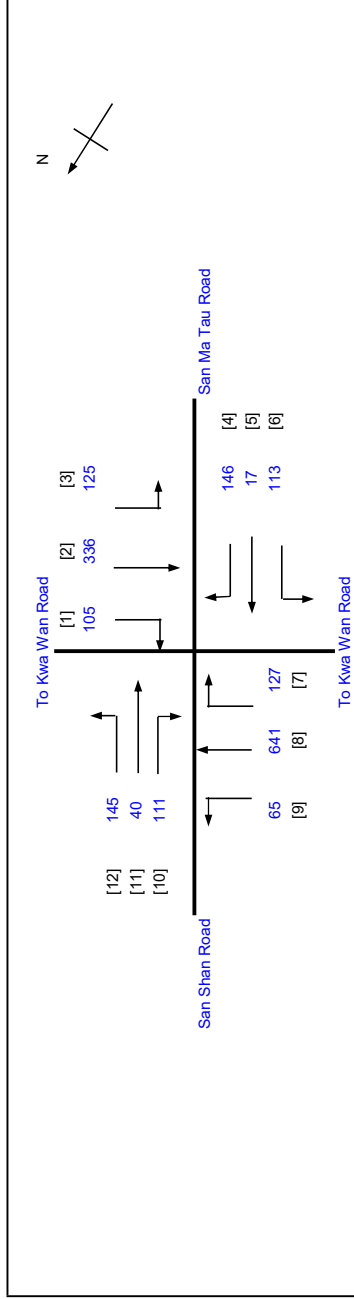
2022 Existing PM

J3 San Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME : J3\_SSR\_TWKR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



No. of stages per cycle = 4

Cycle time = 130 sec

Sum(y) = 0.320

Loss time = 25 sec

Total Flow = 1971 pcu

Co = 62.5 sec

Crm = 36.7 sec

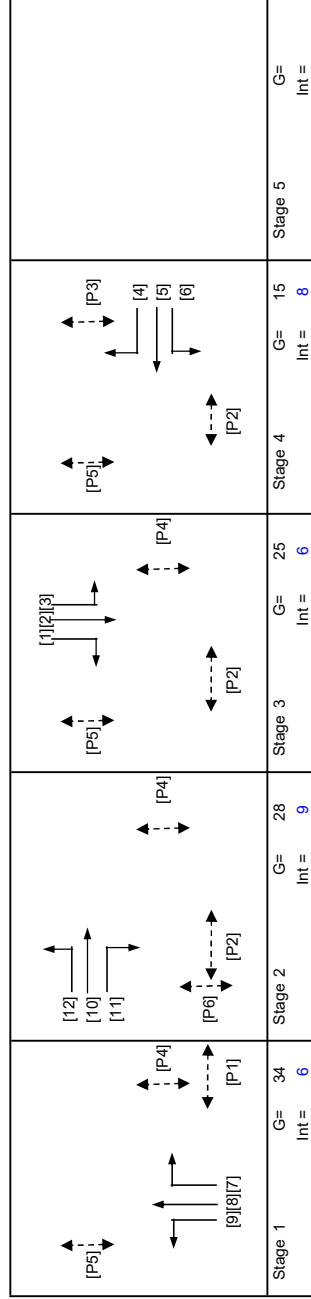
Yult = 0.713

R.C.ult = 122.9 %

Cp = 38.8 sec

Ymax = 0.808

**R.C.(C) = 0.9\*Ymax-y/Y\*100% = 127 %**



| Pedestrian Phase | Stage | Width (m) | Green Time Required SG | Green Time Provided SG |
|------------------|-------|-----------|------------------------|------------------------|
| P1               | 1     | 9.1       | 5                      | 31                     |
| P2               | 2,3,4 | 13.7      | 8                      | 75                     |
| P3               | 4     | 7.2       | 5                      | 16                     |
| P4               | 1,2,3 | 10.2      | 5                      | 98                     |
| P5               | 1,3,4 | 9.3       | 5                      | 84                     |
| P6               | 2     | 6.8       | 5                      | 29                     |

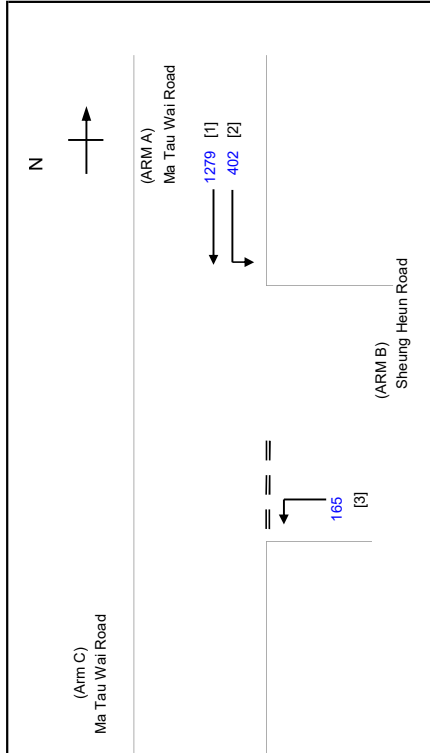
| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight Ahead Sat. Flow | Movement   |                |             | Total Flow pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Effect pcu/hr | Site Factor | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|------------|----------------|-------------|------------------|--------------------------------|-----------------|---------------------|--------------------|-------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
|           |       |               |             |           |   |   |                          | Left pcu/h | Straight pcu/h | Right pcu/h |                  |                                |                 |                     |                    |             |            |                        |                         |       |           |       |                  |               |                        |                        |                         |
| 1         | 3     | 3.00          | 1           | 30        |   |   | 2055                     | 105        | 319            | 105         | 1.00             | 1957                           |                 |                     |                    |             |            | 1957                   | 0.054                   |       | 25        | 18    | 26               | 0.395         | 18                     | 50                     |                         |
| 2         | 3     | 3.00          | 2           | 10        | N |   | 4110                     | 319        | 142            | 433         | 0.00             | 4110                           |                 |                     |                    |             |            | 4110                   | 0.078                   | 0.078 |           | 25    | 26               | 0.396         | 27                     | 42                     |                         |
| 2,3       | 3     | 4.50          | 1           | 10        |   |   | 2065                     | 125        | 17             | 191         | 0.88             | 1824                           |                 |                     |                    |             |            | 1824                   | 0.078                   | 0.078 |           | 26    | 26               | 0.395         | 24                     | 44                     |                         |
| 4         | 4     | 3.40          | 1           | 24        |   |   | 2095                     | 97         | 49             | 209         | 1.00             | 1972                           |                 |                     |                    |             |            | 1972                   | 0.049                   |       |           | 16    | 16               | 0.396         | 18                     | 52                     |                         |
| 4,5,6     | 4     | 3.40          | 1           | 16        |   |   | 2095                     | 96         | 30             | 433         | 0.82             | 1945                           |                 |                     |                    |             |            | 1945                   | 0.049                   | 0.049 |           | 16    | 16               | 0.396         | 18                     | 52                     |                         |
| 6         | 4     | 3.40          | 1           | 10        | N |   | 1955                     | 83         | 83             | 182         | 1.00             | 1700                           |                 |                     |                    |             |            | 1700                   | 0.049                   |       |           | 16    | 16               | 0.396         | 12                     | 52                     |                         |
| 7,8       | 1     | 3.00          | 1           | 25        |   |   | 2055                     | 82         | 82             | 127         | 0.61             | 1983                           |                 |                     |                    |             |            | 1983                   | 0.105                   | 0.105 |           | 35    | 35               | 0.396         | 30                     | 37                     |                         |
| 8         | 1     | 3.00          | 2           | 10        |   |   | 4110                     | 433        | 17             | 433         | 0.00             | 4110                           |                 |                     |                    |             |            | 4110                   | 0.105                   |       |           | 35    | 35               | 0.396         | 33                     | 36                     |                         |
| 8,9       | 1     | 3.00          | 1           | 10        | N |   | 1915                     | 65         | 126            | 191         | 0.34             | 1822                           |                 |                     |                    |             |            | 1822                   | 0.105                   |       |           | 34    | 35               | 0.396         | 30                     | 38                     |                         |
| 10        | 2     | 3.00          | 1           | 24        |   |   | 2055                     | 75         | 40             | 75          | 1.00             | 1934                           |                 |                     |                    |             |            | 1934                   | 0.039                   | 0.039 |           | 13    | 29               | 0.396         | 12                     | 55                     |                         |
| 10,11     | 2     | 3.00          | 1           | 16        |   |   | 2055                     | 76         | 0              | 76          | 0.47             | 1968                           |                 |                     |                    |             |            | 1968                   | 0.039                   | 0.039 |           | 13    | 29               | 0.396         | 12                     | 55                     |                         |
| 11,12     | 2     | 3.00          | 1           | 10        | N |   | 1915                     | 145        | 145            | 145         | 1.00             | 1665                           |                 |                     |                    |             |            | 1665                   | 0.087                   | 0.087 |           | 29    | 29               | 0.396         | 24                     | 42                     |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

|  |  |  |                  |              |      |
|--|--|--|------------------|--------------|------|
| <b>LLA CONSULTANCY LIMITED</b>   |  | <b>PRIORITY JUNCTION CALCULATION</b>   |                  | INITIALS     | DATE |
| Proposed Development at 33 Sheung Heung Road, Kowloon  |  | PROJECT NO.:   | 40848            | PREPARED BY: | SKL  |
| J4 Ha Heung Road / Lok Shan Road   |  | FILENAME :   | J4_HH_J4_HHR_LSR | CHECKED BY:  | SLN  |
|  |  | REFERENCE NO.:   |                  | REVIEWED BY: | SLN  |
| <b>2022 Existing AM</b>  |  |  |                  |              |      |
|  |  | <p>NOTES : ( GEOMETRIC INPUT DATA )</p> <p>W = MAJOR ROAD WIDTH</p> <p>W cr = CENTRAL RESERVE WIDTH</p> <p>W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a</p> <p>W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c</p> <p>W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b</p> <p>VI b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a</p> <p>Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a</p> <p>Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</p> <p>Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b</p> <p>X a = STREAM-SPECIFIC (RIGHT TURN FROM A)</p> <p>X b = STREAM-SPECIFIC (RIGHT TURN FROM B)</p> <p>Z b = STREAM-SPECIFIC (LEFT TURN FROM B)</p> <p>M b = STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE) (1-0.0345W)</p> <p>Y = RATIO OF FLOW TO CAPACITY IN STREAM b-a</p> <p>r b-a =</p> |                  |              |      |
| <p><b>GEOMETRIC DETAILS:</b></p> <p>GENERAL</p> <p>W = 7.30 (metres)</p> <p>W cr = 0 (metres)</p> <p>Y = 0.74815</p> <p>MAJOR ROAD (ARM A)</p> <p>W a-d = 0.00 (metres)</p> <p>Vr a-d = 0 (metres)</p> <p>q a-b = 80 (pcu/hr)</p> <p>q a-c = 201 (pcu/hr)</p> <p>q a-d = 0 (pcu/hr)</p> <p>MINOR ROAD (ARM B)</p> <p>W b-a = (metres)</p> <p>W b-c = (metres)</p> <p>VI b-a = (metres)</p> <p>Vr b-a = (metres)</p> <p>Vr b-c = (metres)</p> <p>q b-a = 0 (pcu/hr)</p> <p>q b-c = 0 (pcu/hr)</p> <p>q b-d = 0 (pcu/hr)</p> |  | <p><b>GEOMETRIC FACTORS :</b></p> <p>X b = 0.533</p> <p>X c = 0.586</p> <p>Z b = 0.586</p> <p>M b = 0.533</p> <p>X a = 0.586</p> <p>X d = 0.924</p> <p>Z d = 0.586</p> <p>M d = 0.539</p> <p><b>PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :</b></p> <p>r b-a = 0</p> <p>qI b-d = 0 (pcu/hr)</p> <p>q r b-d = 0 (pcu/hr)</p> <p><b>CAPACITY OF MOVEMENT :</b></p> <p>Q b-a = 270 (pcu/hr)</p> <p>Q b-c = 399 (pcu/hr)</p> <p>Q c-b = 392 (pcu/hr)</p> <p>QI b-d = 301 (pcu/hr)</p> <p>Q r b-d = 301 (pcu/hr)</p> <p>TOTAL FLOW = 573 (PCU/HR)</p>  |                  |              |      |
|  |  | <p><b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b></p> <p>DFC b-a = 0.0000</p> <p>DFC b-c = 0.0000</p> <p>DFC c-b = 0.0000</p> <p>DFCI b-d = 0.0000</p> <p>DFCr b-d = 0.0000</p> <p>DFC d-c = 0.2865</p> <p>DFC d-a = 0.0000</p> <p>DFC a-d = 0.0000</p> <p>DFCI d-b = 0.2783</p> <p>DFCr d-b = 0.0900</p> <p style="text-align: right;"><b>CRITICAL DFC = 0.29</b></p>  |                  |              |      |

|   |  |  |                  |              |      |
|---|--|--|------------------|--------------|------|
| <b>LLA CONSULTANCY LIMITED</b>  |  | <b>PRIORITY JUNCTION CALCULATION</b>   |                  | INITIALS     | DATE |
| Proposed Development at 33 Sheung Heung Road, Kowloon   |  | PROJECT NO.:   | 40848            | PREPARED BY: | SKL  |
| J4 Ha Heung Road / Lok Shan Road  |  | FILENAME :   | J4_HF_J4_HHR_LSR | CHECKED BY:  | SLN  |
|   |  | REFERENCE NO.:   |                  | REVIEWED BY: | SLN  |
|   |  | <p>NOTES : ( GEOMETRIC INPUT DATA )</p> <p>W = MAJOR ROAD WIDTH</p> <p>W cr = CENTRAL RESERVE WIDTH</p> <p>W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a</p> <p>W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c</p> <p>W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b</p> <p>VI b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a</p> <p>VI b-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a</p> <p>VI b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</p> <p>VI c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</p> <p>X a = STREAM-SPECIFIC (RIGHT TURN FROM A)</p> <p>X b = STREAM-SPECIFIC (RIGHT TURN FROM B)</p> <p>Z b = STREAM-SPECIFIC (LEFT TURN FROM B)</p> <p>M b = STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE) (1-0.0345W)</p> <p>Y = RATIO OF FLOW TO CAPACITY IN STREAM b-a</p> <p>r b-a =</p> |                  |              |      |
| <p><b>GEOMETRIC DETAILS:</b></p> <p>GENERAL</p> <p>W = 7.30 (metres)</p> <p>W cr = 0 (metres)</p> <p>Y = 0.74815</p> <p>MAJOR ROAD (ARM A)</p> <p>W a-d = 0.00 (metres)</p> <p>Vr a-d = 0 (metres)</p> <p>q a-b = 88 (pcu/hr)</p> <p>q a-c = 207 (pcu/hr)</p> <p>q a-d = 0 (pcu/hr)</p> <p>MINOR ROAD (ARM B)</p> <p>W b-a = (metres)</p> <p>W b-c = (metres)</p> <p>VI b-a = (metres)</p> <p>VI b-c = (metres)</p> <p>Vr b-a = (metres)</p> <p>Vr b-c = (metres)</p> <p>q b-a = 0 (pcu/hr)</p> <p>q b-c = 0 (pcu/hr)</p> <p>q b-d = 0 (pcu/hr)</p> |  | <p><b>GEOMETRIC FACTORS :</b></p> <p>X b = 0.533</p> <p>X c = 0.586</p> <p>Z b = 0.586</p> <p>M b = 0.533</p> <p>PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :</p> <p>r b-a = 0</p> <p>qI b-d = 0 (pcu/hr)</p> <p>q r b-d = 0 (pcu/hr)</p> <p><b>CAPACITY OF MOVEMENT :</b></p> <p>Q b-a = 258 (pcu/hr)</p> <p>Q b-c = 398 (pcu/hr)</p> <p>Q c-b = 389 (pcu/hr)</p> <p>QI b-d = 299 (pcu/hr)</p> <p>Q r b-d = 299 (pcu/hr)</p> <p>TOTAL FLOW = 654 (PCU/HR)</p>   |                  |              |      |
|   |  | <p><b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b></p> <p>DFC b-a = 0.0000</p> <p>DFC b-c = 0.0000</p> <p>DFC c-b = 0.0000</p> <p>DFCI b-d = 0.0000</p> <p>DFCr b-d = 0.0000</p> <p>DFC d-c = 0.2797</p> <p>DFC d-a = 0.0000</p> <p>DFC a-d = 0.0000</p> <p>DFCI d-b = 0.4238</p> <p>DFCr d-b = 0.1392</p> <p style="text-align: right;"><b>CRITICAL DFC = 0.42</b></p>  |                  |              |      |

|   |  |                                      |                     |              |        |
|---|--|--------------------------------------|---------------------|--------------|--------|
| <b>LLA CONSULTANCY LIMITED</b>                        |  | <b>PRIORITY JUNCTION CALCULATION</b> |                     | INITIALS     | DATE   |
| Proposed Development at 33 Sheung Heung Road, Kowloon |  | PROJECT NO.:                         | 40848               | PREPARED BY: | SKL    |
| J5 Sheung Heung Road / Ma Tau Kok Road                |  | FILENAME :                           | J5_SHR_N_J5_SHR_MTV | CHECKED BY:  | SLN    |
|   |  | REFERENCE NO.:                       |                     | REVIEWED BY: | SLN    |
|   |  | <b>2022 Existing AM</b>              |                     |              | Nov-22 |
|   |  |                                      |                     |              | Nov-22 |

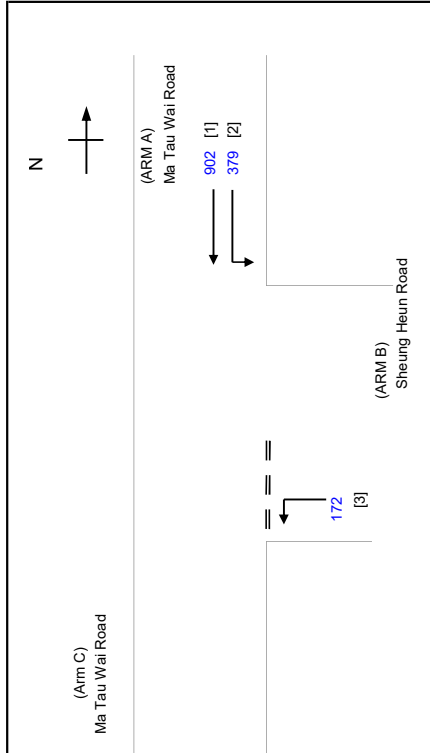


NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W cr = CENTRAL RESERVE WIDTH  
W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V l b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V r b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V l b-c = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-c  
V r b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
V l c-b = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM c-b  
V r c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (1-0.0345W)

|                           |             |                                   |                 |   |  |
|---------------------------|-------------|-----------------------------------|-----------------|---|--|
| <b>GEOMETRIC DETAILS:</b> |             | <b>THE CAPACITY OF MOVEMENT :</b> |                 | <b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b> |  |
| <b>MAJOR ROAD (ARM A)</b> |             | <b>Q b-a = 156</b>                |                 | <b>DFC b-a = 0.0000</b>                       |  |
| W = 10.50 (metres)        | D = 0.53322 | Q b-c = 427                       | Q b-c (O) = 427 | DFC b-c = 0.3864                              |  |
| W cr = 0 (metres)         | E = 1.03866 | Q c-b = 208                       |                 | DFC c-b = 0.0000                              |  |
| q a-b = 402 (pcu/hr)      | F = 0.58595 | Q b-ac = 427                      |                 | DFC b-c (share lane) = 0.3864                 |  |
| q a-c = 1279 (pcu/hr)     | Y = 0.63775 | TOTAL FLOW = 1846                 | (PCU/HR)        |   |  |
| <b>MAJOR ROAD (ARM C)</b> |             | F for (Qb-ac) = 1                 |                 |   |  |
| W c-b = 0.00 (metres)     |             |                                   |                 | <b>CRITICAL DFC = 0.39</b>                    |  |
| V r c-b = 0 (metres)      |             |                                   |                 |   |  |
| q c-a = 0 (pcu/hr)        |             |                                   |                 |   |  |
| q c-b = 0 (pcu/hr)        |             |                                   |                 |   |  |
| <b>MINOR ROAD (ARM B)</b> |             |                                   |                 |   |  |
| W b-a = 0.00 (metres)     |             |                                   |                 |   |  |
| W b-c = 5.00 (metres)     |             |                                   |                 |   |  |
| V l b-a = 0 (metres)      |             |                                   |                 |   |  |
| V r b-a = 0 (metres)      |             |                                   |                 |   |  |
| V r b-c = 33 (metres)     |             |                                   |                 |   |  |
| q b-a = 0 (pcu/hr)        |             |                                   |                 |   |  |
| q b-c = 165 (pcu/hr)      |             |                                   |                 |   |  |

|   |  |                                      |                     |              |        |
|---|--|--------------------------------------|---------------------|--------------|--------|
| <b>LLA CONSULTANCY LIMITED</b>                        |  | <b>PRIORITY JUNCTION CALCULATION</b> |                     | INITIALS     | DATE   |
| Proposed Development at 33 Sheung Heung Road, Kowloon |  | PROJECT NO.:                         | 40848               | PREPARED BY: | SKL    |
| J5 Sheung Heung Road / Ma Tau Kok Road                |  | FILENAME :                           | J5_SHR_N_J5_SHR_MTV | CHECKED BY:  | SLN    |
|   |  | REFERENCE NO.:                       |                     | REVIEWED BY: | SLN    |
|   |  | <b>2022 Existing PM</b>              |                     |              | Nov-22 |
|   |  |                                      |                     |              | Nov-22 |



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W cr = CENTRAL RESERVE WIDTH  
W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V l b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V r b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V l b-c = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-c  
V r b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
V l c-b = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM c-b  
V r c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (+0.0345W)

|                           |             |                                   |                 |   |  |
|---------------------------|-------------|-----------------------------------|-----------------|---|--|
| <b>GEOMETRIC DETAILS:</b> |             | <b>THE CAPACITY OF MOVEMENT :</b> |                 | <b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b> |  |
| <b>MAJOR ROAD (ARM A)</b> |             | <b>Q b-a = 204</b>                |                 | <b>DFC b-a = 0.0000</b>                       |  |
| W = 10.50 (metres)        | D = 0.53322 | Q b-c = 520                       | Q b-c (O) = 520 | DFC b-c = 0.3308                              |  |
| W cr = 0 (metres)         | E = 1.03866 | Q c-b = 262                       |                 | DFC c-b = 0.0000                              |  |
| q a-b = 379 (pcu/hr)      | F = 0.58595 | Q b-ac = 520                      |                 | DFC b-c (share lane) = 0.3308                 |  |
| q a-c = 902 (pcu/hr)      | Y = 0.63775 | TOTAL FLOW = 1453                 | (PCU/HR)        |   |  |
| <b>MAJOR ROAD (ARM C)</b> |             | F for (Qb-ac) = 1                 |                 |   |  |
| W c-b = 0.00 (metres)     |             |                                   |                 |   |  |
| V r c-b = 0 (metres)      |             |                                   |                 |   |  |
| q c-a = 0 (pcu/hr)        |             |                                   |                 |   |  |
| q c-b = 0 (pcu/hr)        |             |                                   |                 |   |  |
| <b>MINOR ROAD (ARM B)</b> |             |                                   |                 | <b>CRITICAL DFC = 0.33</b>                    |  |
| W b-a = 0.00 (metres)     |             |                                   |                 |   |  |
| W b-c = 5.00 (metres)     |             |                                   |                 |   |  |
| V l b-a = 0 (metres)      |             |                                   |                 |   |  |
| V r b-a = 0 (metres)      |             |                                   |                 |   |  |
| V r b-c = 33 (metres)     |             |                                   |                 |   |  |
| q b-a = 0 (pcu/hr)        |             |                                   |                 |   |  |
| q b-c = 172 (pcu/hr)      |             |                                   |                 |   |  |

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

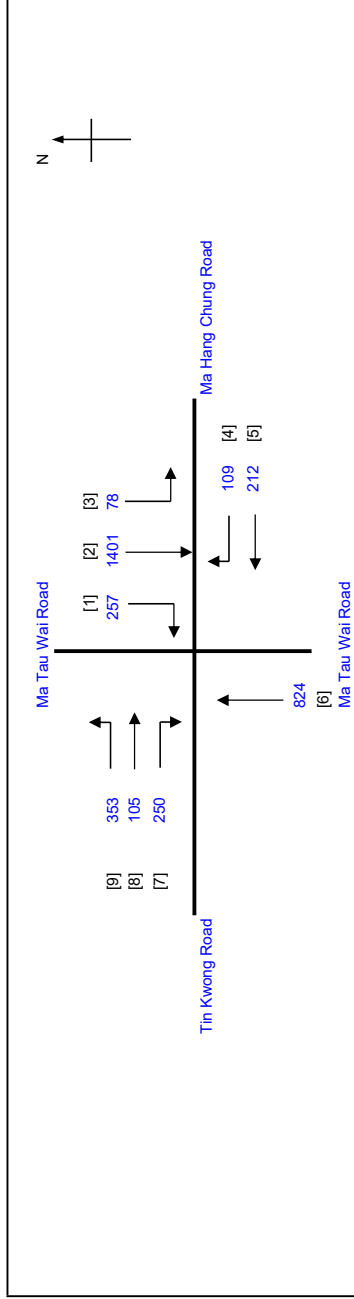
Proposed Development at 33 Sheung Heung Road, Kowloon

2022 Existing AM

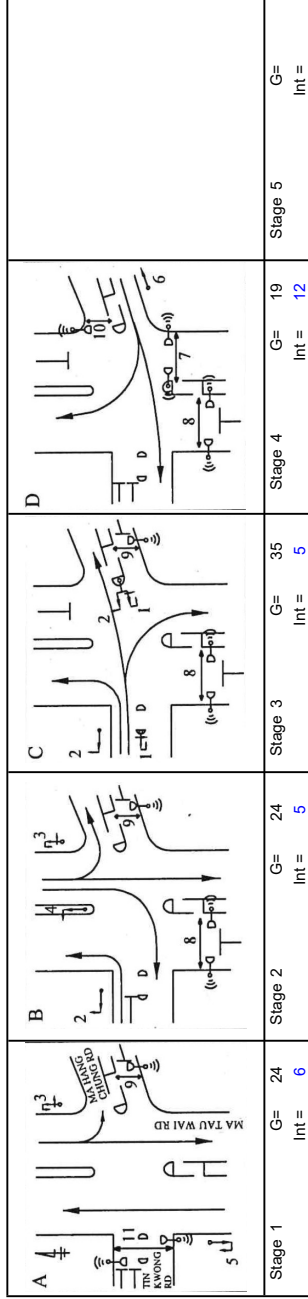
J6 Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road

PROJECT NO.: 40848  
 FILENAME: J6\_MTW\_R\_TKR.xlsx

INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



No. of stages per cycle = 4  
 Cycle time = 130 sec  
 Sum(y) = 0.568  
 Loss time = 24 sec  
 Total Flow = 3589 pcu  
 Co = (1.5\*L+5)/(1-Y) = 95.0 sec  
 Crm = L/(1-Y) = 55.6 sec  
 Yult = 0.720  
 R.C.ult = (Yult-Y)\*100% = 26.7 %  
 Cp = 0.9\*L/(0.9-Y) = 65.1 sec  
 Ymax = 1-L/C = 0.815  
**R.C.(C) = 0.9\*Ymax-Y)\*100% = 29 %**



| Pedestrian Phase | Stage | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|---------------|---------------|-------|------------------------|------------------------|
| P7               | 4     | 6             | 13            | 8     | 10                     | 13                     |
| P8               | 2,3,4 | 5             | 10            | 3     | 87                     | 10                     |
| P9               | 1,2,3 | 5             | 8             | 1     | 90                     | 8                      |
| P10              | 4     | 5             | 10            | 8     | 13                     | 10                     |
| P11              | 1     | 18            | 7             | 1     | 22                     | 7                      |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total Flow pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Effect Factor | Site Effect % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|--------------------|---------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 2,3       | 1,2   | 3.00          | 1           | 9         |   | N | 1915                     | 78                  | 263                     | 1138                 | 341              | 0.23                           | 1845            |                     |                    |               |                        | 1845                    | 0.185 | 0.185     | 24    | 34               | 50            | 0.697                  | 54                     | 46                      |
| 2         | 1,2   | 3.00          | 3           |           |   | N | 6165                     |                     |                         |                      | 1138             | 0.00                           | 6165            |                     |                    |               |                        | 6165                    | 0.185 | 0.185     |       | 34               | 50            | 0.697                  | 60                     | 41                      |
| 1         | 2     | 3.20          | 1           | 15        |   | N | 2075                     |                     | 257                     |                      | 257              | 1.00                           | 1886            |                     |                    |               |                        | 1886                    | 0.136 | 0.136     |       | 25               | 25            | 0.697                  | 42                     | 54                      |
| 6         | 1     | 3.40          | 3           |           |   | N | 6145                     |                     | 824                     |                      | 824              | 0.00                           | 6145            |                     |                    |               |                        | 6145                    | 0.134 | 0.134     |       | 25               | 25            | 0.697                  | 48                     | 47                      |
| 9         | 2,3   | 3.00          | 1           | 5         |   | N | 1915                     |                     | 105                     | 353                  | 353              | 1.00                           | 1473            |                     |                    |               |                        | 1473                    | 0.240 | 0.191     |       | 45               | 61            | 0.697                  | 48                     | 40                      |
| 7,8       | 3     | 3.00          | 1           | 10        |   | N | 2055                     |                     | 353                     | 250                  | 355              | 0.70                           | 1859            |                     |                    |               |                        | 1859                    | 0.191 | 0.191     |       | 36               | 36            | 0.697                  | 54                     | 45                      |
| 5         | 4     | 3.65          | 1           |           |   | N | 1980                     |                     | 212                     | 109                  | 212              | 0.00                           | 1980            |                     |                    |               |                        | 1980                    | 0.107 | 0.107     |       | 20               | 20            | 0.697                  | 36                     | 59                      |
| 4         | 4     | 3.65          | 1           | 11        |   | N | 2120                     |                     | 109                     | 109                  | 109              | 1.00                           | 1866            |                     |                    |               |                        | 1866                    | 0.058 | 0.058     |       | 11               | 20            | 0.697                  | 24                     | 76                      |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m



# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

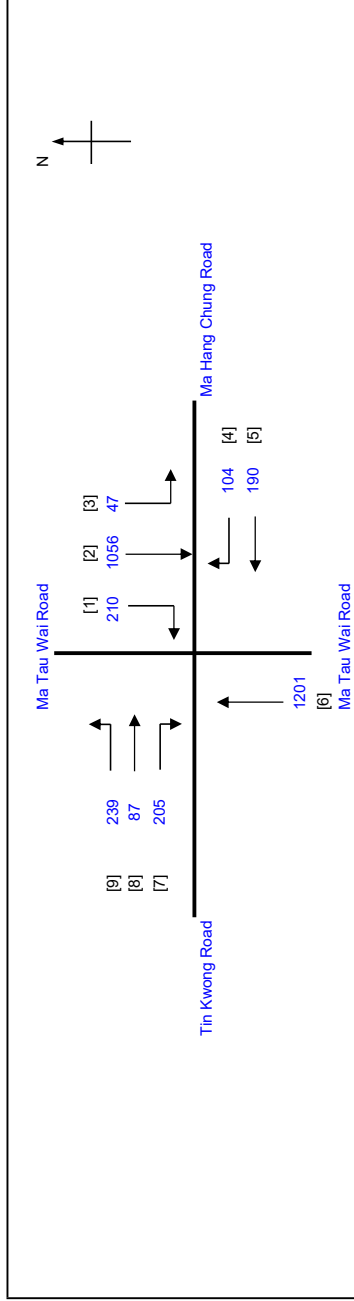
Proposed Development at 33 Sheung Heung Road, Kowloon

2022 Existing PM

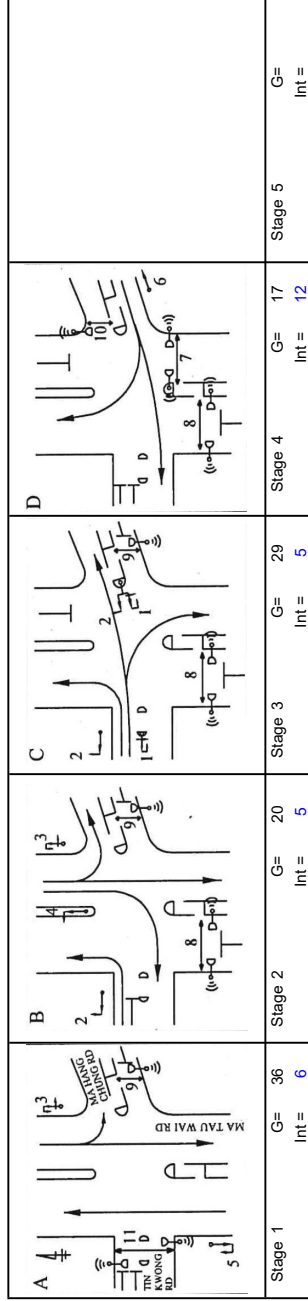
J6 Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road

PROJECT NO.: 40848  
 FILENAME: J6\_MTWTR\_TKR.xlsx  
 Prepared By:  
 Checked By:  
 Reviewed By:

| INITIALS | DATE   |
|----------|--------|
| SKL      | Nov-22 |
| SLN      | Nov-22 |
| SLN      | Nov-22 |



|                         |                                  |
|-------------------------|----------------------------------|
| No. of stages per cycle | N = 4                            |
| Cycle time              | C = 130 sec                      |
| Sum(y)                  | Y = 0.560                        |
| Loss time               | L = 24 sec                       |
| Total Flow              | Co = 3339 pcu                    |
| Co                      | = (1.5*L+5)/(1-Y)                |
| Cm                      | = L/(1-Y)                        |
| Yult                    | = 0.720                          |
| R.C.ult                 | = (Yult-Y)*100%                  |
| Cp                      | = 0.9*L/(0.9-Y)                  |
| Ymax                    | = 1-L/C                          |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-Y)*100% = 31 %</b> |



| Pedestrian Phase | Stage | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|---------------|---------------|-------|------------------------|------------------------|
| P7               | 4     | 6             | 13            | 8     | 8                      | 13                     |
| P8               | 2,3,4 | 5             | 10            | 3     | 75                     | 10                     |
| P9               | 1,2,3 | 5             | 8             | 1     | 92                     | 8                      |
| P10              | 4     | 5             | 10            | 8     | 11                     | 10                     |
| P11              | 1     | 18            | 7             | 1     | 34                     | 7                      |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total Flow pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 2,3       | 1,2   | 3.00          | 1           | 9         |   | N | 1915                     | 47                  | 209                     | 847                  | 256              | 0.18                           | 1858            |                     |             |                    |            |                        | 1858                    | 0.138 | 0.138     | 24    | 26               | 58            | 0.687                  | 42                     | 53                      |
| 2         | 1,2   | 3.00          | 3           | 15        |   | N | 6165                     |                     |                         | 847                  | 847              | 0.00                           | 6165            |                     |             |                    |            | 6165                   | 0.137                   | 0.137 |           | 26    | 58               | 0.687         | 48                     | 46                     |                         |
| 1         | 2     | 3.20          | 1           | 15        |   | N | 2075                     |                     | 210                     | 210                  | 210              | 1.00                           | 1886            |                     |             |                    |            | 1886                   | 0.111                   | 0.111 |           | 21    | 21               | 0.687         | 36                     | 58                     |                         |
| 6         | 1     | 3.40          | 3           | 11        |   | N | 6145                     |                     | 1201                    | 1201                 | 1201             | 0.00                           | 6145            |                     |             |                    |            | 6145                   | 0.195                   | 0.195 |           | 37    | 37               | 0.687         | 62                     | 39                     |                         |
| 9         | 2,3   | 3.00          | 1           | 5         |   | N | 1915                     | 239                 | 87                      | 205                  | 239              | 1.00                           | 1473            |                     |             |                    |            | 1473                   | 0.162                   | 0.162 |           | 31    | 51               | 0.687         | 36                     | 51                     |                         |
| 7,8       | 3     | 3.00          | 1           | 10        |   | N | 2055                     |                     | 239                     | 292                  | 292              | 0.70                           | 1859            |                     |             |                    |            | 1859                   | 0.157                   | 0.157 |           | 30    | 30               | 0.687         | 48                     | 50                     |                         |
| 5         | 4     | 3.65          | 1           | 11        |   | N | 1980                     |                     | 190                     | 190                  | 190              | 0.00                           | 1980            |                     |             |                    |            | 1980                   | 0.096                   | 0.096 |           | 18    | 18               | 0.687         | 36                     | 61                     |                         |
| 4         | 4     | 3.65          | 1           | 11        |   | N | 2120                     |                     | 104                     | 104                  | 104              | 1.00                           | 1866            |                     |             |                    |            | 1866                   | 0.056                   | 0.056 |           | 11    | 18               | 0.687         | 18                     | 76                     |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m

## **Appendix B**

### **Junction Calculation Sheets - Reference and Design Scenario**

# TRAFFIC SIGNAL CALCULATION

## LLA CONSULTANCY LIMITED

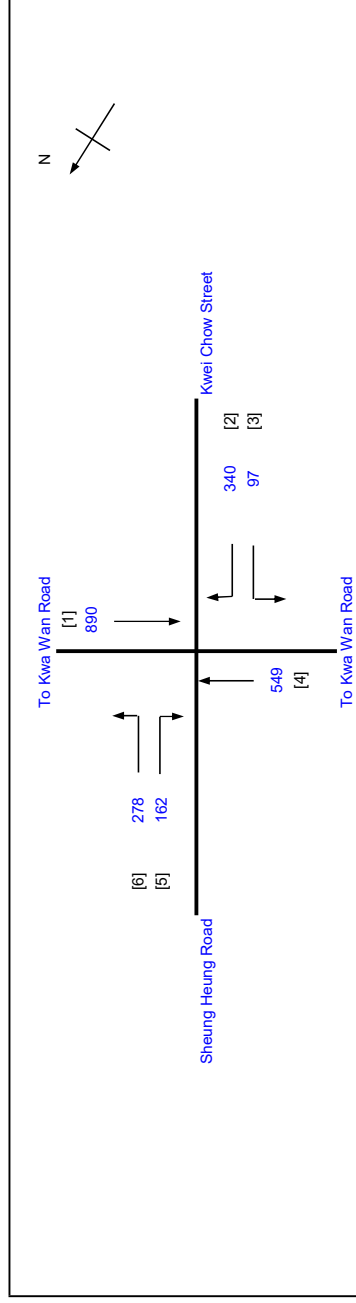
Proposed Development at 33 Sheung Heung Road, Kowloon

J1 Sheung Heung Road / To Kwa Wan Road

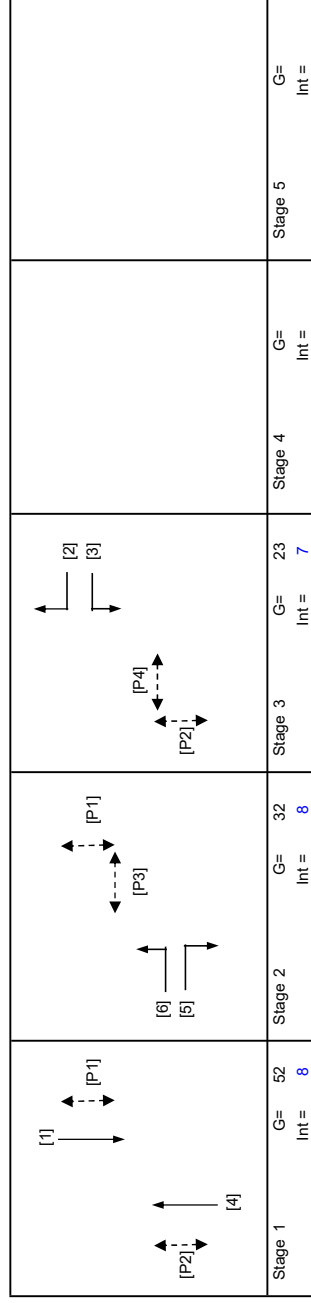
2030 Reference AM

PROJECT NO.: 40848  
 FILENAME: J1\_SHR\_TKWR.xlsx

Prepared By: Nov-22  
 Checked By: Nov-22  
 Reviewed By: Nov-22



|                         |                                    |
|-------------------------|------------------------------------|
| No. of stages per cycle | N = 3                              |
| Cycle time              | C = 130 sec                        |
| Sum(y)                  | Y = 0.300                          |
| Loss time               | L = 20 sec                         |
| Total Flow              | = 2316 pcu                         |
| Co                      | = 50.0 sec                         |
| Cm                      | = 28.6 sec                         |
| Yult                    | = 0.750                            |
| R.C.ult                 | = 150.4 %                          |
| Cp                      | = 30.0 sec                         |
| Ymax                    | = 0.846                            |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-y/Y*100% = 154 %</b> |



| Pedestrian Phase | Stage | Width (m) | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|---------------|---------------|-------|------------------------|------------------------|
| P1               | 1,2   | 12        | 6             | 10            | 2     | 88                     | 10                     |
| P2               | 1,3   | 13.2      | 6             | 12            | 2     | 76                     | 12                     |
| P3               | 2     | 10        | 5             | 10            | 2     | 28                     | 10                     |
| P4               | 3     | 10        | 5             | 10            | 2     | 18                     | 10                     |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 1         | 1     | 3.30          | 3           |           |   | N | 6115                     | 890                 | 890                     |                      | 890              | 0.00                           | 6115            |               |                     | 0.6         | -778               |            | 6115                   | 0.146                   | 0.146 | 20        | 53    | 53               | 0.354         | 36                     | 24                     |                         |
| 4         | 1     | 3.30          | 1           |           |   | N | 1945                     | 120                 | 120                     |                      | 120              | 0.00                           | 1945            |               |                     |             |                    |            | 1167                   | 0.103                   | 0.103 |           | 38    | 53               | 0.354         | 18                     | 35                     |                         |
| 4         | 1     | 3.30          | 2           | 15        |   | N | 4170                     | 429                 | 429                     | 162                  | 429              | 0.00                           | 4170            |               |                     |             |                    |            | 4170                   | 0.103                   | 0.103 |           | 38    | 53               | 0.354         | 30                     | 34                     |                         |
| 5         | 2     | 3.30          | 2           | 5         |   | N | 4030                     |                     |                         |                      | 162              | 1.00                           | 3664            |               |                     |             |                    |            | 3664                   | 0.044                   | 0.044 |           | 16    | 33               | 0.354         | 15                     | 49                     |                         |
| 6         | 2     | 3.30          | 2           | 5         |   | N | 4030                     | 278                 | 278                     |                      | 278              | 1.00                           | 3100            |               |                     |             |                    |            | 3100                   | 0.090                   | 0.090 |           | 33    | 33               | 0.354         | 21                     | 37                     |                         |
| 2         | 3     | 3.00          | 2           | 15        |   | N | 3970                     | 232                 | 232                     |                      | 232              | 1.00                           | 3609            |               |                     |             |                    |            | 3609                   | 0.064                   | 0.064 |           | 24    | 24               | 0.354         | 18                     | 43                     |                         |
| 2,3       | 3     | 3.00          | 1           | 8         |   | N | 2055                     | 108                 | 111                     | 3                    | 111              | 1.00                           | 1731            |               |                     |             |                    |            | 1731                   | 0.064                   | 0.064 |           | 24    | 24               | 0.354         | 18                     | 45                     |                         |
| 3         | 3     | 3.00          | 1           | 5         |   | N | 1915                     | 94                  | 94                      |                      | 94               | 1.00                           | 1473            |               |                     |             |                    |            | 1473                   | 0.064                   | 0.064 |           | 23    | 24               | 0.354         | 12                     | 45                     |                         |

NOTE : O - OPPOSING TRAFFIC      N - NEAR SIDE LANE      SG - STEADY GREEN      FG - FLASHING GREEN      PEDESTRAIN WALKING SPEED = 1.2m/s      QUEUING LENGTH = AVERAGE QUEUE \* 6m

# TRAFFIC SIGNAL CALCULATION

## LLA CONSULTANCY LIMITED

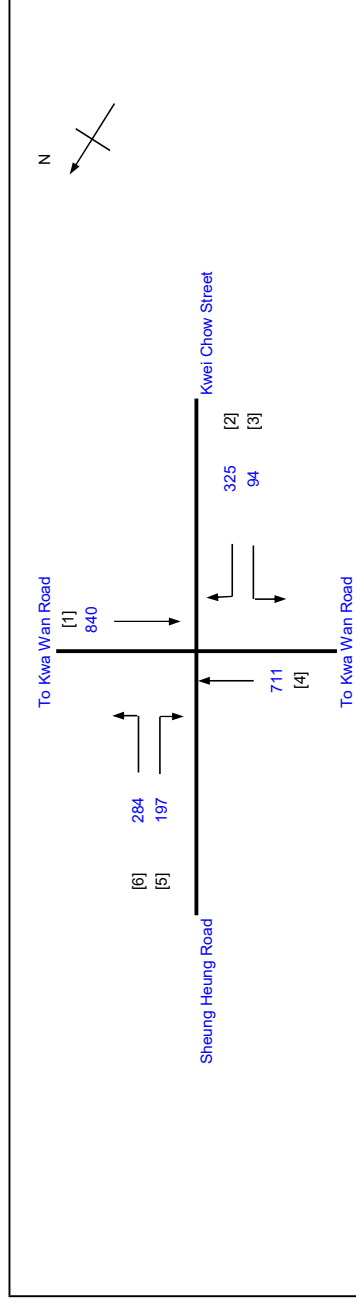
Proposed Development at 33 Sheung Heung Road, Kowloon

J1 Sheung Heung Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J1\_SHR\_TKWR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

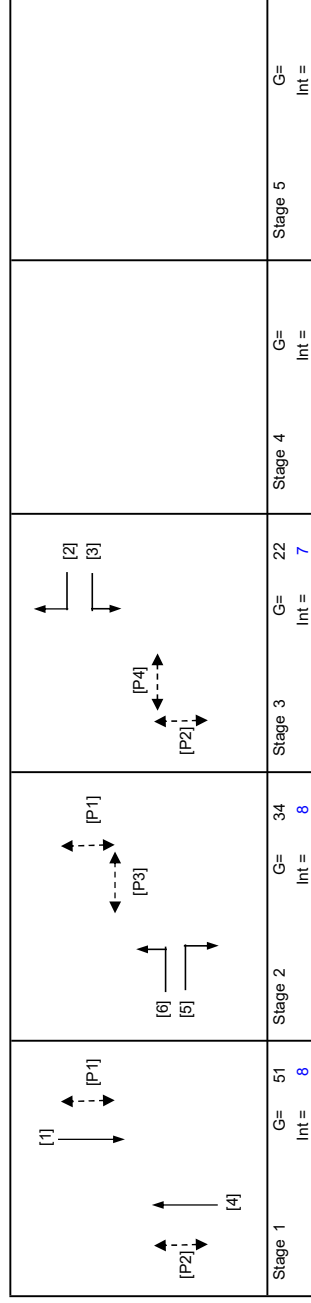
INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



No. of stages per cycle = 3

Cycle time = 130 sec  
 Sum(y) = 0.291  
 Loss time = 20 sec  
 Total Flow = 2451 pcu  
 Co = 49.4 sec  
 Crm = 28.2 sec  
 Yult = 0.750  
 R.C.ult = 157.9 %  
 Cp = 29.5 sec  
 Ymax = 0.846

**R.C.(C) =  $0.9 \cdot Y_{max} \cdot Y \cdot 100\%$  = 162 %**



| Pedestrian Phase | Stage | Width (m) | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|---------------|---------------|-------|------------------------|------------------------|
| P1               | 1,2   | 12        | 6             | 10            | 2     | 89                     | 10                     |
| P2               | 1,3   | 13.2      | 6             | 12            | 2     | 74                     | 12                     |
| P3               | 2     | 10        | 5             | 10            | 2     | 30                     | 10                     |
| P4               | 3     | 10        | 5             | 10            | 2     | 17                     | 10                     |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
| 1         | 1     | 3.30          | 3           |           |   | N | 6115                     | 840                 | 840                     |                      | 840              | 0.00                           | 6115            |               |                     | 0.6         | -778               |            | 6115                   | 0.137                   | 0.137 | 20        | 52    | 52               | 0.344         | 36                     | 25                      |                         |
| 4         | 1     | 3.30          | 1           |           |   | N | 1945                     | 155                 | 155                     |                      | 155              | 0.00                           | 1945            |               |                     |             |                    |            | 1167                   | 0.133                   | 0.133 |           | 50    | 50               | 0.344         | 18                     | 27                      |                         |
| 4         | 1     | 3.30          | 2           | 15        |   | N | 4170                     | 556                 | 556                     | 197                  | 556              | 0.00                           | 4170            |               |                     |             |                    |            | 4170                   | 0.133                   | 0.133 |           | 50    | 50               | 0.344         | 36                     | 26                      |                         |
| 5         | 2     | 3.30          | 2           | 5         |   | N | 4030                     |                     |                         |                      | 197              | 1.00                           | 3664            |               |                     |             |                    |            | 3664                   | 0.054                   | 0.054 |           | 20    | 35               | 0.344         | 18                     | 45                      |                         |
| 6         | 2     | 3.30          | 2           | 5         |   | N | 4030                     | 284                 | 284                     |                      | 284              | 1.00                           | 3100            |               |                     |             |                    |            | 3100                   | 0.092                   | 0.092 |           | 35    | 35               | 0.344         | 21                     | 36                      |                         |
| 2         | 3     | 3.00          | 2           | 15        |   | N | 3970                     | 222                 | 222                     |                      | 222              | 1.00                           | 3609            |               |                     |             |                    |            | 3609                   | 0.062                   | 0.062 |           | 23    | 23               | 0.344         | 18                     | 43                      |                         |
| 2,3       | 3     | 3.00          | 1           | 8         |   | N | 2055                     | 103                 | 107                     | 4                    | 107              | 1.00                           | 1731            |               |                     |             |                    |            | 1731                   | 0.062                   | 0.062 |           | 23    | 23               | 0.344         | 18                     | 45                      |                         |
| 3         | 3     | 3.00          | 1           | 5         |   | N | 1915                     | 90                  | 90                      |                      | 90               | 1.00                           | 1473            |               |                     |             |                    |            | 1473                   | 0.061                   | 0.061 |           | 23    | 23               | 0.344         | 12                     | 45                      |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

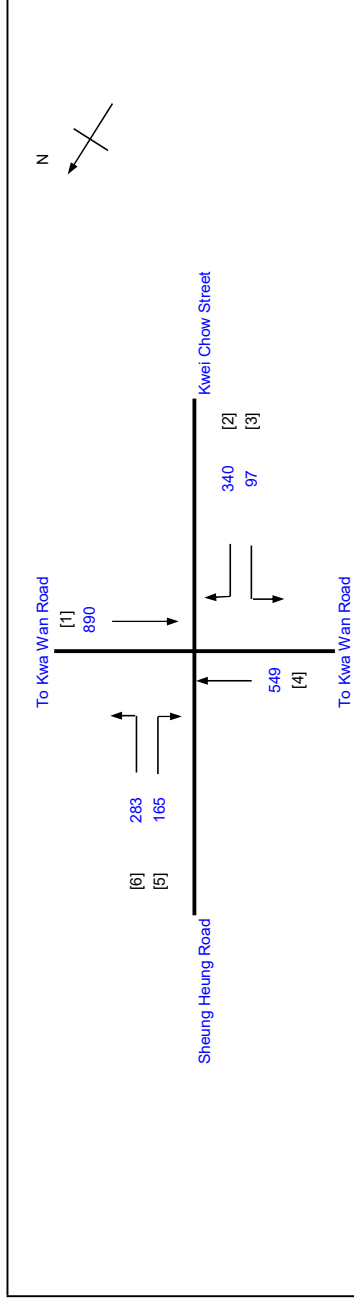
## 2030 Design AM

J1 Sheung Heung Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J1\_SHR\_TKWR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

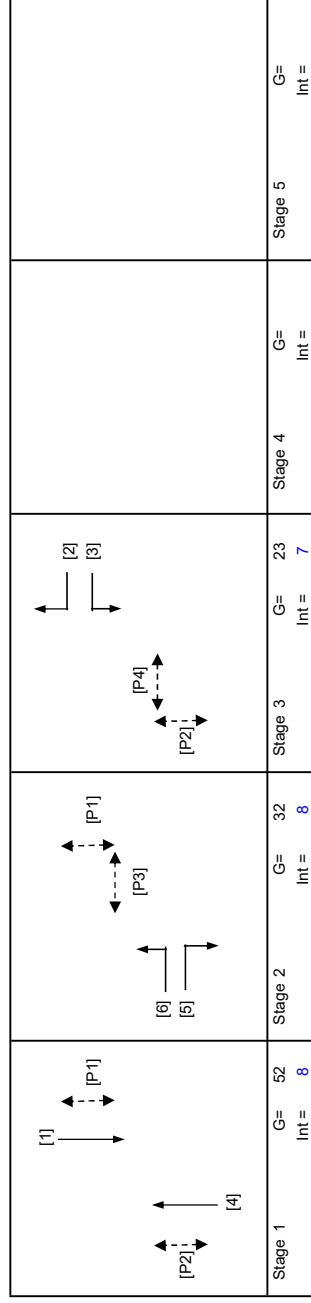
INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



No. of stages per cycle = 3

Cycle time = 130 sec  
 Sum(y) = 0.301  
 Loss time = 20 sec  
 Total Flow = 2324 pcu  
 Co = 50.1 sec  
 Crm = 28.6 sec  
 Yult = 0.750  
 R.C.ult = 148.9 %  
 Cp = 30.1 sec  
 Ymax = 1-L/C = 0.846

**R.C.(C) = 0.9\*Ymax-y)\*Y\*100% = 153 %**



| Pedestrian Phase | Stage | Width (m) | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|---------------|---------------|-------|------------------------|------------------------|
| P1               | 1,2   | 12        | 6             | 10            | 2     | 88                     | 10                     |
| P2               | 1,3   | 13.2      | 6             | 12            | 2     | 76                     | 12                     |
| P3               | 2     | 10        | 5             | 10            | 2     | 28                     | 10                     |
| P4               | 3     | 10        | 5             | 10            | 2     | 18                     | 10                     |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 1         | 1     | 3.30          | 3           |           |   | N | 6115                     | 890                 | 890                     |                      | 890              | 0.00                           | 6115            |               |                     |             |                    |            | 6115                   | 0.146                   | 0.146 | 20        | 53    | 53               | 0.356         | 38                     | 24                     |                         |
| 4         | 1     | 3.30          | 1           |           |   | N | 1945                     | 120                 | 120                     |                      | 120              | 0.00                           | 1945            |               |                     |             | -778               |            | 1167                   | 0.103                   | 0.103 |           | 38    | 53               | 0.356         | 18                     | 36                     |                         |
| 4         | 1     | 3.30          | 2           |           |   | N | 4170                     | 429                 | 429                     | 165                  | 429              | 0.00                           | 4170            |               |                     | 0.6         |                    |            | 4170                   | 0.103                   | 0.103 |           | 38    | 53               | 0.356         | 33                     | 34                     |                         |
| 5         | 2     | 3.30          | 2           | 15        |   | N | 4030                     |                     |                         |                      | 165              | 1.00                           | 3664            |               |                     |             |                    |            | 3664                   | 0.045                   | 0.045 |           | 16    | 33               | 0.356         | 15                     | 49                     |                         |
| 6         | 2     | 3.30          | 2           | 5         |   | N | 4030                     | 283                 | 283                     |                      | 283              | 1.00                           | 3100            |               |                     |             |                    |            | 3100                   | 0.091                   | 0.091 |           | 33    | 33               | 0.356         | 21                     | 37                     |                         |
| 2         | 3     | 3.00          | 2           | 15        |   | N | 3970                     | 231                 | 231                     |                      | 231              | 1.00                           | 3609            |               |                     |             |                    |            | 3609                   | 0.064                   | 0.064 |           | 23    | 24               | 0.356         | 18                     | 43                     |                         |
| 2,3       | 3     | 3.00          | 1           | 8         |   | N | 2055                     | 109                 | 111                     | 2                    | 111              | 1.00                           | 1731            |               |                     |             |                    |            | 1731                   | 0.064                   | 0.064 |           | 23    | 24               | 0.356         | 18                     | 45                     |                         |
| 3         | 3     | 3.00          | 1           | 5         |   | N | 1915                     | 95                  | 95                      |                      | 95               | 1.00                           | 1473            |               |                     |             |                    |            | 1473                   | 0.064                   | 0.064 |           | 24    | 24               | 0.356         | 12                     | 45                     |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

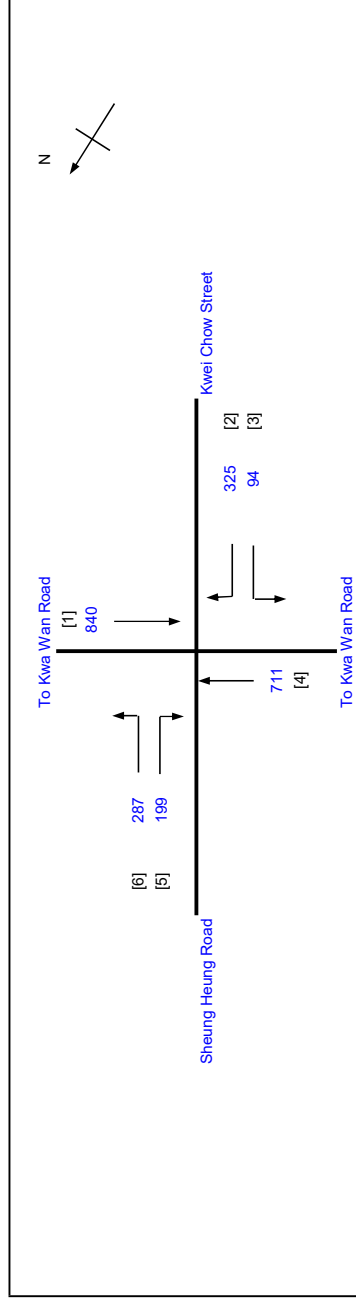
Proposed Development at 33 Sheung Heung Road, Kowloon

## 2030 Design PM

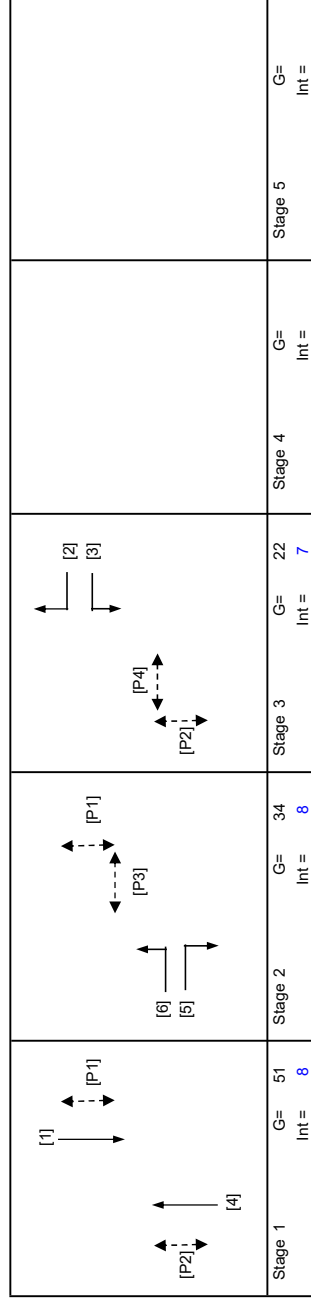
J1 Sheung Heung Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J1\_SHR\_TKWR.xlsx

INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



|                         |                                    |
|-------------------------|------------------------------------|
| No. of stages per cycle | N = 3                              |
| Cycle time              | C = 130 sec                        |
| Sum(y)                  | Y = 0.292                          |
| Loss time               | L = 20 sec                         |
| Total Flow              | = 2456 pcu                         |
| Co                      | = (1.5*L+5)/(1-Y) = 49.4 sec       |
| Cm                      | = L/(1-Y) = 28.2 sec               |
| Yult                    | = 0.750                            |
| R.C.ult                 | = (Yult-Y)*100% = 157.1 %          |
| Cp                      | = 0.9*L/(0.9-Y) = 29.6 sec         |
| Ymax                    | = 1-L/C = 0.846                    |
| <b>R.C.(C)</b>          | <b>= (0.9*Ymax-Y)*100% = 161 %</b> |



| Pedestrian Phase | Stage | Width (m) | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|---------------|---------------|-------|------------------------|------------------------|
| P1               | 1,2   | 12        | 6             | 10            | 2     | 89                     | 10                     |
| P2               | 1,3   | 13.2      | 6             | 12            | 2     | 74                     | 12                     |
| P3               | 2     | 10        | 5             | 10            | 2     | 30                     | 10                     |
| P4               | 3     | 10        | 5             | 10            | 2     | 17                     | 10                     |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 1         | 1     | 3.30          | 3           |           |   | N | 6115                     | 840                 | 840                     |                      | 840              | 0.00                           | 6115            |               |                     | 0.6         | -778               |            | 6115                   | 0.137                   | 0.137 | 20        | 52    | 52               | 0.345         | 36                     | 25                     |                         |
| 4         | 1     | 3.30          | 1           |           |   | N | 1945                     | 155                 | 155                     |                      | 155              | 0.00                           | 1945            |               |                     |             |                    |            | 1167                   | 0.133                   | 0.133 |           | 50    | 50               | 0.345         | 18                     | 27                     |                         |
| 4         | 1     | 3.30          | 2           |           |   | N | 4170                     | 556                 | 556                     | 199                  | 556              | 0.00                           | 4170            |               |                     |             |                    |            | 4170                   | 0.133                   | 0.133 |           | 50    | 50               | 0.345         | 36                     | 26                     |                         |
| 5         | 2     | 3.30          | 2           | 15        |   | N | 4030                     |                     |                         |                      | 199              | 1.00                           | 3664            |               |                     |             |                    |            | 3664                   | 0.054                   | 0.054 |           | 20    | 35               | 0.345         | 18                     | 45                     |                         |
| 6         | 2     | 3.30          | 2           | 5         |   | N | 4030                     | 287                 | 287                     |                      | 287              | 1.00                           | 3100            |               |                     |             |                    |            | 3100                   | 0.093                   | 0.093 |           | 35    | 35               | 0.345         | 21                     | 36                     |                         |
| 2         | 3     | 3.00          | 2           | 15        |   | N | 3970                     | 222                 | 222                     |                      | 222              | 1.00                           | 3609            |               |                     |             |                    |            | 3609                   | 0.062                   | 0.062 |           | 23    | 23               | 0.345         | 18                     | 43                     |                         |
| 2,3       | 3     | 3.00          | 1           | 8         |   | N | 2055                     | 103                 | 106                     | 3                    | 106              | 1.00                           | 1731            |               |                     |             |                    |            | 1731                   | 0.061                   | 0.061 |           | 23    | 23               | 0.345         | 18                     | 45                     |                         |
| 3         | 3     | 3.00          | 1           | 5         |   | N | 1915                     | 91                  | 91                      |                      | 91               | 1.00                           | 1473            |               |                     |             |                    |            | 1473                   | 0.062                   | 0.062 |           | 23    | 23               | 0.345         | 12                     | 45                     |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

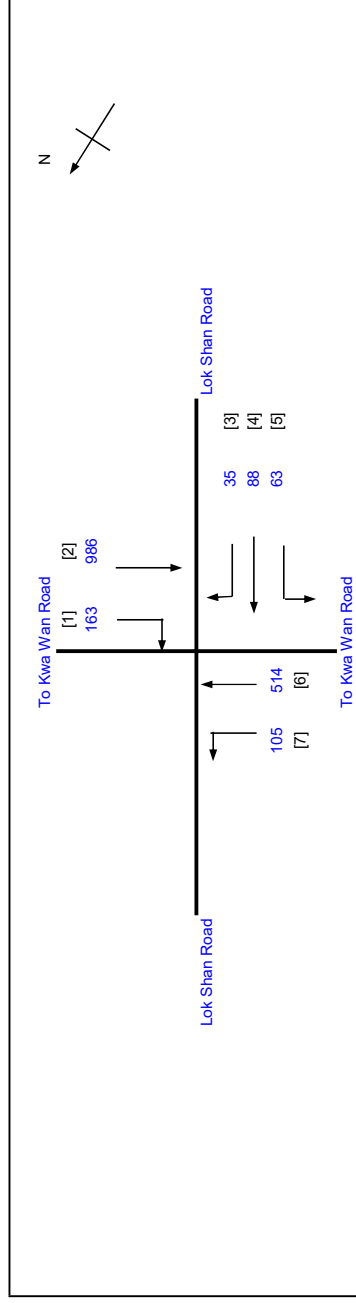
2030 Reference AM

J2 Lok Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J2\_LSR\_TWKR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

Nov-22  
 Nov-22  
 Nov-22



No. of stages per cycle = 4

Cycle time = 130 sec

Sum(y) = 0.287

Loss time = 42 sec

Total Flow = 1954 pcu

Co = 95.3 sec

Cm = 58.9 sec

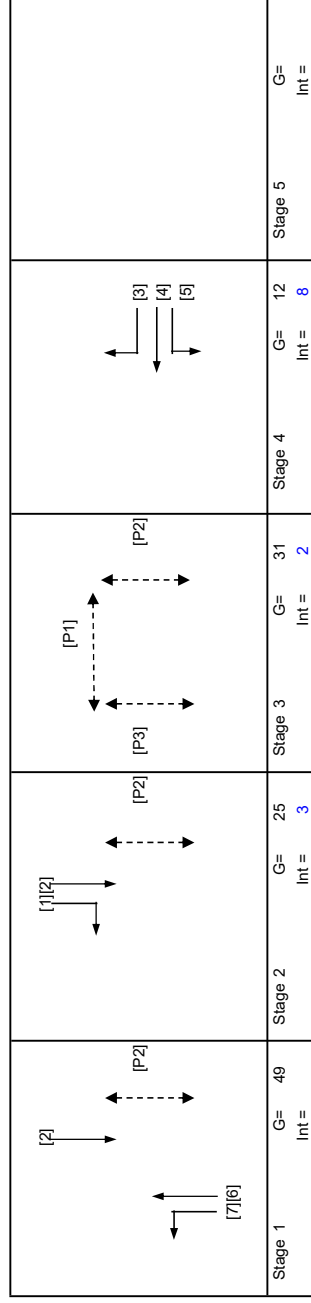
Yult = 0.585

R.C.ult = (Yult-Y)\*100% = 104.1 %

Cp = 0.9\*L/(0.9-Y)

Ymax = 1-L/C = 0.677

**R.C.(C) = 0.9\*Ymax-Y\*100% = 113 %**



| Pedestrian Phase | Stage | Width (m) | Green Time Required SG | Green Time Provided SG |
|------------------|-------|-----------|------------------------|------------------------|
| P1               | 3     |           | 5                      | 19                     |
| P2               | 1,2,3 |           | 5                      | 99                     |
| P3               | 3     |           | 5                      | 18                     |

| Movement | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement   |                |             | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|----------|-------|---------------|-------------|-----------|---|---|--------------------------|------------|----------------|-------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
|          |       |               |             |           |   |   |                          | Left pcu/h | Straight pcu/h | Right pcu/h |                  |                                |                 |                     |             |                    |            |                        |                         |       |           |       |                  |               |                        |                         |                         |
| 2        | 1,2   | 3.30          | 2           |           |   | N | 4030                     | 986        | 0.00           | 4030        | 0.00             | 4030                           | 0.245           |                     |             |                    |            | 4030                   | 0.245                   | 0.245 | 11        | 75    | 75               | 0.423         | 45                     | 14                      |                         |
| 6        | 1     | 3.30          | 2           |           |   | N | 4170                     | 444        | 0.00           | 4170        | 0.00             | 4170                           | 0.106           |                     |             |                    |            | 4170                   | 0.106                   | 0.106 |           | 33    | 33               | 0.423         | 36                     | 38                      |                         |
| 6,7      | 1     | 3.30          | 1           | 5         |   | N | 1945                     | 175        | 0.60           | 1648        | 0.60             | 1648                           | 0.106           |                     |             |                    |            | 1648                   | 0.106                   | 0.106 |           | 33    | 33               | 0.423         | 24                     | 40                      |                         |
| 1        | 2     | 3.30          | 1           | 15        |   | N | 2085                     | 163        | 1.00           | 1895        | 1.00             | 1895                           | 0.086           |                     |             |                    |            | 1895                   | 0.086                   | 0.086 |           | 26    | 26               | 0.423         | 24                     | 44                      |                         |
| 3,4      | 4     | 3.40          | 1           | 15        |   | N | 1955                     | 58         | 0.60           | 1844        | 0.60             | 1844                           | 0.031           |                     |             |                    |            | 1844                   | 0.031                   | 0.031 |           | 10    | 13               | 0.423         | 6                      | 60                      |                         |
| 4        | 4     | 3.40          | 1           | 5         |   | N | 2095                     | 65         | 0.00           | 2095        | 0.00             | 2095                           | 0.031           |                     |             |                    |            | 2095                   | 0.031                   | 0.031 |           | 10    | 13               | 0.423         | 12                     | 60                      |                         |
| 5        | 4     | 3.40          | 1           | 5         |   | N | 1955                     | 63         | 1.00           | 1504        | 1.00             | 1504                           | 0.042           |                     |             |                    |            | 1504                   | 0.042                   | 0.042 |           | 13    | 13               | 0.423         | 12                     | 58                      |                         |
| PED      | 3     |               |             |           |   |   |                          |            |                |             |                  |                                |                 |                     |             |                    |            |                        |                         |       |           |       |                  |               |                        |                         |                         |

NOTE : O - OPPOSING TRAFFIC      N - NEAR SIDE LANE      SG - STEADY GREEN      FG - FLASHING GREEN      PEDESTRAIN WALKING SPEED = 1.2m/s      QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

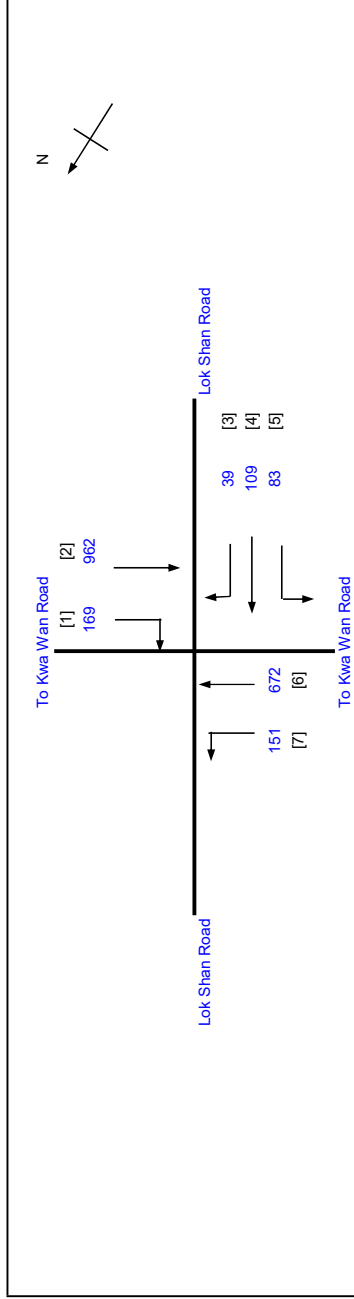
2030 Reference PM

J2 Lok Shan Road / To Kwa Wan Road

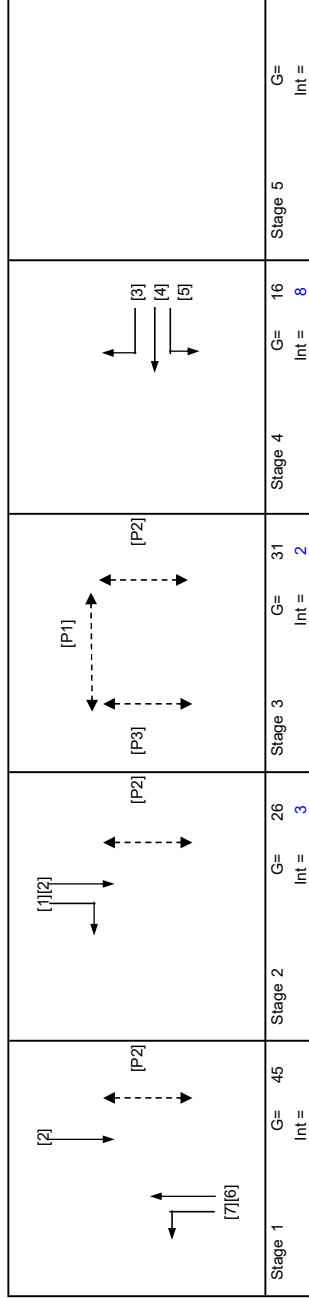
PROJECT NO.: 40848  
 FILENAME : J2\_LSR\_TWKR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

| INITIALS | DATE   |
|----------|--------|
| SKL      | Nov-22 |
| SLN      | Nov-22 |
| SLN      | Nov-22 |



|                         |                                    |
|-------------------------|------------------------------------|
| No. of stages per cycle | N = 4                              |
| Cycle time              | C = 130 sec                        |
| Sum(y)                  | Y = 0.294                          |
| Loss time               | L = 42 sec                         |
| Total Flow              | = 2185 pcu                         |
| Co                      | = (1.5*L+5)/(1-Y)                  |
| Cm                      | = L/(1-Y)                          |
| Yult                    | = 0.585                            |
| R.C.ult                 | = (Yult-Y)*100%                    |
| Cp                      | = 0.9*L/(0.9-Y)                    |
| Ymax                    | = 1-L/C                            |
| <b>R.C.(C)</b>          | <b>= (0.9*Ymax-Y)*100% = 107 %</b> |



| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
| 2         | 1,2   | 3.30          | 2           |           |   | N | 4030                     | 962                 | 962                     |                      | 962              | 0.00                           | 4030            | 0.239               |             |                    |            |                        | 4030                    | 0.239 | 0.239     | 11    | 71               | 71            | 0.434                  | 45                      | 16                      |
| 6         | 1     | 3.30          | 2           |           |   | N | 4170                     | 593                 | 593                     |                      | 593              | 0.00                           | 4170            | 0.142               |             |                    |            |                        | 4170                    | 0.142 | 0.142     |       | 43               | 43            | 0.434                  | 42                      | 32                      |
| 6,7       | 1     | 3.30          | 1           | 5         |   | N | 1945                     | 151                 | 79                      | 230                  | 0.66             | 0.66                           | 1625            | 0.142               |             |                    |            |                        | 1625                    | 0.142 | 0.142     |       | 43               | 43            | 0.434                  | 30                      | 33                      |
| 1         | 2     | 3.30          | 1           | 15        |   | N | 2085                     | 169                 | 169                     |                      | 169              | 1.00                           | 1895            | 0.089               |             |                    |            |                        | 1895                    | 0.089 | 0.055     |       | 27               | 27            | 0.434                  | 24                      | 44                      |
| 3,4       | 4     | 3.40          | 1           | 15        |   | N | 1955                     | 31                  | 31                      |                      | 70               | 0.56                           | 1852            | 0.038               |             |                    |            |                        | 1852                    | 0.038 | 0.037     |       | 11               | 17            | 0.434                  | 12                      | 58                      |
| 4         | 4     | 3.40          | 1           | 5         |   | N | 2095                     | 78                  | 78                      |                      | 78               | 0.00                           | 2095            | 0.037               |             |                    |            |                        | 2095                    | 0.037 | 0.055     |       | 17               | 17            | 0.434                  | 12                      | 58                      |
| 5         | 4     | 3.40          | 1           | 5         |   | N | 1955                     | 83                  | 83                      |                      | 83               | 1.00                           | 1504            | 0.055               |             |                    |            |                        | 1504                    | 0.055 | 0.055     |       | 17               | 17            | 0.434                  | 12                      | 54                      |
| PED       | 3     |               |             |           |   |   |                          |                     |                         |                      |                  |                                |                 |                     |             |                    |            |                        |                         |       |           |       |                  |               |                        |                         |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m



# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

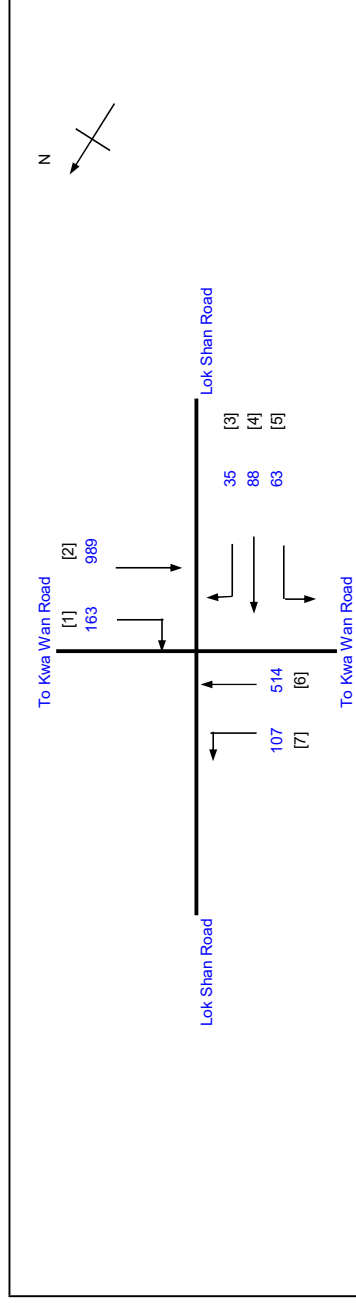
Proposed Development at 33 Sheung Heung Road, Kowloon

2030 Design AM

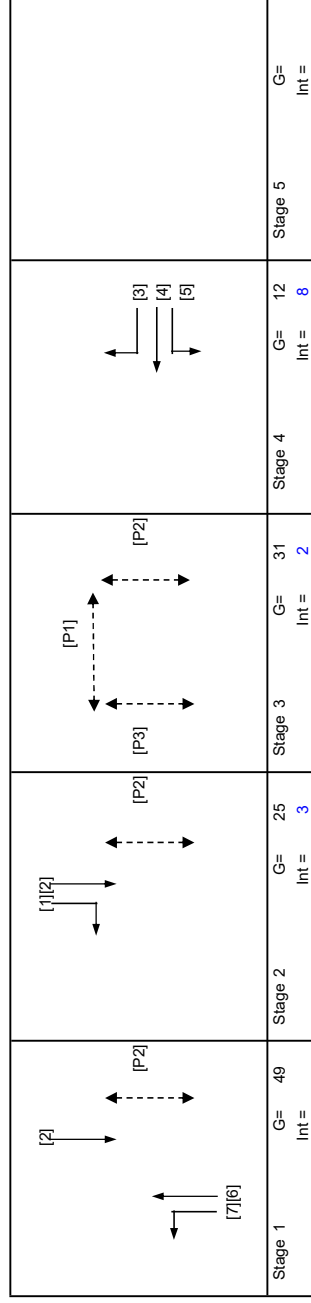
J2 Lok Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J2\_LSR\_TWKR.xlsx

INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



|                         |                                   |
|-------------------------|-----------------------------------|
| No. of stages per cycle | N = 4                             |
| Cycle time              | C = 130 sec                       |
| Sum(y)                  | 0.287                             |
| Loss time               | Y = 42 sec                        |
| Total Flow              | L = 1959 pcu                      |
| Co                      | = (1.5*L+5)/(1-Y)                 |
| Cm                      | = L/(1-Y)                         |
| Yult                    | =                                 |
| R.C.ult                 | = (Yult-Y)*100%                   |
| Cp                      | = 0.9*L/(0.9-Y)                   |
| Ymax                    | = 1-L/C                           |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-Y)*100% = 112 %</b> |



| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
| 2         | 1,2   | 3.30          | 2           |           |   | N | 4030                     | 989                 | 445                     | 176                  | 163              | 0.00                           | 4030            |                     |             |                    |            |                        | 4030                    | 0.245 | 0.245     | 11    | 75               | 75            | 0.424                  | 45                      | 14                      |
| 6         | 1     | 3.30          | 2           |           |   | N | 4170                     | 445                 | 69                      | 35                   | 58               | 0.00                           | 4170            |                     |             |                    |            |                        | 4170                    | 0.107 | 0.107     |       | 33               | 33            | 0.424                  | 36                      | 38                      |
| 6,7       | 1     | 3.30          | 1           | 5         |   | N | 1945                     | 107                 | 65                      | 65                   | 63               | 0.61                           | 1645            |                     |             |                    |            |                        | 1645                    | 0.107 | 0.107     |       | 33               | 33            | 0.424                  | 24                      | 40                      |
| 1         | 2     | 3.30          | 1           | 15        |   | N | 2085                     |                     | 23                      | 65                   | 63               | 1.00                           | 1895            |                     |             |                    |            |                        | 1895                    | 0.086 | 0.086     |       | 26               | 26            | 0.424                  | 24                      | 44                      |
| 3,4       | 4     | 3.40          | 1           | 15        |   | N | 1955                     |                     | 65                      | 63                   | 58               | 0.60                           | 1844            |                     |             |                    |            |                        | 1844                    | 0.031 | 0.031     |       | 10               | 13            | 0.424                  | 6                       | 61                      |
| 4         | 4     | 3.40          | 1           | 5         |   | N | 2095                     |                     | 63                      | 63                   | 63               | 1.00                           | 2095            |                     |             |                    |            |                        | 2095                    | 0.031 | 0.031     |       | 10               | 13            | 0.424                  | 12                      | 60                      |
| 5         | 4     | 3.40          | 1           | 5         |   | N | 1955                     |                     | 63                      | 63                   | 63               | 1.00                           | 1504            |                     |             |                    |            |                        | 1504                    | 0.042 | 0.042     | 31    | 13               | 13            | 0.424                  | 12                      | 58                      |
| PED       | 3     |               |             |           |   |   |                          |                     |                         |                      |                  |                                |                 |                     |             |                    |            |                        |                         |       |           |       |                  |               |                        |                         |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

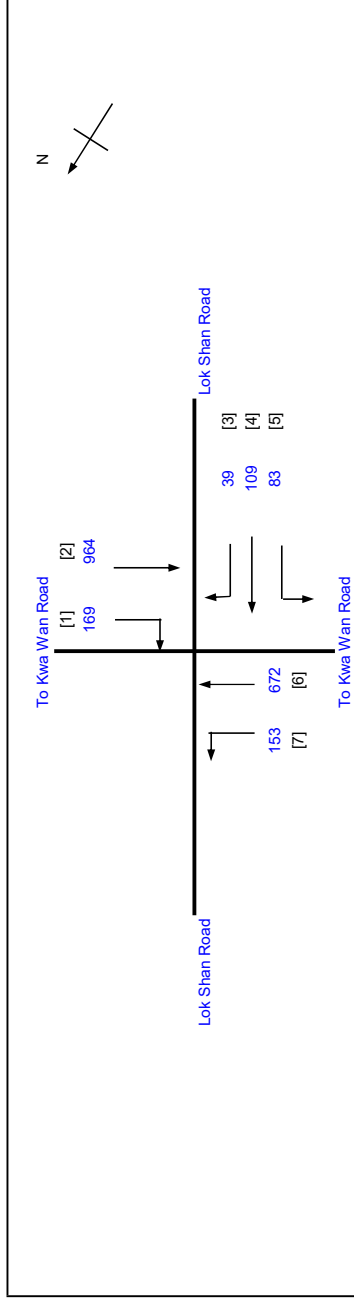
2030 Design PM

J2 Lok Shan Road / To Kwa Wan Road

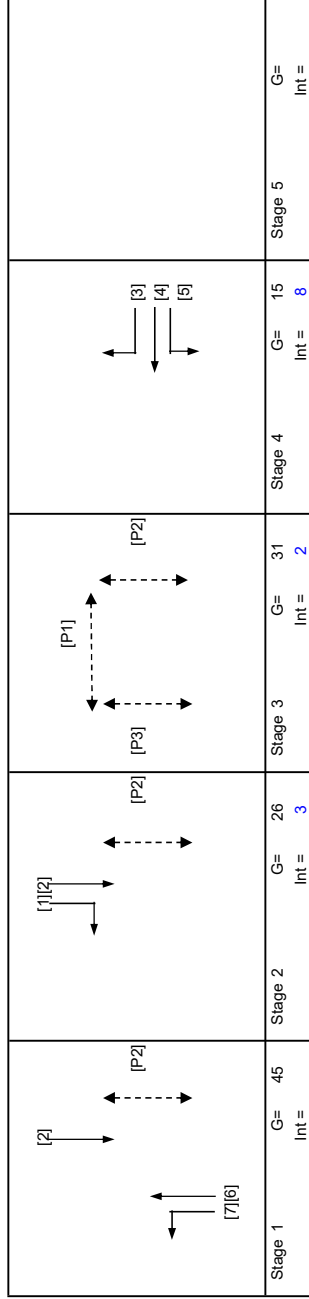
PROJECT NO.: 40848  
 FILENAME: J2\_LSR\_TWKR.xlsx

Prepared By:  
 Checked By:  
 Reviewed By:

| INITIALS | DATE   |
|----------|--------|
| SKL      | Nov-22 |
| SLN      | Nov-22 |
| SLN      | Nov-22 |



|                         |                                  |
|-------------------------|----------------------------------|
| No. of stages per cycle | N = 4                            |
| Cycle time              | C = 130 sec                      |
| Sum(y)                  | 0.294                            |
| Loss time               | Y = 42 sec                       |
| Total Flow              | L = 2189 pcu                     |
| Co                      | = (1.5*L+5)/(1-Y)                |
| Cm                      | = L/(1-Y)                        |
| Yult                    | =                                |
| R.C.ult                 | = (Yult-Y)*100%                  |
| Cp                      | = 0.9*L/(0.9-Y)                  |
| Ymax                    | = 1-L/C                          |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-Y*100% = 107 %</b> |



| Pedestrian Phase | Stage | Width (m) | Green Time SG | Green Time FG | Green Time Required Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|---------------|---------------|---------------------------|------------------------|------------------------|
| P1               | 3     |           | 5             | 12            | 2                         | 19                     | 12                     |
| P2               | 1,2,3 |           | 5             | 9             | 2                         | 96                     | 9                      |
| P3               | 3     |           | 5             | 7             | 8                         | 18                     | 7                      |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
| 2         | 1,2   | 3.30          | 2           |           |   | N | 4030                     | 964                 | 964                     | 964                  | 964              | 0.00                           | 4030            |                     |             |                    |            | 4030                   | 0.239                   | 0.239 | 11        | 72    | 72               | 0.435         | 45                     | 16                      |                         |
| 6         | 1     | 3.30          | 2           |           |   | N | 4170                     | 594                 | 594                     | 594                  | 594              | 0.00                           | 4170            |                     |             |                    |            | 4170                   | 0.142                   | 0.142 |           | 43    | 43               | 0.435         | 42                     | 32                      |                         |
| 6,7       | 1     | 3.30          | 1           | 5         |   | N | 1945                     | 153                 | 78                      | 231                  | 231              | 0.66                           | 1623            |                     |             |                    |            | 1623                   | 0.142                   | 0.142 |           | 43    | 43               | 0.435         | 30                     | 33                      |                         |
| 1         | 2     | 3.30          | 1           | 15        |   | N | 2085                     |                     | 169                     | 169                  | 169              | 1.00                           | 1895            |                     |             |                    |            | 1895                   | 0.089                   | 0.089 |           | 27    | 27               | 0.435         | 24                     | 44                      |                         |
| 3,4       | 4     | 3.40          | 1           | 15        |   | N | 1955                     |                     | 31                      | 39                   | 70               | 0.56                           | 1852            |                     |             |                    |            | 1852                   | 0.038                   | 0.038 |           | 11    | 16               | 0.435         | 12                     | 58                      |                         |
| 4         | 4     | 3.40          | 1           |           |   | N | 2095                     |                     | 78                      | 78                   | 78               | 0.00                           | 2095            |                     |             |                    |            | 2095                   | 0.037                   | 0.037 |           | 11    | 16               | 0.435         | 12                     | 58                      |                         |
| 5         | 4     | 3.40          | 1           | 5         |   | N | 1955                     |                     | 83                      | 83                   | 83               | 1.00                           | 1504            |                     |             |                    |            | 1504                   | 0.055                   | 0.055 | 31        | 16    | 16               | 0.435         | 12                     | 54                      |                         |
| PED       | 3     |               |             |           |   |   |                          |                     |                         |                      |                  |                                |                 |                     |             |                    |            |                        |                         |       |           |       |                  |               |                        |                         |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

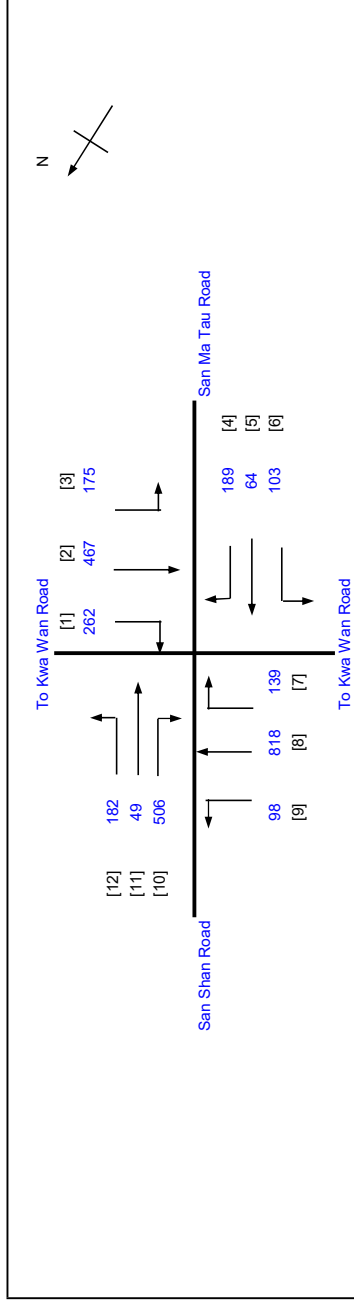
Proposed Development at 33 Sheung Heung Road, Kowloon

2030 Reference AM

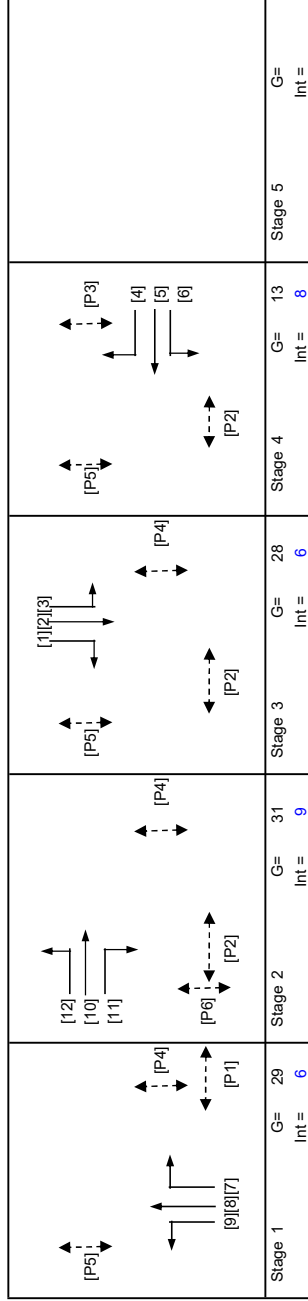
J3 San Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J3\_SSR\_TWKR.xlsx

Prepared By: Nov-22  
 Checked By: Nov-22  
 Reviewed By: Nov-22



|                         |                                   |
|-------------------------|-----------------------------------|
| No. of stages per cycle | N = 4                             |
| Cycle time              | C = 130 sec                       |
| Sum(y)                  | Y = 0.477                         |
| Loss time               | L = 25 sec                        |
| Total Flow              | = 3052 pcu                        |
| Co                      | = (1.5*L+5)/(1-Y)                 |
| Cm                      | = L/(1-Y)                         |
| Yult                    | = 0.713                           |
| R.C.ult                 | = (Yult-Y)*100%                   |
| Cp                      | = 0.9*L/(0.9-Y)                   |
| Ymax                    | = 1-L/C                           |
| <b>R.C.(C)</b>          | <b>= (0.9*Ymax-Y)*100% = 53 %</b> |



| Pedestrian Phase | Stage | Width (m) | Green Time Required SG | Green Time Required FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|-----------|------------------------|------------------------|-------|------------------------|------------------------|
| P1               | 1     | 9.1       | 5                      | 9                      |       | 26                     | 9                      |
| P2               | 2,3,4 | 13.7      | 8                      | 15                     |       | 80                     | 15                     |
| P3               | 4     | 7.2       | 5                      | 7                      |       | 14                     | 7                      |
| P4               | 1,2,3 | 10.2      | 5                      | 9                      |       | 100                    | 9                      |
| P5               | 1,3,4 | 9.3       | 5                      | 9                      |       | 81                     | 9                      |
| P6               | 2     | 6.8       | 5                      | 8                      |       | 32                     | 8                      |

| Move-ment | Stage | Lane Width (m) | No. of lane | Radius (m) | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total FLOW pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|----------------|-------------|------------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 1         | 3     | 3.00           | 1           | 30         |   |   | 2055                     |                     | 262                     | 262                  | 262              | 1.00                           | 1957            |                     |             |                    |            | 1957                   | 0.134                   | 0.134 | 25        | 29    | 29               | 0.590         | 42                     | 46                     |                         |
| 2         | 3     | 3.00           | 2           | 10         |   | N | 4110                     |                     | 445                     | 445                  | 445              | 0.00                           | 4110            |                     |             |                    |            | 4110                   | 0.108                   | 0.108 |           | 24    | 29               | 0.590         | 39                     | 47                     |                         |
| 2,3       | 3     | 4.50           | 1           | 10         |   |   | 2065                     | 175                 | 22                      | 197                  | 197              | 0.89                           | 1822            |                     |             |                    |            | 1822                   | 0.108                   | 0.108 |           | 24    | 29               | 0.590         | 30                     | 51                     |                         |
| 4         | 4     | 3.40           | 1           | 24         |   |   | 2095                     |                     | 126                     | 126                  | 126              | 1.00                           | 1972            |                     |             |                    |            | 1972                   | 0.064                   | 0.064 |           | 14    | 14               | 0.590         | 24                     | 61                     |                         |
| 4,5,6     | 4     | 3.40           | 1           | 16         |   | N | 2095                     | 0                   | 64                      | 127                  | 127              | 0.50                           | 2002            |                     |             |                    |            | 2002                   | 0.063                   | 0.063 |           | 14    | 14               | 0.590         | 24                     | 61                     |                         |
| 6         | 4     | 3.40           | 1           | 10         |   |   | 1955                     | 103                 | 103                     | 103                  | 103              | 1.00                           | 1700            |                     |             |                    |            | 1700                   | 0.061                   | 0.061 |           | 13    | 14               | 0.590         | 18                     | 63                     |                         |
| 7,8       | 1     | 3.00           | 1           | 25         |   |   | 2055                     | 128                 | 139                     | 267                  | 267              | 0.52                           | 1993            |                     |             |                    |            | 1993                   | 0.134                   | 0.134 |           | 30    | 30               | 0.590         | 42                     | 46                     |                         |
| 8         | 1     | 3.00           | 2           | 10         |   | N | 4110                     | 548                 | 548                     | 548                  | 548              | 0.00                           | 4110            |                     |             |                    |            | 4110                   | 0.133                   | 0.133 |           | 29    | 30               | 0.590         | 45                     | 43                     |                         |
| 8,9       | 1     | 3.00           | 1           | 10         |   |   | 1915                     | 98                  | 142                     | 240                  | 240              | 0.41                           | 1804            |                     |             |                    |            | 1804                   | 0.133                   | 0.133 |           | 29    | 30               | 0.590         | 36                     | 46                     |                         |
| 10        | 2     | 3.00           | 1           | 24         |   |   | 2055                     |                     | 280                     | 280                  | 280              | 1.00                           | 1934            |                     |             |                    |            | 1934                   | 0.145                   | 0.145 |           | 32    | 32               | 0.590         | 42                     | 44                     |                         |
| 10,11     | 2     | 3.00           | 1           | 16         |   | N | 2055                     | 49                  | 226                     | 275                  | 275              | 0.82                           | 1908            |                     |             |                    |            | 1908                   | 0.144                   | 0.144 |           | 32    | 32               | 0.590         | 42                     | 44                     |                         |
| 11,12     | 2     | 3.00           | 1           | 10         |   |   | 1915                     | 182                 | 0                       | 182                  | 182              | 1.00                           | 1665            |                     |             |                    |            | 1665                   | 0.109                   | 0.109 |           | 24    | 32               | 0.590         | 30                     | 51                     |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

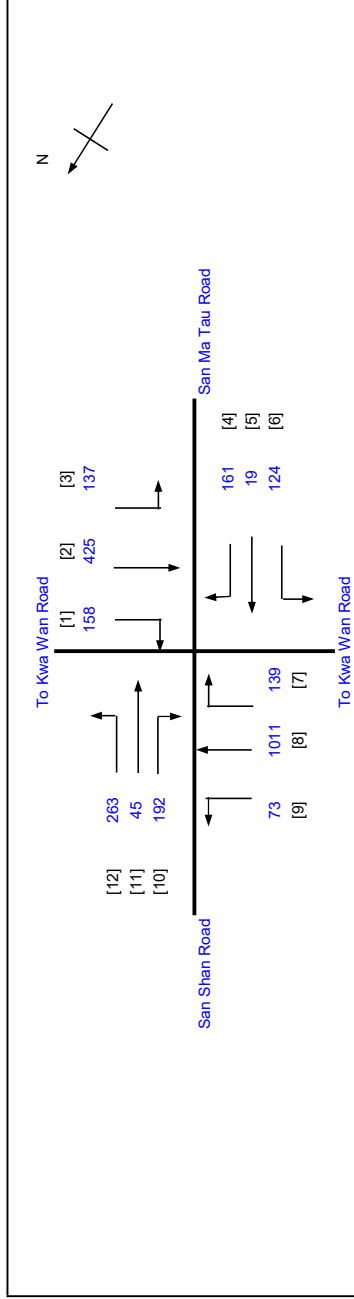
Proposed Development at 33 Sheung Heung Road, Kowloon

2030 Reference PM

J3 San Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J3\_SSR\_TWKR.xlsx

INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



No. of stages per cycle = 4

Cycle time = 130 sec

Sum(y) = 0.461

Loss time = 25 sec

Total Flow = 2747 pcu

Co = 78.9 sec

Cm = 46.4 sec

Yult = 0.713

R.C.ult = (Yult-Y)\*100% = 54.5 %

Cp = 0.9\*L/(0.9-Y) = 51.3 sec

Ymax = 1-L/C = 0.808

**R.C.(C) = (0.9\*Ymax-Y)\*100% = 58 %**

| Stage   | Green Time (sec) | Yellow Time (sec) | Red Time (sec) | Green Time (sec) |
|---------|------------------|-------------------|----------------|------------------|
| Stage 1 | 34               | 6                 | 9              | 34               |
| Stage 2 | 35               | 9                 | 9              | 35               |
| Stage 3 | 21               | 6                 | 8              | 21               |
| Stage 4 | 11               | 8                 | 8              | 11               |
| Stage 5 | 11               | 8                 | 8              | 11               |

| Stage | Width (m) | Green Time (sec) | Yellow Time (sec) | Red Time (sec) | Green Time (sec) |
|-------|-----------|------------------|-------------------|----------------|------------------|
| 1     | 9.1       | 5                | 9                 | 9              | 31               |
| 2,3,4 | 13.7      | 8                | 15                | 15             | 75               |
| 5     | 7.2       | 5                | 7                 | 7              | 12               |
| 6     | 10.2      | 5                | 9                 | 9              | 102              |
| 7     | 9.3       | 5                | 9                 | 9              | 77               |
| 8     | 6.8       | 5                | 8                 | 8              | 36               |

| Move-ment | Stage | Lane Width (m) | No. of lane | Radius (m) | O | N | Straight-Ahead Sat. Flow | Movement | Total Flow | Proportion of Turning Vehicles | Sat. Flow | Flare Lane | Flare Effect | Site Effect | Gradient % | Gradient Effect | Revised Sat. Flow | Greater y | L  | g (required) | g (input) | Degree of Saturation | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|----------------|-------------|------------|---|---|--------------------------|----------|------------|--------------------------------|-----------|------------|--------------|-------------|------------|-----------------|-------------------|-----------|----|--------------|-----------|----------------------|-------------------------|-------------------------|
| 1         | 3     | 3.00           | 1           | 30         |   |   | 2055                     | Left     | 158        | 1.00                           | 1957      |            |              |             |            | 1957            | 0.081             | 25        | 18 | 22           | 0.571     | 24                   | 55                      |                         |
| 2         | 3     | 3.00           | 2           |            |   | N | 4110                     | Right    | 388        | 0.00                           | 4110      |            |              |             |            | 4110            | 0.094             |           | 22 | 22           | 0.571     | 33                   | 48                      |                         |
| 2,3       | 3     | 4.50           | 1           | 10         |   |   | 2065                     | Through  | 174        | 0.79                           | 1847      |            |              |             |            | 1847            | 0.094             |           | 21 | 22           | 0.571     | 30                   | 52                      |                         |
| 4         | 4     | 3.40           | 1           | 24         |   |   | 2095                     | Left     | 107        | 1.00                           | 1972      |            |              |             |            | 1972            | 0.054             |           | 12 | 12           | 0.571     | 18                   | 62                      |                         |
| 4,5,6     | 4     | 3.40           | 1           | 16         |   | N | 2095                     | Right    | 105        | 0.82                           | 1946      |            |              |             |            | 1946            | 0.054             |           | 12 | 12           | 0.571     | 18                   | 62                      |                         |
| 6         | 4     | 3.40           | 1           | 10         |   |   | 1955                     | Through  | 92         | 1.00                           | 1700      |            |              |             |            | 1700            | 0.054             |           | 12 | 12           | 0.571     | 18                   | 64                      |                         |
| 7,8       | 1     | 3.00           | 1           | 25         |   |   | 2055                     | Left     | 309        | 0.45                           | 2001      |            |              |             |            | 2001            | 0.154             |           | 35 | 35           | 0.571     | 48                   | 41                      |                         |
| 8         | 1     | 3.00           | 2           |            |   | N | 4110                     | Right    | 630        | 0.00                           | 4110      |            |              |             |            | 4110            | 0.153             |           | 35 | 35           | 0.571     | 48                   | 39                      |                         |
| 8,9       | 1     | 3.00           | 1           | 10         |   |   | 1915                     | Through  | 284        | 0.26                           | 1844      |            |              |             |            | 1844            | 0.154             |           | 35 | 35           | 0.571     | 42                   | 41                      |                         |
| 10        | 2     | 3.00           | 1           | 24         |   |   | 2055                     | Left     | 118        | 1.00                           | 1934      |            |              |             |            | 1934            | 0.061             |           | 14 | 36           | 0.571     | 18                   | 60                      |                         |
| 10,11     | 2     | 3.00           | 1           | 16         |   | N | 2055                     | Right    | 119        | 0.62                           | 1942      |            |              |             |            | 1942            | 0.061             |           | 14 | 36           | 0.571     | 18                   | 60                      |                         |
| 11,12     | 2     | 3.00           | 1           | 10         |   |   | 1915                     | Through  | 263        | 1.00                           | 1665      |            |              |             |            | 1665            | 0.158             |           | 36 | 36           | 0.571     | 36                   | 41                      |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

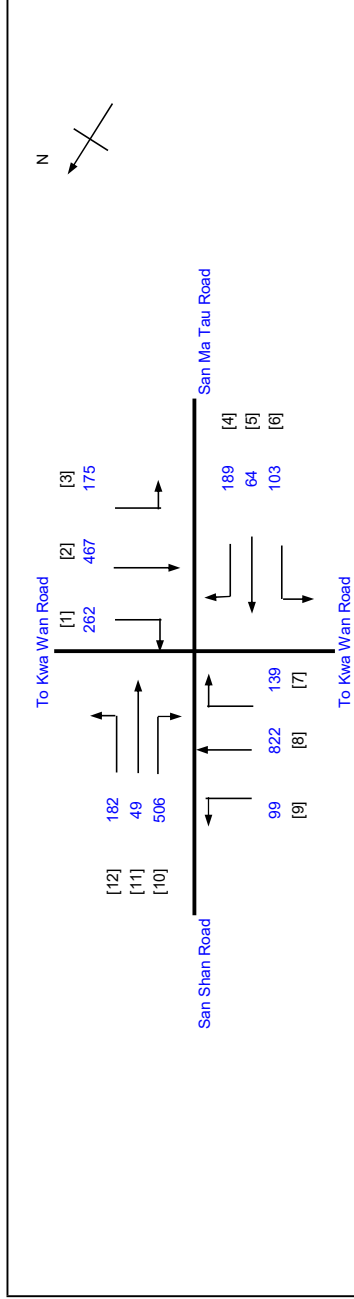
2030 Design AM

J3 San Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J3\_SSR\_TWKR.xlsx

Prepared By: SKL  
 Checked By: SLN  
 Reviewed By: SLN

DATE: Nov-22  
 Nov-22  
 Nov-22



No. of stages per cycle = 4

Cycle time = 130 sec

Sum(y) = 0.477

Loss time = 25 sec

Total Flow = 3057 pcu

Co = (1.5\*L+5)/(1-Y) = 81.2 sec

Cm = L/(1-Y) = 47.8 sec

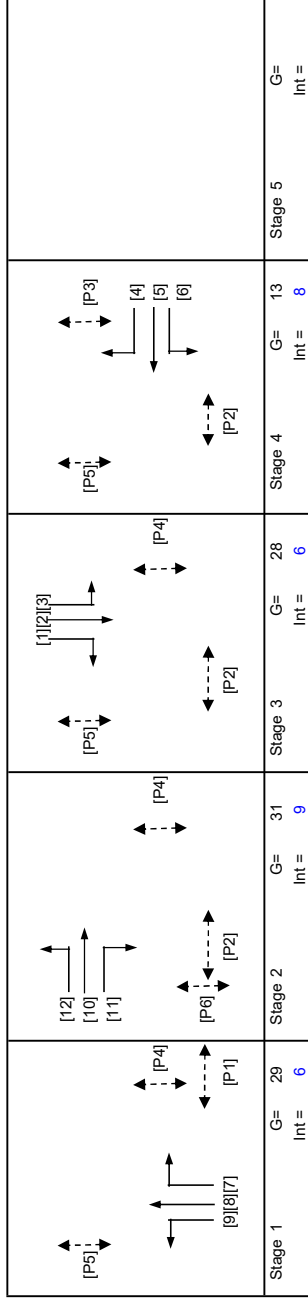
Yult = 0.713

R.C.ult = (Yult-Y)\*100% = 49.4 %

Cp = 0.9\*L/(0.9-Y) = 53.2 sec

Ymax = 1-L/C = 0.808

**R.C.(C) = 0.9\*Ymax-Y\*100% = 52 %**



| Pedestrian Phase | Stage | Width (m) | Green Time Required SG | Delay FG | Green Time Provided SG |
|------------------|-------|-----------|------------------------|----------|------------------------|
| P1               | 1     | 9.1       | 5                      | 9        | 26                     |
| P2               | 2,3,4 | 13.7      | 8                      | 15       | 80                     |
| P3               | 4     | 7.2       | 5                      | 7        | 14                     |
| P4               | 1,2,3 | 10.2      | 5                      | 9        | 100                    |
| P5               | 1,3,4 | 9.3       | 5                      | 9        | 81                     |
| P6               | 2     | 6.8       | 5                      | 8        | 32                     |

| Move-ment | Stage | Lane Width (m) | No. of lane | Radius (m) | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total Flow pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|----------------|-------------|------------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 1         | 3     | 3.00           | 1           | 30         |   |   | 2055                     |                     | 262                     | 262                  | 262              | 1.00                           | 1957            |               |                     |             |                    |            |                        | 1957                    | 0.134 | 0.134     | 25    | 29               | 29            | 0.590                  | 42                     | 46                      |
| 2         | 3     | 3.00           | 2           | 10         |   | N | 4110                     |                     | 445                     | 445                  | 445              | 0.00                           | 4110            |               |                     |             |                    |            |                        | 4110                    | 0.108 | 0.108     | 24    | 24               | 29            | 0.590                  | 39                     | 47                      |
| 2,3       | 3     | 4.50           | 1           | 10         |   |   | 2065                     | 175                 | 22                      | 197                  | 197              | 0.89                           | 1822            |               |                     |             |                    |            |                        | 1822                    | 0.108 | 0.108     | 24    | 24               | 29            | 0.590                  | 30                     | 51                      |
| 4         | 4     | 3.40           | 1           | 24         |   |   | 2095                     |                     | 126                     | 126                  | 126              | 1.00                           | 1972            |               |                     |             |                    |            |                        | 1972                    | 0.064 | 0.064     | 14    | 14               | 14            | 0.590                  | 24                     | 61                      |
| 4,5,6     | 4     | 3.40           | 1           | 16         |   | N | 2095                     | 0                   | 64                      | 63                   | 127              | 0.50                           | 2002            |               |                     |             |                    |            |                        | 2002                    | 0.063 | 0.063     | 14    | 14               | 14            | 0.590                  | 24                     | 61                      |
| 6         | 4     | 3.40           | 1           | 10         |   |   | 1955                     | 103                 | 103                     | 103                  | 103              | 1.00                           | 1700            |               |                     |             |                    |            |                        | 1700                    | 0.061 | 0.061     | 13    | 13               | 14            | 0.590                  | 18                     | 64                      |
| 7,8       | 1     | 3.00           | 1           | 25         |   |   | 2055                     | 128                 | 139                     | 267                  | 267              | 0.52                           | 1993            |               |                     |             |                    |            |                        | 1993                    | 0.134 | 0.134     | 30    | 30               | 30            | 0.590                  | 42                     | 46                      |
| 8         | 1     | 3.00           | 2           | 10         |   | N | 4110                     | 552                 | 552                     | 552                  | 552              | 0.00                           | 4110            |               |                     |             |                    |            |                        | 4110                    | 0.134 | 0.134     | 30    | 30               | 30            | 0.590                  | 45                     | 43                      |
| 8,9       | 1     | 3.00           | 1           | 10         |   |   | 1915                     | 99                  | 142                     | 241                  | 241              | 0.41                           | 1804            |               |                     |             |                    |            |                        | 1804                    | 0.134 | 0.134     | 29    | 29               | 30            | 0.590                  | 36                     | 46                      |
| 10        | 2     | 3.00           | 1           | 24         |   |   | 2055                     |                     | 280                     | 280                  | 280              | 1.00                           | 1934            |               |                     |             |                    |            |                        | 1934                    | 0.145 | 0.145     | 32    | 32               | 32            | 0.590                  | 42                     | 44                      |
| 10,11     | 2     | 3.00           | 1           | 16         |   | N | 2055                     | 49                  | 226                     | 275                  | 275              | 0.82                           | 1908            |               |                     |             |                    |            |                        | 1908                    | 0.144 | 0.144     | 32    | 32               | 32            | 0.590                  | 42                     | 44                      |
| 11,12     | 2     | 3.00           | 1           | 10         |   |   | 1915                     | 182                 | 0                       | 182                  | 182              | 1.00                           | 1665            |               |                     |             |                    |            |                        | 1665                    | 0.109 | 0.109     | 24    | 24               | 32            | 0.590                  | 30                     | 51                      |

NOTE :

O - OPPOSING TRAFFIC

N - NEAR SIDE LANE

SG - STEADY GREEN

FG - FLASHING GREEN

PEDESTRAIN WALKING SPEED = 1.2m/s

QUEUEING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

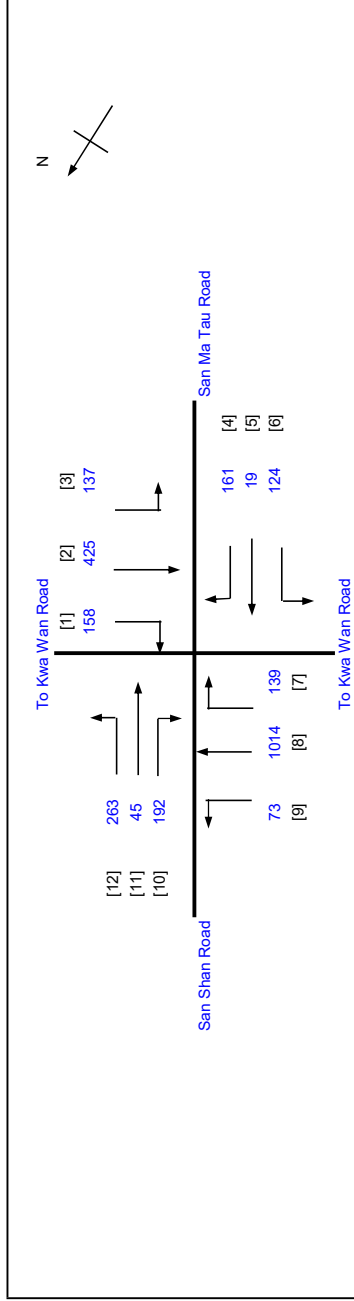
Proposed Development at 33 Sheung Heung Road, Kowloon

2030 Design PM

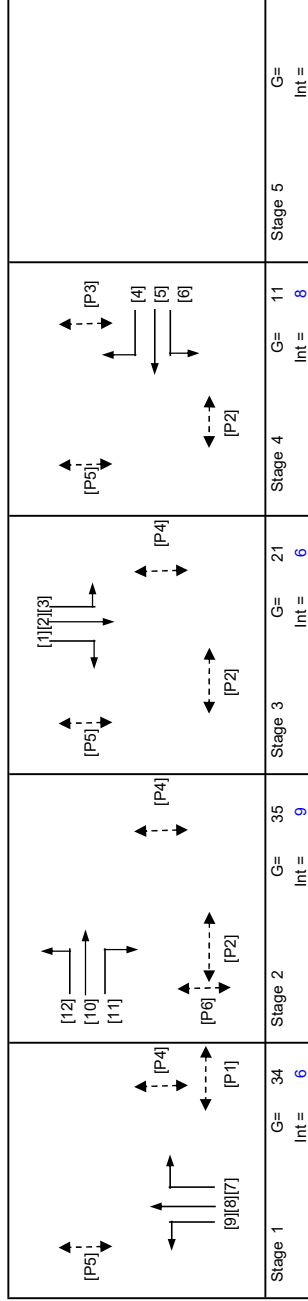
J3 San Shan Road / To Kwa Wan Road

PROJECT NO.: 40848  
 FILENAME: J3\_SSR\_TWKR.xlsx

INITIALS DATE  
 SKL Nov-22  
 SLN Nov-22  
 SLN Nov-22



|                         |                                   |
|-------------------------|-----------------------------------|
| No. of stages per cycle | N = 4                             |
| Cycle time              | C = 130 sec                       |
| Sum(y)                  | 0.461                             |
| Loss time               | Y = 25 sec                        |
| Total Flow              | L = 2750 pcu                      |
| Co                      | = (1.5*L+5)/(1-Y) = 78.9 sec      |
| Cm                      | = L/(1-Y) = 46.4 sec              |
| Yult                    | = 0.713                           |
| R.C.ult                 | = (Yult-Y)*100% = 54.5 %          |
| Cp                      | = 0.9*L/(0.9-Y) = 51.3 sec        |
| Ymax                    | = 1-L/C = 0.808                   |
| <b>R.C.(C)</b>          | <b>= (0.9*Ymax-Y)*100% = 58 %</b> |



| Stage | Width (m) | Green Time Required SG | Green Time Required FG | Delay | Green Time Provided SG | Green Time Provided FG |
|-------|-----------|------------------------|------------------------|-------|------------------------|------------------------|
| 1     | 9.1       | 5                      | 9                      |       | 31                     | 9                      |
| 2,3,4 | 13.7      | 8                      | 15                     |       | 75                     | 15                     |
| 5     | 7.2       | 5                      | 7                      |       | 12                     | 7                      |
| 1,2,3 | 10.2      | 5                      | 9                      |       | 102                    | 9                      |
| 1,3,4 | 9.3       | 5                      | 9                      |       | 77                     | 9                      |
| 2     | 6.8       | 5                      | 8                      |       | 36                     | 8                      |

| Move-ment | Stage | Lane Width (m) | No. of lane | Radius (m) | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total Flow pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|----------------|-------------|------------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|-------------------------|-------------------------|
| 1         | 3     | 3.00           | 1           | 30         |   |   | 2055                     |                     | 158                     | 158                  | 158              | 1.00                           | 1957            |               |                     |             |                    |            | 1957                   | 0.081                   | 0.094 | 25        | 18    | 22               | 0.571         | 24                     | 55                      |                         |
| 2         | 3     | 3.00           | 2           |            |   | N | 4110                     | 388                 | 388                     | 388                  | 0.00             | 4110                           |                 |               |                     |             |                    |            | 4110                   | 0.094                   | 0.094 |           | 22    | 22               | 0.571         | 33                     | 48                      |                         |
| 2,3       | 3     | 4.50           | 1           | 10         |   |   | 2065                     | 137                 | 37                      | 174                  | 0.79             | 1847                           |                 |               |                     |             |                    |            | 1847                   | 0.094                   | 0.094 |           | 21    | 22               | 0.571         | 30                     | 52                      |                         |
| 4         | 4     | 3.40           | 1           | 24         |   |   | 2095                     |                     | 107                     | 107                  | 1.00             | 1972                           |                 |               |                     |             |                    |            | 1972                   | 0.054                   | 0.054 |           | 12    | 12               | 0.571         | 18                     | 62                      |                         |
| 4,5,6     | 4     | 3.40           | 1           | 16         |   | N | 2095                     | 32                  | 19                      | 54                   | 0.82             | 1946                           |                 |               |                     |             |                    |            | 1946                   | 0.054                   | 0.054 |           | 12    | 12               | 0.571         | 18                     | 62                      |                         |
| 6         | 4     | 3.40           | 1           | 10         |   |   | 1955                     | 92                  | 92                      | 92                   | 1.00             | 1700                           |                 |               |                     |             |                    |            | 1700                   | 0.054                   | 0.054 |           | 12    | 12               | 0.571         | 18                     | 64                      |                         |
| 7,8       | 1     | 3.00           | 1           | 25         |   |   | 2055                     |                     | 170                     | 139                  | 0.45             | 2001                           |                 |               |                     |             |                    |            | 2001                   | 0.154                   | 0.154 |           | 35    | 35               | 0.571         | 48                     | 41                      |                         |
| 8         | 1     | 3.00           | 2           |            |   | N | 4110                     | 633                 | 633                     | 633                  | 0.00             | 4110                           |                 |               |                     |             |                    |            | 4110                   | 0.154                   | 0.154 |           | 35    | 35               | 0.571         | 48                     | 39                      |                         |
| 8,9       | 1     | 3.00           | 1           | 10         |   |   | 1915                     | 73                  | 211                     | 284                  | 0.26             | 1844                           |                 |               |                     |             |                    |            | 1844                   | 0.154                   | 0.154 |           | 35    | 35               | 0.571         | 42                     | 41                      |                         |
| 10        | 2     | 3.00           | 1           | 24         |   |   | 2055                     |                     | 118                     | 118                  | 1.00             | 1934                           |                 |               |                     |             |                    |            | 1934                   | 0.061                   | 0.061 |           | 14    | 36               | 0.571         | 18                     | 60                      |                         |
| 10,11     | 2     | 3.00           | 1           | 16         |   | N | 2055                     | 45                  | 74                      | 119                  | 0.62             | 1942                           |                 |               |                     |             |                    |            | 1942                   | 0.061                   | 0.061 |           | 14    | 36               | 0.571         | 18                     | 60                      |                         |
| 11,12     | 2     | 3.00           | 1           | 10         |   |   | 1915                     | 263                 | 0                       | 263                  | 1.00             | 1665                           |                 |               |                     |             |                    |            | 1665                   | 0.158                   | 0.158 |           | 36    | 36               | 0.571         | 36                     | 41                      |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m

|  |  |   |                  |              |      |
|--|--|---|------------------|--------------|------|
| <b>LLA CONSULTANCY LIMITED</b>   |  | <b>PRIORITY JUNCTION CALCULATION</b>  |                  | INITIALS     | DATE |
| Proposed Development at 33 Sheung Heung Road, Kowloon  |  | PROJECT NO.:  | 40848            | PREPARED BY: | SKL  |
| J4 Ha Heung Road / Lok Shan Road   |  | FILENAME :  | J4_HH_J4_HHR_LSR | CHECKED BY:  | SLN  |
|  |  | REFERENCE NO.:  |                  | REVIEWED BY: | SLN  |
|  |  | <p>NOTES : ( GEOMETRIC INPUT DATA )</p> <ul style="list-style-type: none"> <li>W = MAJOR ROAD WIDTH</li> <li>W cr = CENTRAL RESERVE WIDTH</li> <li>W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a</li> <li>W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c</li> <li>W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b</li> <li>VI b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a</li> <li>Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a</li> <li>Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</li> <li>Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b</li> <li>X a = STREAM-SPECIFIC (RIGHT TURN FROM A)</li> <li>X b = STREAM-SPECIFIC (RIGHT TURN FROM B)</li> <li>Z b = STREAM-SPECIFIC (LEFT TURN FROM B)</li> <li>M b = STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE) (1-0.0345W)</li> <li>Y = RATIO OF FLOW TO CAPACITY IN STREAM b-a</li> <li>r b-a =</li> </ul> |                  |              |      |
| <p><b>GEOMETRIC DETAILS:</b></p> <p>GENERAL</p> <p>W = 7.30 (metres)</p> <p>W cr = 0 (metres)</p> <p>Y = 0.74815</p> <p>MAJOR ROAD (ARM A)</p> <p>W a-d = 0.00 (metres)</p> <p>Vr a-d = 0 (metres)</p> <p>q a-b = 87 (pcu/hr)</p> <p>q a-c = 218 (pcu/hr)</p> <p>q a-d = 0 (pcu/hr)</p> <p>MINOR ROAD (ARM B)</p> <p>W b-a = (metres)</p> <p>W b-c = (metres)</p> <p>VI b-a = (metres)</p> <p>Vr b-a = (metres)</p> <p>Vr b-c = (metres)</p> <p>q b-a = 0 (pcu/hr)</p> <p>q b-c = 0 (pcu/hr)</p> <p>q b-d = 0 (pcu/hr)</p> |  | <p><b>GEOMETRIC FACTORS :</b></p> <p>X b = 0.533</p> <p>X c = 0.586</p> <p>Z b = 0.586</p> <p>M b = 0.533</p> <p>X a = 0.586</p> <p>X d = 0.924</p> <p>Z d = 0.586</p> <p>M d = 0.539</p> <p><b>PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :</b></p> <p>r b-a = 0</p> <p>qI b-d = 0 (pcu/hr)</p> <p>q r b-d = 0 (pcu/hr)</p> <p><b>CAPACITY OF MOVEMENT :</b></p> <p>Q b-a = 263 (pcu/hr)</p> <p>Q b-c = 396 (pcu/hr)</p> <p>Q c-b = 388 (pcu/hr)</p> <p>QI b-d = 298 (pcu/hr)</p> <p>Q r b-d = 298 (pcu/hr)</p> <p>TOTAL FLOW = 629.5 (PCU/HR)</p>   |                  |              |      |
|  |  | <p><b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b></p> <p>DFC b-a = 0.0000</p> <p>DFC b-c = 0.0000</p> <p>DFC c-b = 0.0000</p> <p>DFCI b-d = 0.0000</p> <p>DFCr b-d = 0.0000</p> <p>DFC d-c = 0.3257</p> <p>DFC d-a = 0.0000</p> <p>DFC a-d = 0.0000</p> <p>DFCI d-b = 0.3143</p> <p>DFCr d-b = 0.0933</p> <p><b>CRITICAL DFC = 0.33</b></p>  |                  |              |      |

|  |  |  |                  |              |      |
|--|--|--|------------------|--------------|------|
| <b>LLA CONSULTANCY LIMITED</b>   |  | <b>PRIORITY JUNCTION CALCULATION</b>   |                  | INITIALS     | DATE |
| Proposed Development at 33 Sheung Heung Road, Kowloon  |  | PROJECT NO.:   | 40848            | PREPARED BY: | SKL  |
| J4 Ha Heung Road / Lok Shan Road   |  | FILENAME :   | J4_HH_J4_HHR_LSR | CHECKED BY:  | SLN  |
|  |  | REFERENCE NO.:   |                  | REVIEWED BY: | SLN  |
|  |  | <p>NOTES : ( GEOMETRIC INPUT DATA )</p> <p>W = MAJOR ROAD WIDTH</p> <p>W cr = CENTRAL RESERVE WIDTH</p> <p>W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a</p> <p>W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c</p> <p>W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b</p> <p>VI b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a</p> <p>Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a</p> <p>Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</p> <p>Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b</p> <p>X a = STREAM-SPECIFIC (RIGHT TURN FROM A)</p> <p>X b = STREAM-SPECIFIC (RIGHT TURN FROM B)</p> <p>Z b = STREAM-SPECIFIC (LEFT TURN FROM B)</p> <p>M b = STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE)</p> <p>Y = (1-0.0345W)</p> <p>r b-a = RATIO OF FLOW TO CAPACITY IN STREAM b-a</p> |                  |              |      |
| <p><b>GEOMETRIC DETAILS:</b></p> <p>GENERAL</p> <p>W = 7.30 (metres)</p> <p>W cr = 0 (metres)</p> <p>Y = 0.74815</p> <p>MAJOR ROAD (ARM A)</p> <p>W a-d = 0.00 (metres)</p> <p>Vr a-d = 0 (metres)</p> <p>q a-b = 96 (pcu/hr)</p> <p>q a-c = 225 (pcu/hr)</p> <p>q a-d = 0 (pcu/hr)</p> <p>MINOR ROAD (ARM B)</p> <p>W b-a = (metres)</p> <p>W b-c = (metres)</p> <p>VI b-a = (metres)</p> <p>Vr b-a = (metres)</p> <p>Vr b-c = (metres)</p> <p>q b-a = 0 (pcu/hr)</p> <p>q b-c = 0 (pcu/hr)</p> <p>q b-d = 0 (pcu/hr)</p> |  | <p><b>GEOMETRIC FACTORS :</b></p> <p>X b = 0.533</p> <p>X c = 0.586</p> <p>Z b = 0.586</p> <p>M b = 0.533</p> <p>PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :</p> <p>r b-a = 0</p> <p>qI b-d = 0 (pcu/hr)</p> <p>q r b-d = 0 (pcu/hr)</p> <p><b>CAPACITY OF MOVEMENT :</b></p> <p>Q b-a = 251 (pcu/hr)</p> <p>Q b-c = 395 (pcu/hr)</p> <p>Q c-b = 385 (pcu/hr)</p> <p>QI b-d = 296 (pcu/hr)</p> <p>Q r b-d = 296 (pcu/hr)</p> <p>TOTAL FLOW = 717.5 (PCU/HR)</p>   |                  |              |      |
|  |  | <p><b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b></p> <p>DFC b-a = 0.0000</p> <p>DFC b-c = 0.0000</p> <p>DFC c-b = 0.0000</p> <p>DFCI b-d = 0.0000</p> <p>DFCr b-d = 0.0000</p> <p>DFC d-c = 0.3171</p> <p>DFC d-a = 0.0000</p> <p>DFC a-d = 0.0000</p> <p>DFCI d-b = 0.4789</p> <p>DFCr d-b = 0.1446</p> <p><b>CRITICAL DFC = 0.48</b></p>   |                  |              |      |



|   |  |  |                  |                            |        |
|---|--|--|------------------|----------------------------|--------|
| <b>LLA CONSULTANCY LIMITED</b>  |  | <b>PRIORITY JUNCTION CALCULATION</b>   |                  | INITIALS                   | DATE   |
| Proposed Development at 33 Sheung Heung Road, Kowloon   |  | <b>2030 Design AM</b>  |                  | SKL                        | Nov-22 |
| J4 Ha Heung Road / Lok Shan Road  |  | PROJECT NO.:   | 40848            | PREPARED BY:               | SLN    |
|   |  | FILENAME :   | J4_HH_J4_HHR_LSR | CHECKED BY:                | SLN    |
|   |  | REFERENCE NO.:   |                  | REVIEWED BY:               | SLN    |
|   |  | <p>NOTES : ( GEOMETRIC INPUT DATA )</p> <p>W = MAJOR ROAD WIDTH</p> <p>W cr = CENTRAL RESERVE WIDTH</p> <p>W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a</p> <p>W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c</p> <p>W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b</p> <p>VI b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a</p> <p>Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a</p> <p>Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</p> <p>Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b</p> <p>X a = STREAM-SPECIFIC (RIGHT TURN FROM A)</p> <p>X b = STREAM-SPECIFIC (RIGHT TURN FROM B)</p> <p>Z b = STREAM-SPECIFIC (LEFT TURN FROM B)</p> <p>M b = STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE)</p> <p>Y = (1-0.0345W)</p> <p>r b-a = RATIO OF FLOW TO CAPACITY IN STREAM b-a</p> |                  |                            |        |
| <p><b>GEOMETRIC DETAILS:</b></p> <p>GENERAL</p> <p>W = 7.30 (metres)</p> <p>W cr = 0 (metres)</p> <p>Y = 0.74815</p> <p>MAJOR ROAD (ARM A)</p> <p>W a-d = 0.00 (metres)</p> <p>Vr a-d = 0 (metres)</p> <p>q a-b = 87 (pcu/hr)</p> <p>q a-c = 218 (pcu/hr)</p> <p>q a-d = 0 (pcu/hr)</p> <p>MINOR ROAD (ARM B)</p> <p>W b-a = 5.00 (metres)</p> <p>W b-c = 0.00 (metres)</p> <p>VI b-a = 16 (metres)</p> <p>Vr b-a = 0 (metres)</p> <p>Vr b-c = 0 (metres)</p> <p>q b-a = 0 (pcu/hr)</p> <p>q b-c = 0 (pcu/hr)</p> <p>q b-d = 0 (pcu/hr)</p> |  | <p><b>GEOMETRIC FACTORS :</b></p> <p>X b = 0.533</p> <p>X c = 0.586</p> <p>Z b = 0.586</p> <p>M b = 0.533</p> <p>PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :</p> <p>r b-a = 0</p> <p>qI b-d = 0 (pcu/hr)</p> <p>q r b-d = 0 (pcu/hr)</p> <p>CAPACITY OF MOVEMENT :</p> <p>Q b-a = 263 (pcu/hr)</p> <p>Q b-c = 396 (pcu/hr)</p> <p>Q c-b = 388 (pcu/hr)</p> <p>QI b-d = 298 (pcu/hr)</p> <p>Q r b-d = 298 (pcu/hr)</p> <p>TOTAL FLOW = 632.5 (PCU/HR)</p>  |                  |                            |        |
|   |  | <p><b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b></p> <p>DFC b-a = 0.0000</p> <p>DFC b-c = 0.0000</p> <p>DFC c-b = 0.0000</p> <p>DFCI b-d = 0.0000</p> <p>DFC d-c = 0.3312</p> <p>DFC d-a = 0.0000</p> <p>DFC a-d = 0.0000</p> <p>DFCI d-b = 0.3156</p> <p>DFCr d-b = 0.0926</p>  |                  | <b>CRITICAL DFC = 0.33</b> |        |

|   |  |   |                  |              |      |
|---|--|---|------------------|--------------|------|
| <b>LLA CONSULTANCY LIMITED</b>  |  | <b>PRIORITY JUNCTION CALCULATION</b>  |                  | INITIALS     | DATE |
| Proposed Development at 33 Sheung Heung Road, Kowloon   |  | PROJECT NO.:  | 40848            | PREPARED BY: | SKL  |
| J4 Ha Heung Road / Lok Shan Road  |  | FILENAME :  | J4_HH_J4_HHR_LSR | CHECKED BY:  | SLN  |
|   |  | REFERENCE NO.:  |                  | REVIEWED BY: | SLN  |
|   |  | <p>NOTES : ( GEOMETRIC INPUT DATA )</p> <ul style="list-style-type: none"> <li>W = MAJOR ROAD WIDTH</li> <li>W cr = CENTRAL RESERVE WIDTH</li> <li>W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a</li> <li>W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c</li> <li>W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b</li> <li>VI b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a</li> <li>VI b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a</li> <li>VI b-d = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</li> <li>Vr b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a</li> <li>Vr b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c</li> <li>Vr c-b = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b</li> <li>X a = STREAM-SPECIFIC (RIGHT TURN FROM A)</li> <li>X b = STREAM-SPECIFIC (RIGHT TURN FROM B)</li> <li>Z b = STREAM-SPECIFIC (LEFT TURN FROM B)</li> <li>M b = STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE) (1-0.0345W)</li> <li>Y = RATIO OF FLOW TO CAPACITY IN STREAM b-a</li> <li>r b-a =</li> </ul> |                  |              |      |
| <p><b>GEOMETRIC DETAILS:</b></p> <p>GENERAL</p> <p>W = 7.30 (metres)</p> <p>W cr = 0 (metres)</p> <p>Y = 0.74815</p> <p>MAJOR ROAD (ARM A)</p> <p>W a-d = 0.00 (metres)</p> <p>Vr a-d = 0 (metres)</p> <p>q a-b = 96 (pcu/hr)</p> <p>q a-c = 225 (pcu/hr)</p> <p>q a-d = 0 (pcu/hr)</p> <p>MINOR ROAD (ARM B)</p> <p>W b-a = (metres)</p> <p>W b-c = (metres)</p> <p>VI b-a = (metres)</p> <p>Vr b-a = (metres)</p> <p>q b-a = 0 (pcu/hr)</p> <p>q b-c = 0 (pcu/hr)</p> <p>q b-d = 0 (pcu/hr)</p> |  | <p><b>GEOMETRIC FACTORS :</b></p> <p>X b = 0.533</p> <p>X c = 0.586</p> <p>Z b = 0.586</p> <p>M b = 0.533</p> <p>PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :</p> <p>r b-a = 0</p> <p>qI b-d = 0 (pcu/hr)</p> <p>q r b-d = 0 (pcu/hr)</p> <p>CAPACITY OF MOVEMENT :</p> <p>Q b-a = 251 (pcu/hr)</p> <p>Q b-c = 395 (pcu/hr)</p> <p>Q c-b = 385 (pcu/hr)</p> <p>QI b-d = 296 (pcu/hr)</p> <p>Q r b-d = 296 (pcu/hr)</p> <p>TOTAL FLOW = 720.5 (PCU/HR)</p>   |                  |              |      |
|   |  | <p><b>COMPARISON OF DESIGN FLOW TO CAPACITY:</b></p> <p>DFC b-a = 0.0000</p> <p>DFC b-c = 0.0000</p> <p>DFC c-b = 0.0000</p> <p>DFCI b-d = 0.0000</p> <p>DFCI b-d = 0.0000</p> <p>DFC d-c = 0.3226</p> <p>DFC d-a = 0.0000</p> <p>DFC a-d = 0.0000</p> <p>DFCI d-b = 0.4809</p> <p>DFCr d-b = 0.1434</p> <p><b>CRITICAL DFC = 0.48</b></p>  |                  |              |      |

# LLA CONSULTANCY LIMITED

Proposed Development at 33 Sheung Heung Road, Kowloon

J5 Sheung Heung Road / Ma Tau Kok Road

# PRIORITY JUNCTION CALCULATION

INITIALS

DATE

## 2030 Reference AM

PROJECT NO.: 40848

PREPARED BY: SKL

Nov-22

FILENAME: J5\_SHR\_N\_J5\_SHR\_MTV

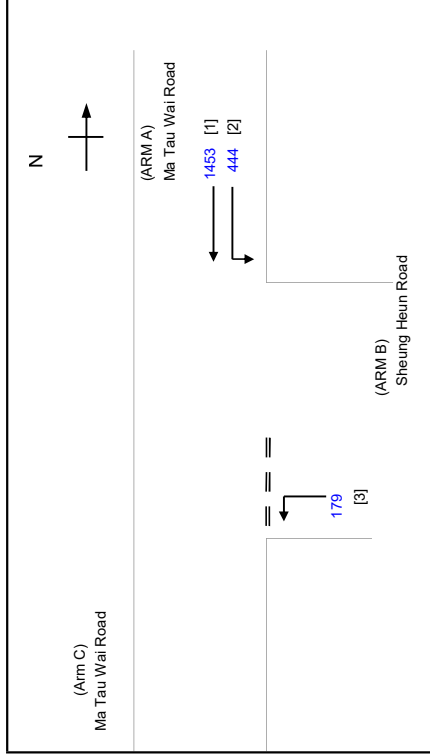
CHECKED BY: SLN

Nov-22

REFERENCE NO.:

REVIEWED BY: SLN

Nov-22



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
 W cr = CENTRAL RESERVE WIDTH  
 W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
 W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
 W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
 V l b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
 V r b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
 V l b-c = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-c  
 V r b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
 D = STREAM-SPECIFIC B-A  
 E = STREAM-SPECIFIC B-C  
 F = STREAM-SPECIFIC C-B  
 Y = (1-0.0345W)

**GEOMETRIC DETAILS:**

|                           |                   |
|---------------------------|-------------------|
| <b>MAJOR ROAD (ARM A)</b> |                   |
| W = 10.50 (metres)        | D = 0.53322       |
| W cr = 0 (metres)         | E = 1.03866       |
| q a-b = 444 (pcu/hr)      | F = 0.58595       |
| q a-c = 1453 (pcu/hr)     | Y = 0.63775       |
| <b>MAJOR ROAD (ARM C)</b> |                   |
| W c-b = 0.00 (metres)     | F for (Qb-ec) = 1 |
| V r c-b = 0 (metres)      |                   |
| q c-a = 0 (pcu/hr)        |                   |
| q c-b = 0 (pcu/hr)        |                   |
| <b>MINOR ROAD (ARM B)</b> |                   |
| W b-a = 0.00 (metres)     |                   |
| W b-c = 5.00 (metres)     |                   |
| V l b-a = 0 (metres)      |                   |
| V r b-a = 0 (metres)      |                   |
| V r b-c = 33 (metres)     |                   |
| q b-a = 0 (pcu/hr)        |                   |
| q b-c = 179 (pcu/hr)      |                   |

**THE CAPACITY OF MOVEMENT :**

|                   |                 |                               |
|-------------------|-----------------|-------------------------------|
| Q b-a = 133       | Q b-c (O) = 381 | DFC b-a = 0.0000              |
| Q b-c = 381       | Q b-c (O) = 381 | DFC b-c = 0.4698              |
| Q c-b = 178       |                 | DFC c-b = 0.0000              |
| Q b-ac = 381      |                 | DFC b-c (share lane) = 0.4698 |
| TOTAL FLOW = 2076 | (PCU/HR)        |                               |

**COMPARISON OF DESIGN FLOW TO CAPACITY:**

**CRITICAL DFC = 0.47**

# LLA CONSULTANCY LIMITED

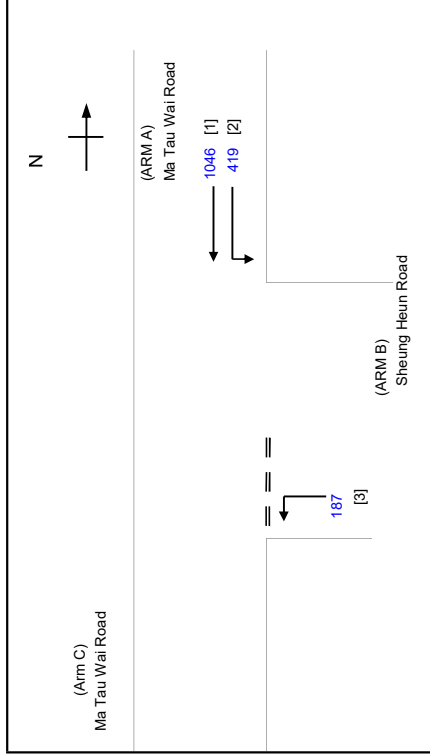
Proposed Development at 33 Sheung Heung Road, Kowloon

J5 Sheung Heung Road / Ma Tau Kok Road

# PRIORITY JUNCTION CALCULATION

## 2030 Reference PM

|                |                    |              |     |          |        |
|----------------|--------------------|--------------|-----|----------|--------|
| PROJECT NO.:   | 40848              | PREPARED BY: | SKL | INITIALS | DATE   |
| FILENAME:      | J5_SHR_NJ5_SHR_MTV | CHECKED BY:  | SLN |          | Nov-22 |
| REFERENCE NO.: |                    | REVIEWED BY: | SLN |          | Nov-22 |



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
W cr = CENTRAL RESERVE WIDTH  
W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
V l b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
V r b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
V l b-c = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-c  
V r b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
D = STREAM-SPECIFIC B-A  
E = STREAM-SPECIFIC B-C  
F = STREAM-SPECIFIC C-B  
Y = (1-0.0345W)

### GEOMETRIC DETAILS:

|                           |                   |
|---------------------------|-------------------|
| <b>MAJOR ROAD (ARM A)</b> |                   |
| W = 10.50 (metres)        | D = 0.53322       |
| W cr = 0 (metres)         | E = 1.03866       |
| q a-b = 419 (pcu/hr)      | F = 0.58595       |
| q a-c = 1046 (pcu/hr)     | Y = 0.63775       |
| <b>MAJOR ROAD (ARM C)</b> |                   |
| W c-b = 0.00 (metres)     | F for (Qb-ec) = 1 |
| V r c-b = 0 (metres)      |                   |
| q c-a = 0 (pcu/hr)        |                   |
| q c-b = 0 (pcu/hr)        |                   |
| <b>MINOR ROAD (ARM B)</b> |                   |
| W b-a = 0.00 (metres)     |                   |
| W b-c = 5.00 (metres)     |                   |
| V l b-a = 0 (metres)      |                   |
| V r b-a = 0 (metres)      |                   |
| V r b-c = 33 (metres)     |                   |
| q b-a = 0 (pcu/hr)        |                   |
| q b-c = 187 (pcu/hr)      |                   |

### GEOMETRIC FACTORS :

|                   |                            |
|-------------------|----------------------------|
| D = 0.53322       | Q b-a = 184                |
| E = 1.03866       | Q b-c = 482                |
| F = 0.58595       | Q c-b = 237                |
| Y = 0.63775       | Q b-ac = 482               |
| F for (Qb-ec) = 1 | TOTAL FLOW = 1652 (PCU/HR) |

### THE CAPACITY OF MOVEMENT :

|                   |                 |
|-------------------|-----------------|
| Q b-a = 184       | Q b-c (O) = 482 |
| Q b-c = 482       |                 |
| Q c-b = 237       |                 |
| Q b-ac = 482      |                 |
| TOTAL FLOW = 1652 | (PCU/HR)        |

### COMPARISON OF DESIGN FLOW TO CAPACITY:

|                        |   |        |
|------------------------|---|--------|
| DFC b-a =              | = | 0.0000 |
| DFC b-c =              | = | 0.3880 |
| DFC c-b =              | = | 0.0000 |
| DFC b-c (share lane) = | = | 0.3880 |

**CRITICAL DFC = 0.39**

# LLA CONSULTANCY LIMITED

Proposed Development at 33 Sheung Heung Road, Kowloon

J5 Sheung Heung Road / Ma Tau Kok Road

# PRIORITY JUNCTION CALCULATION

INITIALS

DATE

## 2030 Design AM

PROJECT NO.: 40848

PREPARED BY: SKL

Nov-22

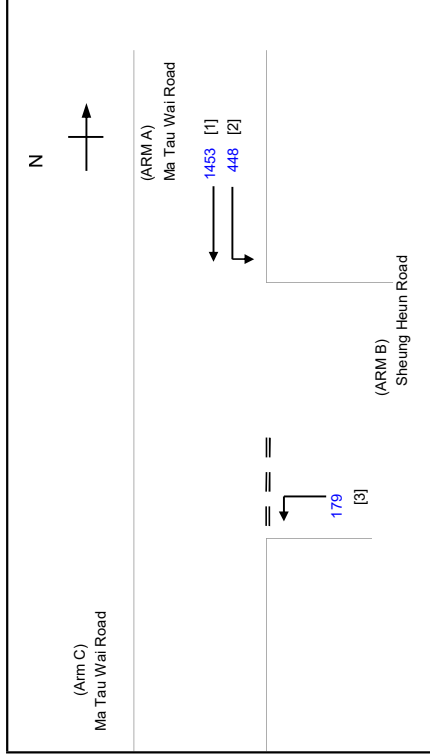
FILENAME: J5\_SHR\_N\_J5\_SHR\_MTV

CHECKED BY: SLN

Nov-22

REFERENCE NO.:

Nov-22



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
 W cr = CENTRAL RESERVE WIDTH  
 W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
 W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
 W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
 V l b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
 V r b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
 V l b-c = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-c  
 V r b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
 D = STREAM-SPECIFIC B-A  
 E = STREAM-SPECIFIC B-C  
 F = STREAM-SPECIFIC C-B  
 Y = (1-0.0345W)

### GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)  
 W = 10.50 (metres)  
 W cr = 0 (metres)  
 q a-b = 448 (pcu/hr)  
 q a-c = 1453 (pcu/hr)

MAJOR ROAD (ARM C)  
 W c-b = 0.00 (metres)  
 V r c-b = 0 (metres)  
 q c-a = 0 (pcu/hr)  
 q c-b = 0 (pcu/hr)

MINOR ROAD (ARM B)  
 W b-a = 0.00 (metres)  
 W b-c = 5.00 (metres)  
 V l b-a = 0 (metres)  
 V r b-a = 0 (metres)  
 V r b-c = 33 (metres)  
 q b-a = 0 (pcu/hr)  
 q b-c = 179 (pcu/hr)

### GEOMETRIC FACTORS :

D = 0.53322  
 E = 1.03866  
 F = 0.58595  
 Y = 0.63775

F for (Qb-ec) = 1

### THE CAPACITY OF MOVEMENT :

Q b-a = 133  
 Q b-c = 381  
 Q c-b = 178  
 Q b-ac = 381

TOTAL FLOW = 2080 (PCU/HR)

### COMPARISON OF DESIGN FLOW TO CAPACITY:

DFC b-a = 0.0000  
 DFC b-c = 0.4698  
 DFC c-b = 0.0000  
 DFC b-c (share lane) = 0.4698

**CRITICAL DFC = 0.47**

# LLA CONSULTANCY LIMITED

Proposed Development at 33 Sheung Heung Road, Kowloon

J5 Sheung Heung Road / Ma Tau Kok Road

# PRIORITY JUNCTION CALCULATION

INITIALS

DATE

## 2030 Design PM

PROJECT NO.: 40848

PREPARED BY: SKL

Nov-22

FILENAME: J5\_SHR\_N\_J5\_SHR\_MTV

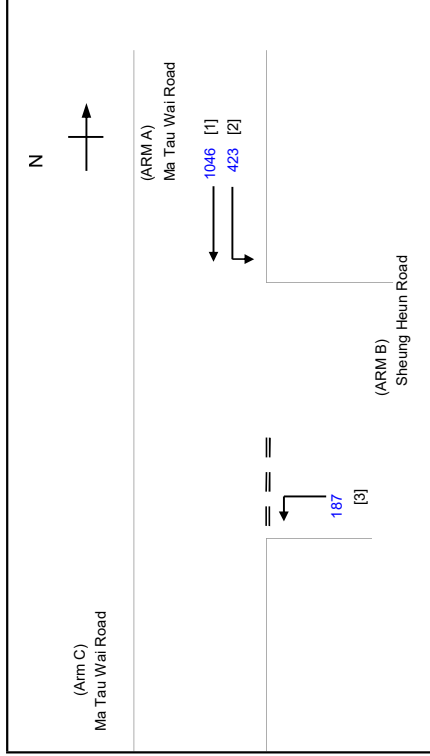
CHECKED BY: SLN

Nov-22

REFERENCE NO.:

SLN

Nov-22



NOTES : ( GEOMETRIC INPUT DATA )

W = MAJOR ROAD WIDTH  
 W cr = CENTRAL RESERVE WIDTH  
 W b-a = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a  
 W b-c = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c  
 W c-b = LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b  
 V l b-a = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a  
 V r b-a = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a  
 V l b-c = VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-c  
 V r b-c = VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c  
 D = STREAM-SPECIFIC B-A  
 E = STREAM-SPECIFIC B-C  
 F = STREAM-SPECIFIC C-B  
 Y = (1-0.0345W)

### GEOMETRIC DETAILS:

MAJOR ROAD (ARM A)  
 W = 10.50 (metres)  
 W cr = 0 (metres)  
 q a-b = 423 (pcu/hr)  
 q a-c = 1046 (pcu/hr)

MAJOR ROAD (ARM C)  
 W c-b = 0.00 (metres)  
 V r c-b = 0 (metres)  
 q c-a = 0 (pcu/hr)  
 q c-b = 0 (pcu/hr)

MINOR ROAD (ARM B)  
 W b-a = 0.00 (metres)  
 W b-c = 5.00 (metres)  
 V l b-a = 0 (metres)  
 V r b-a = 0 (metres)  
 V r b-c = 33 (metres)  
 q b-a = 0 (pcu/hr)  
 q b-c = 187 (pcu/hr)

### GEOMETRIC FACTORS :

D = 0.53322  
 E = 1.03866  
 F = 0.58595  
 Y = 0.63775

F for (Qb-ec) = 1

### THE CAPACITY OF MOVEMENT :

Q b-a = 184  
 Q b-c = 481  
 Q c-b = 237  
 Q b-ac = 481

TOTAL FLOW = 1656 (PCU/HR)

### COMPARISON OF DESIGN FLOW TO CAPACITY:

DFC b-a = 0.0000  
 DFC b-c = 0.3888  
 DFC c-b = 0.0000  
 DFC b-c (share lane) = 0.3888

**CRITICAL DFC = 0.39**

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

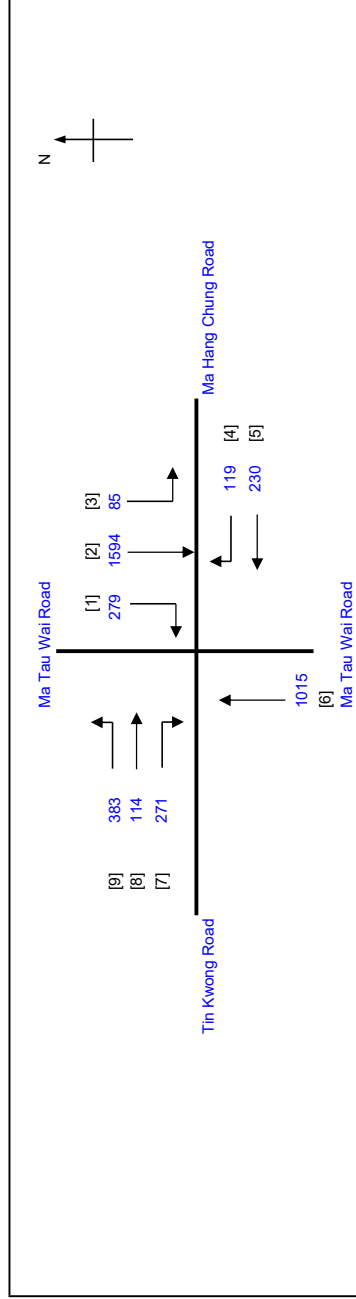
Proposed Development at 33 Sheung Heung Road, Kowloon

## 2030 Reference AM

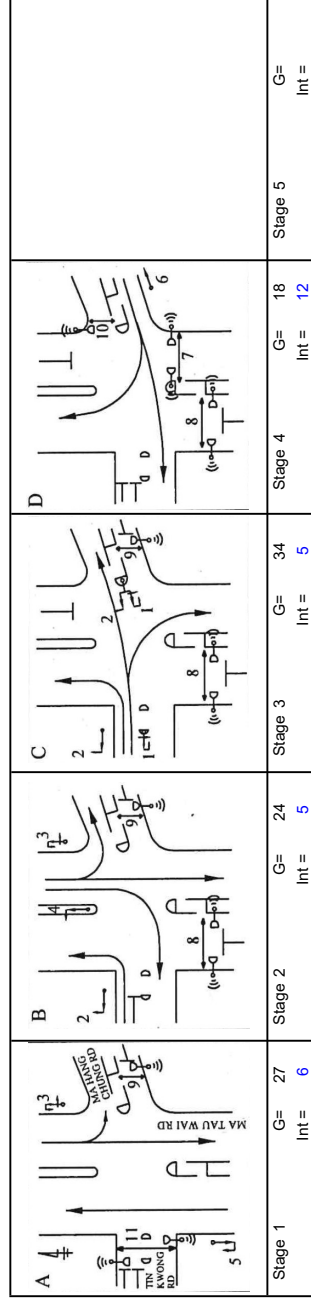
J6 Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road

PROJECT NO.: 40848  
 FILENAME: J6\_MTWTR\_TKR.xlsx  
 Prepared By:  
 Checked By:  
 Reviewed By:

| INITIALS | DATE   |
|----------|--------|
| SKL      | Nov-22 |
| SLN      | Nov-22 |
| SLN      | Nov-22 |



|                         |                                  |
|-------------------------|----------------------------------|
| No. of stages per cycle | N = 4                            |
| Cycle time              | C = 130 sec                      |
| Sum(y)                  | Y = 0.636                        |
| Loss time               | L = 24 sec                       |
| Total Flow              | = 4090 pcu                       |
| Co                      | = (1.5*L+5)/(1-Y)                |
| Cm                      | = L/(1-Y)                        |
| Yult                    | = 0.720                          |
| R.C.ult                 | = (Yult-Y)*100%                  |
| Cp                      | = 0.9*L/(0.9-Y)                  |
| Ymax                    | = 1-L/C                          |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-Y)*100% = 15 %</b> |



| Stage | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|-------|---------------|---------------|-------|------------------------|------------------------|
| 4     | 6             | 13            | 8     | 9                      | 13                     |
| 2,3,4 | 5             | 10            | 3     | 84                     | 10                     |
| 1,2,3 | 5             | 8             | 1     | 91                     | 8                      |
| 4     | 5             | 10            | 8     | 12                     | 10                     |
| 1     | 18            | 7             | 1     | 25                     | 7                      |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement | Total Flow | Proportion of Turning Vehicles | Sat. Flow | Flare Lane m. | Flare Effect | Site Factor | Site Effect | Gradient % | Gradient Effect | Revised Sat. Flow | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|----------|------------|--------------------------------|-----------|---------------|--------------|-------------|-------------|------------|-----------------|-------------------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 2,3       | 1,2   | 3.00          | 1           | 9         |   | N | 1915                     | 85       | 387        | 0.22                           | 1847      |               |              |             |             |            |                 | 1847              | 0.209     | 24    | 35               | 52            | 0.780                  | 60                     | 51                      |
| 2         | 1,2   | 3.00          | 3           | 15        |   | N | 6165                     | 1292     | 1292       | 0.00                           | 6165      |               |              |             |             |            |                 | 6165              | 0.210     |       | 35               | 52            | 0.780                  | 68                     | 43                      |
| 1         | 2     | 3.20          | 1           | 15        |   | N | 2075                     | 279      | 279        | 1.00                           | 1886      |               |              |             |             |            |                 | 1886              | 0.148     |       | 25               | 25            | 0.780                  | 48                     | 61                      |
| 6         | 1     | 3.40          | 3           |           |   | N | 6145                     | 1015     | 1015       | 0.00                           | 6145      |               |              |             |             |            |                 | 6145              | 0.165     |       | 28               | 28            | 0.780                  | 56                     | 48                      |
| 9         | 2,3   | 3.00          | 1           | 5         |   | N | 1915                     | 383      | 383        | 1.00                           | 1473      |               |              |             |             |            |                 | 1473              | 0.260     |       | 43               | 59            | 0.780                  | 54                     | 47                      |
| 7,8       | 3     | 3.00          | 1           | 10        |   | N | 2055                     | 114      | 385        | 0.70                           | 1859      |               |              |             |             |            |                 | 1859              | 0.207     |       | 35               | 35            | 0.780                  | 60                     | 51                      |
| 5         | 4     | 3.65          | 1           | 11        |   | N | 1980                     | 230      | 230        | 0.00                           | 1980      |               |              |             |             |            |                 | 1980              | 0.116     |       | 19               | 19            | 0.780                  | 42                     | 67                      |
| 4         | 4     | 3.65          | 1           | 11        |   | N | 2120                     | 119      | 119        | 1.00                           | 1866      |               |              |             |             |            |                 | 1866              | 0.064     |       | 11               | 19            | 0.780                  | 24                     | 90                      |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

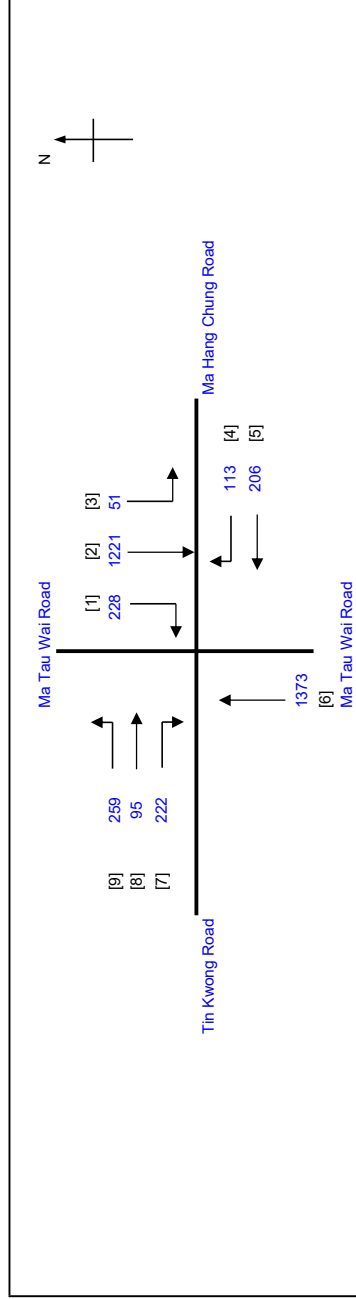
Proposed Development at 33 Sheung Heung Road, Kowloon

## 2030 Reference PM

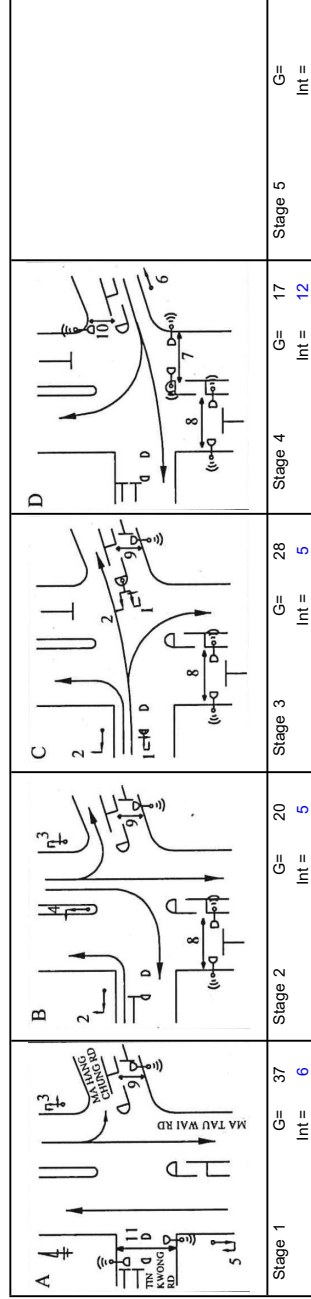
J6 Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road

PROJECT NO.: 40848  
 FILENAME: J6\_MTWTR\_TKR.xlsx  
 Prepared By:  
 Checked By:  
 Reviewed By:

| INITIALS | DATE   |
|----------|--------|
| SKL      | Nov-22 |
| SLN      | Nov-22 |
| SLN      | Nov-22 |



|                         |                                  |
|-------------------------|----------------------------------|
| No. of stages per cycle | N = 4                            |
| Cycle time              | C = 130 sec                      |
| Sum(y)                  | Y = 0.619                        |
| Loss time               | L = 24 sec                       |
| Total Flow              | = 3768 pcu                       |
| Co                      | = (1.5*L+5)/(1-Y) = 107.6 sec    |
| Cm                      | = L/(1-Y) = 63.0 sec             |
| Yult                    | = 0.720                          |
| R.C.ult                 | = (Yult-Y)*100% = 16.4 %         |
| Cp                      | = 0.9*L/(0.9-Y) = 76.8 sec       |
| Ymax                    | = 1-L/C = 0.815                  |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-Y)*100% = 19 %</b> |



| Pedestrian Phase | Stage | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|---------------|---------------|-------|------------------------|------------------------|
| P7               | 4     | 6             | 13            | 8     | 8                      | 13                     |
| P8               | 2,3,4 | 5             | 10            | 3     | 74                     | 10                     |
| P9               | 1,2,3 | 5             | 8             | 1     | 92                     | 8                      |
| P10              | 4     | 5             | 10            | 8     | 11                     | 10                     |
| P11              | 1     | 18            | 7             | 1     | 35                     | 7                      |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement   | Total Flow | Proportion of Turning Vehicles | Sat. Flow | Flare Effect | Site Factor | Site Effect | Gradient % | Gradient Effect | Revised Sat. Flow | Degree of Saturation | g (input) sec | g (required) sec | L sec | Greater y | y    | Revised Sat. Flow | Queue Length (m / lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|------------|------------|--------------------------------|-----------|--------------|-------------|-------------|------------|-----------------|-------------------|----------------------|---------------|------------------|-------|-----------|------|-------------------|-------------------------|-------------------------|
| 2,3       | 1,2   | 3.00          | 1           | 9         |   | N | 1915                     | Left 51    | 295        | 0.17                           | 1861      |              |             |             |            |                 | 1861              | 0.158                | 59            | 27               | 24    | 0.158     | 1861 | 48                | 57                      |                         |
| 2         | 1,2   | 3.00          | 3           | 15        |   | N | 6165                     | Right 977  | 977        | 0.00                           | 6165      |              |             |             |            |                 | 6165              | 0.158                | 59            | 27               | 0.158 | 6165      | 54   | 47                |                         |                         |
| 1         | 2     | 3.20          | 1           | 15        |   | N | 2075                     | Left 228   | 228        | 1.00                           | 1886      |              |             |             |            |                 | 1886              | 0.121                | 21            | 21               | 0.121 | 1886      | 42   | 64                |                         |                         |
| 6         | 1     | 3.40          | 3           | 10        |   | N | 6145                     | Right 1373 | 1373       | 0.00                           | 6145      |              |             |             |            |                 | 6145              | 0.223                | 38            | 38               | 0.223 | 6145      | 68   | 40                |                         |                         |
| 9         | 2,3   | 3.00          | 1           | 5         |   | N | 1915                     | Left 259   | 259        | 1.00                           | 1473      |              |             |             |            |                 | 1473              | 0.176                | 50            | 30               | 0.176 | 1473      | 42   | 57                |                         |                         |
| 7,8       | 3     | 3.00          | 1           | 10        |   | N | 2055                     | Right 95   | 317        | 0.70                           | 1860      |              |             |             |            |                 | 1860              | 0.170                | 29            | 29               | 0.170 | 1860      | 54   | 55                |                         |                         |
| 5         | 4     | 3.65          | 1           | 11        |   | N | 1980                     | Left 206   | 206        | 0.00                           | 1980      |              |             |             |            |                 | 1980              | 0.104                | 18            | 18               | 0.104 | 1980      | 42   | 67                |                         |                         |
| 4         | 4     | 3.65          | 1           | 11        |   | N | 2120                     | Right 113  | 113        | 1.00                           | 1866      |              |             |             |            |                 | 1866              | 0.061                | 18            | 10               | 0.061 | 1866      | 24   | 87                |                         |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE \* 6m



# TRAFFIC SIGNAL CALCULATION

## LLA CONSULTANCY LIMITED

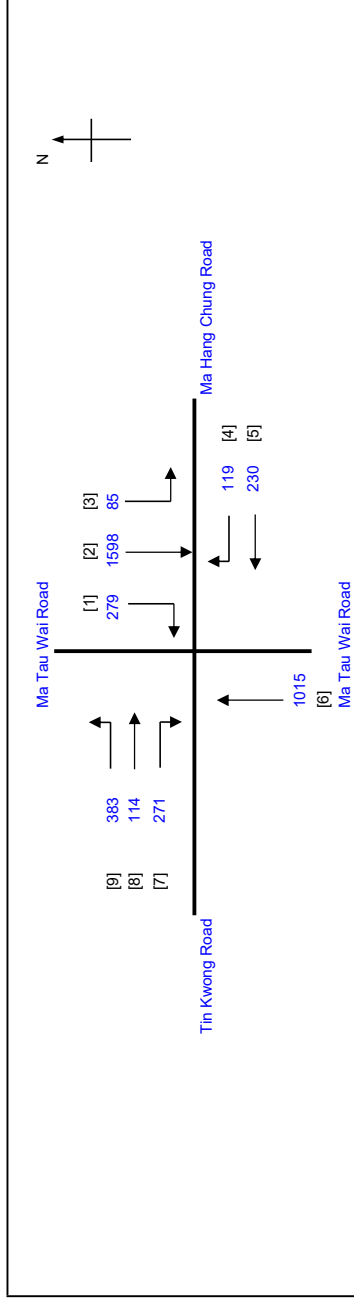
Proposed Development at 33 Sheung Heung Road, Kowloon

### 2030 Design AM

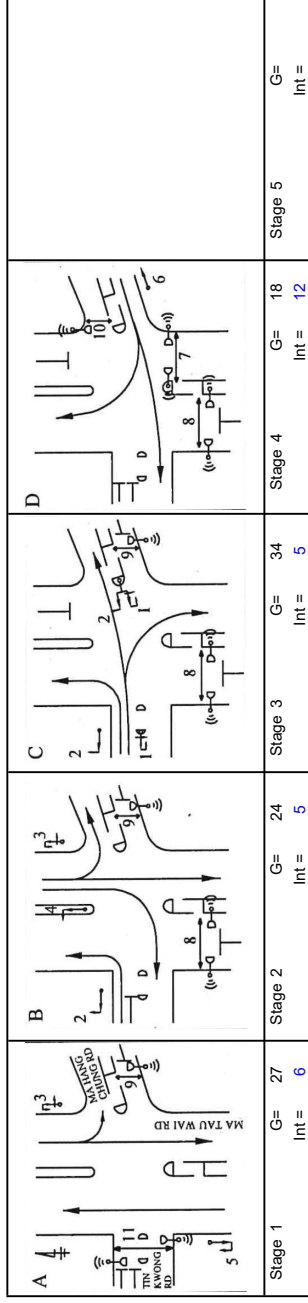
J6 Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road

PROJECT NO.: 40848  
 FILENAME: J6\_MTWTR\_TKR.xlsx  
 Prepared By:  
 Checked By:  
 Reviewed By:

| INITIALS | DATE   |
|----------|--------|
| SKL      | Nov-22 |
| SLN      | Nov-22 |
| SLN      | Nov-22 |



|                         |                                  |
|-------------------------|----------------------------------|
| No. of stages per cycle | N = 4                            |
| Cycle time              | C = 130 sec                      |
| Sum(y)                  | Y = 0.636                        |
| Loss time               | L = 24 sec                       |
| Total Flow              | = 4094 pcu                       |
| Co                      | = (1.5*L+5)/(1-Y)                |
| Cm                      | = L/(1-Y)                        |
| Yult                    | = 0.720                          |
| R.C.ult                 | = (Yult-Y)*100%                  |
| Cp                      | = 0.9*L/(0.9-Y)                  |
| Ymax                    | = 1-L/C                          |
| <b>R.C.(C)</b>          | <b>= 0.9*Ymax-Y)*100% = 15 %</b> |



| Green Time Provided | Green Time Required | Stage | Green Time Required | Green Time Provided |
|---------------------|---------------------|-------|---------------------|---------------------|
| SG                  | FG                  | Delay | SG                  | FG                  |
| 6                   | 13                  | 8     | 6                   | 13                  |
| 5                   | 10                  | 3     | 5                   | 10                  |
| 5                   | 8                   | 1     | 5                   | 8                   |
| 5                   | 10                  | 8     | 5                   | 10                  |
| 18                  | 7                   | 1     | 18                  | 7                   |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement   |             | Total Flow pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|------------|-------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
|           |       |               |             |           |   |   |                          | Left pcu/h | Right pcu/h |                  |                                |                 |               |                     |             |                    |            |                        |                         |       |           |       |                  |               |                        |                        |                         |
| 2,3       | 1,2   | 3.00          | 1           | 9         |   | N | 1915                     | 85         | 303         | 388              | 0.22                           | 1848            |               |                     |             |                    |            | 1848                   | 0.210                   |       | 24        | 35    | 52               | 60            | 0.780                  | 51                     |                         |
| 2         | 1,2   | 3.00          | 3           | 15        |   | N | 6165                     | 1295       | 1295        | 1295             | 0.00                           | 6165            |               |                     |             |                    |            | 6165                   | 0.210                   | 0.148 |           | 35    | 52               | 68            | 0.780                  | 43                     |                         |
| 1         | 2     | 3.20          | 1           | 15        |   | N | 2075                     | 279        | 279         | 279              | 1.00                           | 1886            |               |                     |             |                    |            | 1886                   | 0.148                   | 0.148 |           | 25    | 25               | 48            | 0.780                  | 61                     |                         |
| 6         | 1     | 3.40          | 3           | 10        |   | N | 6145                     | 1015       | 1015        | 1015             | 0.00                           | 6145            |               |                     |             |                    |            | 6145                   | 0.165                   | 0.165 |           | 28    | 28               | 56            | 0.780                  | 48                     |                         |
| 9         | 2,3   | 3.00          | 1           | 5         |   | N | 1915                     | 383        | 114         | 383              | 1.00                           | 1473            |               |                     |             |                    |            | 1473                   | 0.260                   | 0.207 |           | 43    | 59               | 54            | 0.780                  | 47                     |                         |
| 7,8       | 3     | 3.00          | 1           | 10        |   | N | 2055                     | 271        | 271         | 385              | 0.70                           | 1859            |               |                     |             |                    |            | 1859                   | 0.207                   | 0.207 |           | 35    | 35               | 60            | 0.780                  | 51                     |                         |
| 5         | 4     | 3.65          | 1           | 11        |   | N | 1980                     | 230        | 230         | 230              | 0.00                           | 1980            |               |                     |             |                    |            | 1980                   | 0.116                   | 0.116 |           | 19    | 19               | 42            | 0.780                  | 67                     |                         |
| 4         | 4     | 3.65          | 1           | 11        |   | N | 2120                     | 119        | 119         | 119              | 1.00                           | 1866            |               |                     |             |                    |            | 1866                   | 0.064                   | 0.064 |           | 11    | 19               | 24            | 0.780                  | 90                     |                         |

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUEING LENGTH = AVERAGE QUEUE \* 6m

# LLA CONSULTANCY LIMITED

# TRAFFIC SIGNAL CALCULATION

Proposed Development at 33 Sheung Heung Road, Kowloon

## 2030 Design PM

J6 Tin Kwong Road / Ma Tau Wai Road / Pak Tai Street / Ma Hang Chung Road

PROJECT NO.: 40848

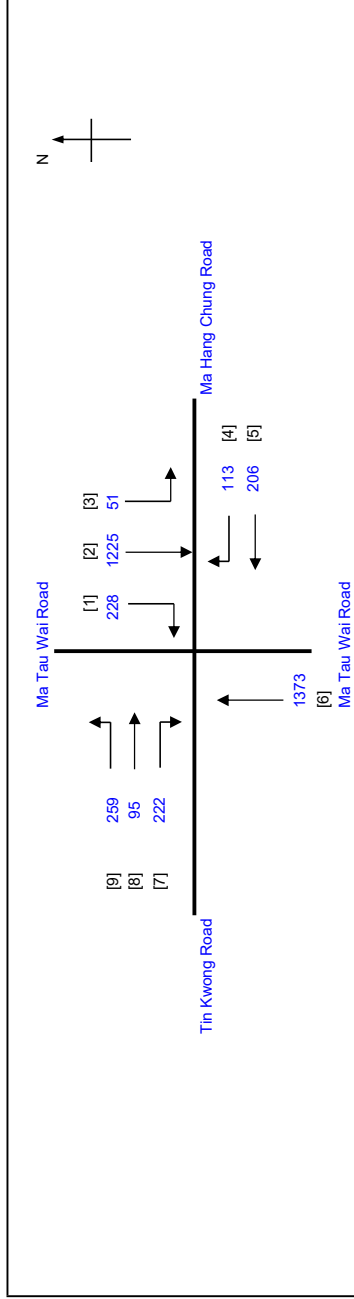
Prepared By: SKL

FILENAME: J6\_MTWTR\_TKR.xlsx

Checked By: SLN

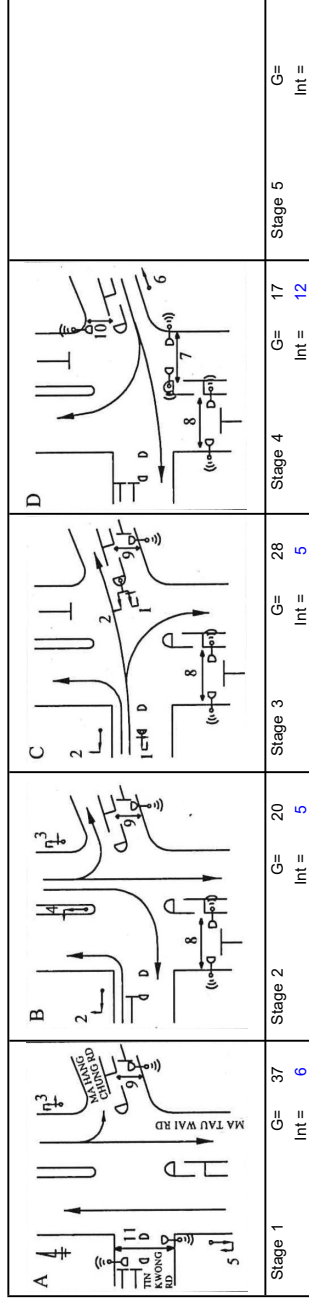
Reviewed By: SLN

DATE: Nov-22



No. of stages per cycle N = 4  
 Cycle time C = 130 sec  
 Sum(y) Y = 0.619  
 Loss time L = 24 sec  
 Total Flow = 3772 pcu  
 Co = (1.5\*L+5)/(1-Y) = 107.6 sec  
 Crm = L/(1-Y) = 63.0 sec  
 Yult = 0.720  
 R.C.ult = (Yult-Y)\*100% = 16.4 %  
 Cp = 0.9\*L/(0.9-Y) = 76.8 sec  
 Ymax = 1-L/C = 0.815

**R.C.(C) = 0.9\*Ymax-Y)\*100% = 19 %**



| Pedestrian Phase | Stage | Green Time SG | Green Time FG | Delay | Green Time Provided SG | Green Time Provided FG |
|------------------|-------|---------------|---------------|-------|------------------------|------------------------|
| P7               | 4     | 6             | 13            | 8     | 8                      | 13                     |
| P8               | 2,3,4 | 5             | 10            | 3     | 74                     | 10                     |
| P9               | 1,2,3 | 5             | 8             | 1     | 92                     | 8                      |
| P10              | 4     | 5             | 10            | 8     | 11                     | 10                     |
| P11              | 1     | 18            | 7             | 1     | 35                     | 7                      |

| Move-ment | Stage | Lane Width m. | No. of lane | Radius m. | O | N | Straight-Ahead Sat. Flow | Movement Left pcu/h | Movement Straight pcu/h | Movement Right pcu/h | Total Flow pcu/h | Proportion of Turning Vehicles | Sat. Flow pcu/h | Flare Lane m. | Flare Effect pcu/hr | Site Factor | Site Effect pcu/hr | Gradient % | Gradient Effect pcu/hr | Revised Sat. Flow pcu/h | y     | Greater y | L sec | g (required) sec | g (input) sec | Degree of Saturation X | Queue Length (m /lane) | Average Delay (seconds) |
|-----------|-------|---------------|-------------|-----------|---|---|--------------------------|---------------------|-------------------------|----------------------|------------------|--------------------------------|-----------------|---------------|---------------------|-------------|--------------------|------------|------------------------|-------------------------|-------|-----------|-------|------------------|---------------|------------------------|------------------------|-------------------------|
| 2,3       | 1,2   | 3.00          | 1           | 9         |   | N | 1915                     | 51                  | 245                     | 980                  | 296              | 0.17                           | 1862            |               |                     |             |                    |            |                        | 1862                    | 0.159 | 0.159     | 24    | 27               | 59            | 0.759                  | 48                     | 57                      |
| 2         | 1,2   | 3.00          | 3           | 15        |   | N | 6165                     |                     | 980                     | 228                  | 980              | 0.00                           | 6165            |               |                     |             |                    |            |                        | 6165                    | 0.159 | 0.121     |       | 27               | 59            | 0.759                  | 54                     | 47                      |
| 1         | 2     | 3.20          | 1           | 15        |   | N | 2075                     |                     |                         |                      | 228              | 1.00                           | 1886            |               |                     |             |                    |            |                        | 1886                    | 0.121 | 0.121     |       | 21               | 21            | 0.759                  | 42                     | 64                      |
| 6         | 1     | 3.40          | 3           | 10        |   | N | 6145                     |                     | 1373                    |                      | 1373             | 0.00                           | 6145            |               |                     |             |                    |            |                        | 6145                    | 0.223 | 0.223     |       | 38               | 38            | 0.759                  | 68                     | 40                      |
| 9         | 2,3   | 3.00          | 1           | 5         |   | N | 1915                     |                     | 259                     |                      | 259              | 1.00                           | 1473            |               |                     |             |                    |            |                        | 1473                    | 0.176 | 0.170     |       | 30               | 50            | 0.759                  | 42                     | 57                      |
| 7,8       | 3     | 3.00          | 1           | 10        |   | N | 2055                     |                     | 95                      |                      | 317              | 0.70                           | 1860            |               |                     |             |                    |            |                        | 1860                    | 0.170 | 0.170     |       | 29               | 29            | 0.759                  | 54                     | 55                      |
| 5         | 4     | 3.65          | 1           | 11        |   | N | 1980                     |                     | 206                     |                      | 206              | 0.00                           | 1980            |               |                     |             |                    |            |                        | 1980                    | 0.104 | 0.104     |       | 18               | 18            | 0.759                  | 42                     | 67                      |
| 4         | 4     | 3.65          | 1           | 11        |   | N | 2120                     |                     | 113                     |                      | 113              | 1.00                           | 1866            |               |                     |             |                    |            |                        | 1866                    | 0.061 | 0.061     |       | 10               | 18            | 0.759                  | 24                     | 87                      |

NOTE : O - OPPOSING TRAFFIC

N - NEAR SIDE LANE

SG - STEADY GREEN

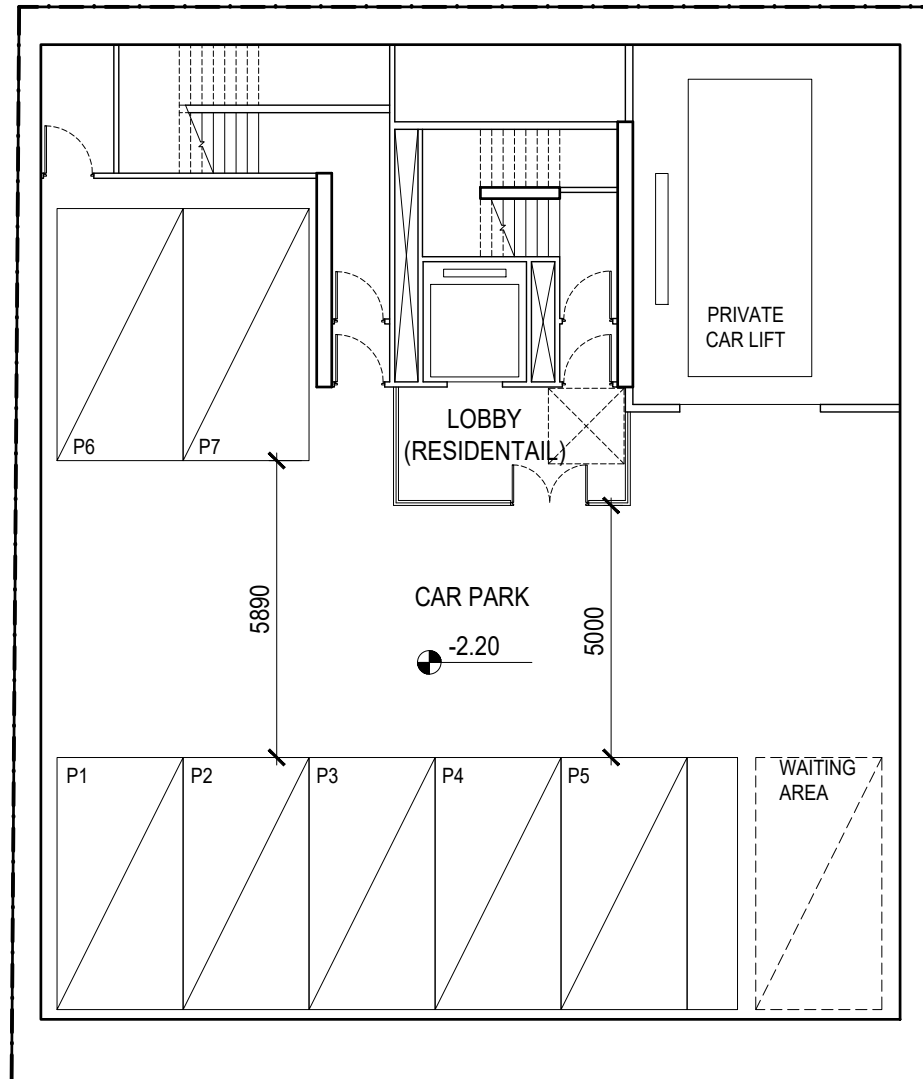
FG - FLASHING GREEN

PEDESTRAIN WALKING SPEED = 1.2m/s

QUEUEING LENGTH = AVERAGE QUEUE \* 6m

## **Appendix C**

### **Proposed Car Park Layout**



PRIVATE PARKING SPACES : 7 NOS.

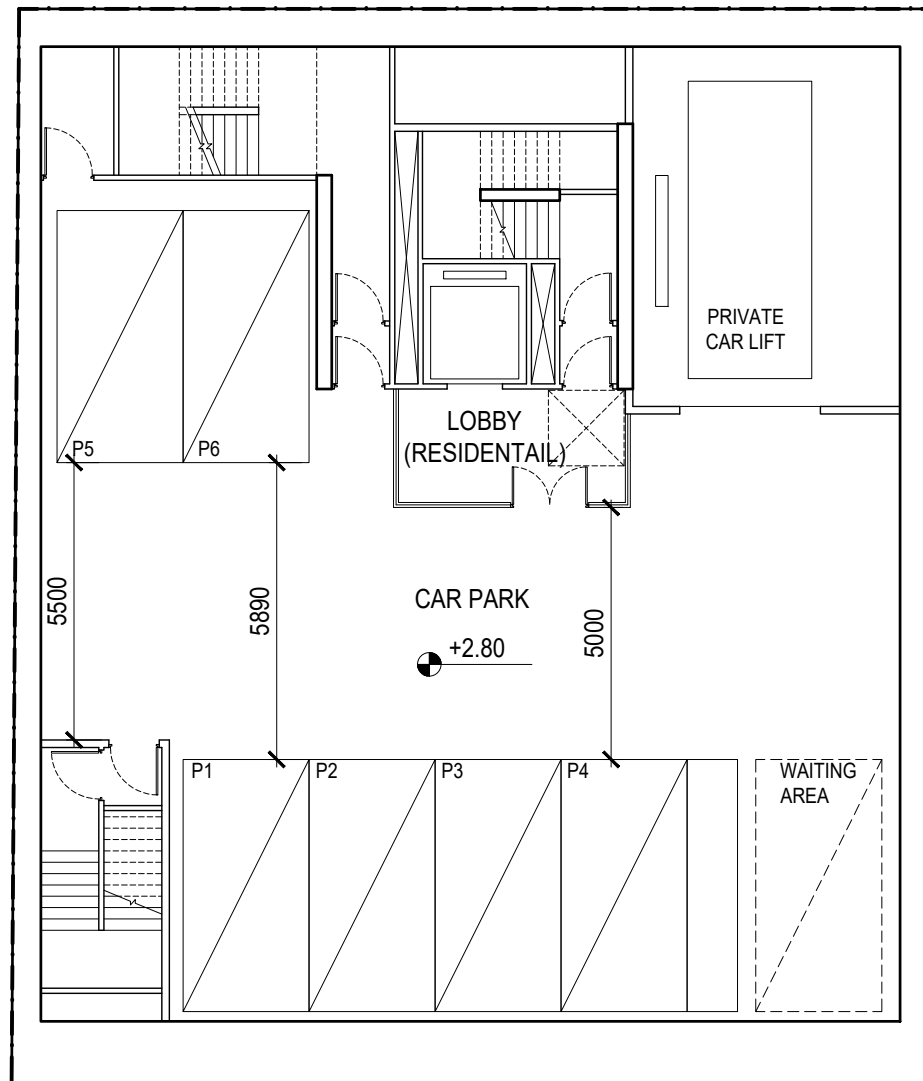
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Drawing No.  
SK001.2

Drawing Title  
BASEMENT 2 LAYOUT PLAN

Scale  
1:150@A3

Plot Date  
20-Dec-22



PRIVATE PARKING SPACES : 6 NOS.

Job Title  
PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON

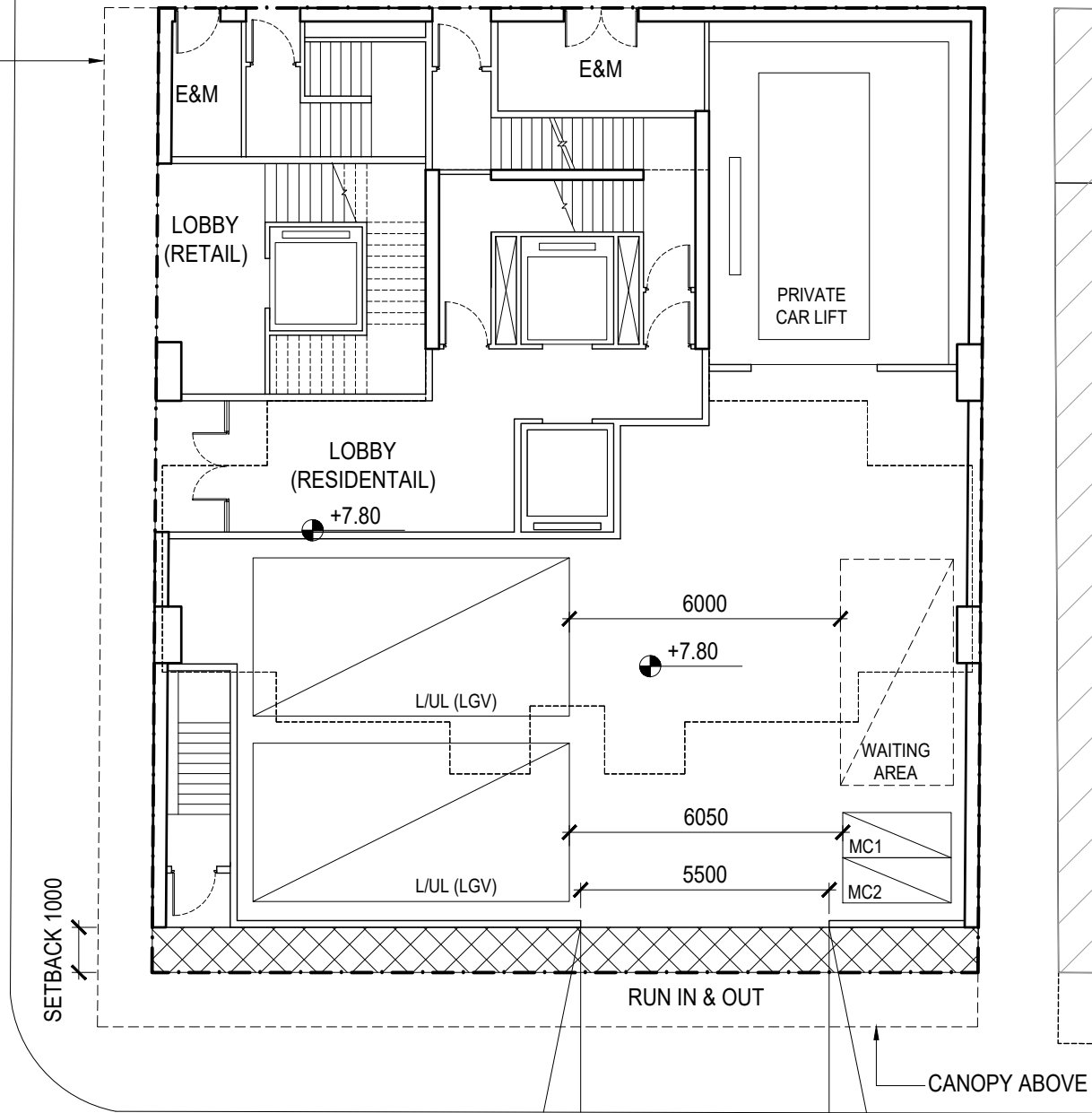
Drawing No.  
SK001.3

Drawing Title  
BASEMENT 1 LAYOUT PLAN

Scale  
1:150@A3

Plot Date  
20-Dec-22

CANOPY ABOVE



LIGHT GOODS VEHICLES: 2 NOS.  
MOTORCYCLE 2 NOS.

Job Title  
PROPOSED DEVELOPMENT AT 33 SHEUNG HEUNG ROAD, KOWLOON

Drawing Title  
GROUND FLOOR LAYOUT PLAN

Drawing No.  
SK001.4

Scale  
1:150@A3

Plot Date  
20-Dec-22