香港特別行政區政府

The Government of the Hong Kong Special Administrative Region

發展局
起動九龍東辦事處
九龍觀塘
海濱道122號

Energizing Kowloon East Office
Development Bureau
No. 122, Hoi Bun Road,
Kwun Tong,
Kowloon

本處檔號 Our reference : ( ) in DEVB/W/EKEO/9-50/2
來函檔號 Your reference :
電話號碼 Tel No.: : 3904 1648
傳真號碼 Fax No.: : 3904 1161

13 March 2020

Clerk to Public Works Subcommittee
Legislative Council Secretariat
Legislative Council Complex
1 Legislative Council Road, Central
Hong Kong
(Attn.: Ms Doris LO)

Dear Ms Lo,

Legislative Council Public Works Subcommittee
Follow-up Actions to Meetings on 30 October and 6 November 2019

At the Public Works Subcommittee meetings on 30 October and 6 November 2019 for the agenda item on "171CD – Revitalization of Tsui Ping River", Members requested for the traffic impact assessment report for the project and cross-sectional drawings of the proposed Tsui Ping River to show the levels of the river bed at present and after completion of the works, and the highest and lowest water levels with installation of the smart water gate. Enclosed please find the relevant report and drawings (Drawing nos. DDP/171CD/0010, 0011 and 0012) for Members' information.

Yours sincerely,

(Edwin WONG)
for Head of Energizing Kowloon East Office

Encls.

c.c. FSTB (Attn.: Mr CHIU Kwong-kin)
DSD (Attn.: Mr Thomas WONG Hip-lik)

渠務署
Drainage Services Department

Agreement No. CE 58/2017 (DS)

Energizing Kowloon East - Revitalization of Tsui Ping River - Design and Construction

Final Report on Traffic Review and Traffic Management Plan

December 2019

Disclaimer for disclosure of Final Report on Traffic Review and Traffic Management Plan

The Final Report on Traffic Review and Traffic Management Plan was prepared solely for "Agreement No. CE 58/2017(DS) Energizing Kowloon East – Revitalization of Tsui Ping River – Design and Construction" and shall not be quoted to or relied upon by any person without the HKSAR Government's written consent.

Table of Contents

List of Appendices

List of Tables

List of Figures

.

1. INTRODUCTION

1.1 Project Scope

1.1.1 The Government has adopted a visionary, coordinated and integrated approach to transform Kowloon East (KE) into an attractive additional core business district (CBD2) to support Hong Kong's economic development. A multi-disciplinary Energizing Kowloon East Office (EKEO) was set up in the Development Bureau (DEVB) in 2012 to steer and oversee the transformation of Kowloon East. To achieve the policy objective, EKEO formulated an evolving Energizing Kowloon East Conceptual Master Plan (CMP) that highlights the latest initiatives. The latest Conceptual Master Plan version 5.0 (CMP 5.0) was published in November 2016 and has five focuses, namely walkability and mobility, green CBD, smart city, socio-economic vibrancy and the "Spirit of Creation".

1.1.2 One of the 10 Main Tasks in CMP 5.0 is to develop environmental, ecological and landscape proposals to transform the King Yip Street nullah into Tsui Ping River without compromising its storm water discharge function and capacity. Aligned with the policy objective, this project will enhance the image of the district, improve connectivity and the public space, hence acting as a catalyst to the transformation of KE into an attractive CBD2.

1.1.3 The King Yip Street nullah was constructed more than 50 years ago. It is located near Kwun Tong Promenade and next to Laguna Park and the former Shing Yip Street Rest Garden.

1.1.4 Atkins China Ltd (ACL) was commissioned by DSD in December 2017 to undertake the Project "Agreement No. CE 58/2017 (DS) Energizing Kowloon East - Revitalization of Tsui Ping River – Design and Construction" (hereinafter called the Project).

1.1.5 For the purpose of this Project, the scope comprises the transformation of about one kilometre of the existing nullah between Kai Lim Road and its estuary at the harbour, alongside King Yip Street, King Yip Lane and Tsui Ping Road into Tsui Ping River with environmental, ecological and landscape upgrading with associated enhancement of drainage capacity. The river is divided into four zones by existing roads of Kwun Tong Road, Shing Yip Street and Wai Yip Street, and the sections are identified as Zones A to D from the upstream towards the downstream.

1.1.6 To manifest the water body of the revitalized river, the water level of the river is to be regulated. This is achieved through a number of measures, that includes installation of a water gate and supplementing scenic water from two stormwater storage tanks at the upstream part of the drainage catchment and by seawater pumping system.

1.1.7 The Project also includes the associated works to match with the assignment theme of enhancing connectivity and walkability by means of provision of walkways, bridges and landscaped decks at the river. The layout plan of the Assignment is shown in **Figure 1.1**.

1.1.8 The objectives of this Project are to implement the works under the Project as described above from adoptive review, investigations, impact assessments, public

consultation, detailed design, tendering, construction to the commissioning of the works in accordance with an agreed programme.

1.2 Objectives of the Report

1.2.1 As part of the Project, as required under Clause 6.2.14 and 6.14 of the Brief, a Traffic Impact Assessment (TIA) Report prepared under Agreement No. CE 79/2014 (DS) in the Investigation Phase of the Project shall be reviewed, a Report on Traffic Review and Traffic Management Pan (hereafter called the Report) is required. The objectives of the Report are:

- to identify and describe the elements of the community and the existing traffic characteristics likely to be affected by the Project, and/or likely to cause adverse impacts upon the Project, including both the existing and proposed road network during the construction of the Project and also during the management/maintenance/operation of the Project;
- to introduce a structured and systematic approach to identifying, assessing and mitigating potential adverse traffic impacts which might arise from the Project during the construction and subsequent management/maintenance stages;
- to propose suitable temporary traffic diversion schemes and traffic arrangement schemes during construction to accommodate existing traffic flow at the time of construction and subsequent management/maintenance of the sewerage/drainage works of the Project so that any adverse traffic impacts can be kept to a minimum and mitigated to an acceptable level;
- to identify, assess and specify methods, measures and standards to be included in the detailed design and construction of the Project which are necessary to mitigate these impacts and reduce them to an acceptable levels;
- to demonstrate that with all mitigation measures introduced, the Project will have no detrimental traffic impacts within the project site and to the areas adjacent to the Project;
- to assess the long-term traffic impacts on the road network arising from the Project during operation and maintenance stage, and propose associated mitigation measures; and
- to enable an agreement in principle to be reached among relevant government departments on the “area traffic management measures” and “traffic diversion schedules” during construction and subsequent management/maintenance stages of the Project. The final Report on Traffic Review and Traffic Management Plan will then serve as guidelines for making detailed proposals by the Director’s Representative and contractors in the construction and subsequent management/maintenance stages.

1.2.2 **Figure 1.1** shows the general layout of the proposed Project works.

1.3 Structure of the Report

1.3.1 The report is organized as follows:

- **Section 1** provides a description of the Project scope, purpose of this report, and includes a description of the work programme for the Project;
- **Section 2** The Project, presents the proposed facilities;
- **Section 3** Existing Traffic Context, describes the existing traffic condition in the vicinity;
- **Section 4** Traffic Forecast, explains the methodology of traffic forecasting;
- **Section 5** Construction Traffic Impact Assessment (CTIA), presents the results of the CTIA at the adopted design years, and recommends any improvement measures to alleviate the foreseeable traffic problem, if considered necessary;
- **Section 6** Operation Traffic Impact Assessment, presents the result of TIA at the adopted design years, and recommends any improvement measures to alleviate the foreseeable traffic problem, if considered necessary
- **Section 7** Pedestrian Traffic Enhancement Measures, present the proposed signalized pedestrian crossings across Wai Fat Road, Kwun Tong By-pass slip roads, proposed permanent removal of footbridge ramp of Footbridge KF90 and provision of a landscape walkway FB06; and
- **Section 8** Summary and Conclusion, summarizes the findings of the study and presents the conclusion accordingly.

2. THE PROJECT

2.1 Site Location

2.1.1 The Project, transforming King Yip Street nullah into Tsui Ping River, and the proposed study area of the Report are indicated in **Figure 1.1**.

2.1.2 The concerned section of King Yip Street nullah is located between Kai Lim Road and the seafront adjacent to Kwun Tong Preliminary Treatment Works (KTPTW).

2.2 Construction Schedule

2.2.1 The construction works are planned to be commenced in the fourth quarter of 2019 and for completion in stages by 2023. Therefore, year 2023 would be adopted for assessment during construction as a conservative approach.

2.2.2 The proposed construction works and programme are listed in below,

Section between Kwun Tong Road and Kai Lim Road (namely Zone A)

- Construction of new ramp for footbridge (**Figure 7.5** refers);
- Removal of existing ramp and foundations of footbridge KF90; and
- Revitalization of the existing nullah, stabilization works of existing nullah walls & enhancement works for improving walkability and connectivity.

Section between Shing Yip Street and Kwun Tong Road (namely Zone B)

- Revitalization of the existing nullah, stabilization works of existing nullah walls & enhancement works for improving walkability and connectivity.

Section between Wai Yip Street and Shing Yip Street (namely Zone C)

- Revitalization of the existing nullah, water supplement system and seawater circulation system, stabilization works of existing nullah walls, Enhancement works for improving walkability and connectivity & landscaping, environmental and ecological enhancement and amenity works;
- Construction of proposed signalized pedestrian crossing across Wai Fat Road (**Figure 7.1** refers);
- Construction of proposed cautionary crossings at King Yip Street (**Figure 7.6** & **Figure 7.7** refers); and
- Construction of disabled parking space at Hing Yip Street (**Figure 7.6** refers).

Section between Seafront and Wai Yip Street (namely Zone D)

- Revitalization of the existing nullah, stabilization works of existing nullah walls, enhancement works for improving walkability and connectivity & landscaping, environmental and ecological enhancement and amenity works; and
- Construction of proposed signalized pedestrian crossing across Kwun Tong By-pass slip roads. (**Figure 7.3** refers)

3. EXISTING TRAFFIC CONTEXT

3.1 Existing Road Network

Zone A

3.1.1 The section of King Yip Street nullah at Zone A bounded by Tsui Ping Road at the north, Kai Lim Road at the east, Kwun Tong Swimming Pool at the south and Kwun Tong Road at the west.

3.1.2 The existing Kwun Tong Road between Kwun Tong Road Roundabout and Tsui Ping Road is a dual four lane primary distributor. Kwun Tong Road runs in east-west direction providing linkage to Hoi Yuen Road and Lai Yip Street leading to Kwun Tong Business Area, Tsui Ping Road leading to residential areas and Lei Yue Mun Road leading to Yau Tong.

3.1.3 Tsui Ping Road is a single two-lane district distributor located in between Kwun Tong Road and Hip Wo Street.

Zone B

3.1.4 The section of King Yip Street nullah at Zone B bounded by Kwun Tong Road at the east, Shing Yip Street at the west with about 4.0 m wide walkways alongside.

3.1.5 Shing Yip Street is a one way three lanes local road in between of King Yip Street and Hoi Yuen Road. It not only serves as access to Kwun Tong Business Area but also provides spaces for loading / unloading activities to adjacent commercial / industrial buildings. Currently stopping restriction 7am – 7pm is implemented. Besides, the section of Shing Yip Street between Wai Fat Road and King Yip Street is a two-way carriageway.

Zones C & D

3.1.6 The section of King Yip Street nullah at Zone C bounded by King Yip Street at the north, Shing Yip Street to the east, Wai Fat Road at the south and Wai Yip Street at the west.

3.1.7 King Yip Street is a one-way two-lane carriageway connecting Hung To Road, Hing Yip Street and Shing Yip Street.

3.1.8 Hung To Road and Hing Yip Street are one-way carriageway with stopping restriction 7am – 7pm is implemented. Loading/ unloading bay is currently provided at both sides along Hung To Road and south-western side of Hing Yip Street.

3.1.9 Wai Fat Road is a 7.3 m wide dual carriageway connecting Shing Yip Street and Cha Kwo Ling Road on the east and Kwun Tong bypass and Wai Yip Street on its west underneath Kwun Tong By-pass.

3.1.10 Wai Yip Street is a dual two lane local carriageway connecting Kwun Tong Business Area and Kowloon Bay Business Area. It also connects How Ming Street leading to Kwun Tong Promenade.

3.2 Vehicular and Pedestrian Traffic Survey

3.2.1 A manual classified pedestrian traffic count survey was conducted on a normal weekday, 16 March 2018 (Friday) during the morning, noon and evening peak hour periods from 07:30 to 09:30, from 11:30 to 14:00 and from 17:00 to 19:00 respectively within the vicinity.

3.2.2 The location plan for pedestrian assessment is shown in **Table 3.1** and the location index is illustrated in **Figure 3.1**.

Table 3.1: Location Plan for Pedestrian Assessment

Index (1)	Location
Zone A	
P1	Tsui Ping Road southern walkway adjacent to carriageway
P2	Tsui Ping Road southern walkway between nullah and Kwun Tong Swimming Pool
P3	Tsui Ping Road southern walkway between carriageway and footbridge ramp
P4	Tsui Ping Road southern walkway between footbridge ramp and Kwun Tong Swimming Pool
P18	Cross-nullah walkway adjacent to footbridge ramp
Zone B	
P5	King Yip Lane northern walkway
P6	King Yip Lane southern walkway
Zone C	
P7	King Yip Street northern walkway outside King Yip Factory Building
P8	King Yip Street northern walkway outside King Palace Plaza
P9	King Yip Street southern walkway adjacent to King Yip Street nullah
P10	King Yip Street northern walkway outside Manulife Financial Centre Tower B
P11	Shing Yip Street eastern walkway
P12	Shing Yip Street western walkway
P13	Hing Yip Street eastern walkway
P14	Hing Yip Street western walkway
P15	Hung To Road eastern walkway
P16	Hung To Road western walkway
Zone D	
P17	Wai Yip Street western walkway
P19	Wai Yip Street eastern walkway

*Remarks: (1) Refer to **Figure 3.1**.*

3.2.3 Based on pedestrian traffic count survey, the morning, noon and evening peak hours were identified as 08:30 – 09:30, 13:00 – 14:00 and 18:00 – 19:00 respectively.

3.2.4 A manual classified vehicular traffic count survey was conducted on a normal weekday, 20 March 2018 (Tuesday) during the morning and evening peak hour periods from 07:30 to 09:30 and from 17:00 to 19:00 respectively within the vicinity.

3.2.5 The location of the critical junctions within the study area are listed in **Table 3.2** and shown in **Figure 3.1**.

3.2.6 The year 2018 existing traffic flows are presented in **Figure 3.2**.

Table 3.2: List of Critical Junctions and Road Sections

Index (1)	Location	Type
J1	Tsui Ping Road / Kai Lim Road	Signalized Junction
J2	Kwun Tong Road / Tsui Ping Road	Signalized Junction
J3	King Yip Street / Shing Yip Street	Signalized Junction
J4	Wai Fat Road / Shing Yip Street / Cha Kwo Ling Road	Signalized Junction
J5	Wai Fat Road / Wai Yip Street	Signalized Junction
J6	Lei Yue Mun Road / Cha Kwo Ling Road	Signalized Junction
J7	King Yip Street / Hung To Road	Priority Junction
J8	King Yip Street / Hing Yip Street	Priority Junction
L1	Wai Yip Street	Road Section
L2	King Yip Street	Road Section
L3	Wai Fat Road	Road Section
L4	Kwun Tong Road	Road Section
L5	Tsui Ping Road	Road Section

*Remarks: (1) Refer to **Figure 3.1**.*

3.2.7 Based on vehicular traffic count survey, the morning and evening peak hours were identified as 08:30 – 09:30 and 17:15 – 18:15 respectively.

3.3 Pedestrian Walkway Assessment

3.3.1 The operation performances of the critical pedestrian walkways were assessed and the results are expressed in terms of Level Of Service (LOS).

3.3.2 According to TPDM, LOS "C" is considered an optimal level of service in the **Highway Capacity Manual (HCM)**. In general, LOS "C" is desirable for most design at streets with dominant 'living' pedestrian activities. However, TPDM also stipulates that the capacity for level section of footbridge and subway is 50 ped/min/m which is approximately equivalent to LOS "D" in the HCM. Therefore, it can be considered that a pedestrian walkway operating at LOS "A" to "D" is still within capacity. The definition of LOS is given in **Table 3.3**.

Table 3.3: Pedestrian Walkway Level of Service (LOS)

LOS	Flow Rate (ppm/m)	Description
A	≤ 16	Pedestrians move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.
B	16 – 23	There is sufficient area for pedestrians to select walking speeds freely, to bypass other pedestrians, and to avoid crossing conflicts. At this level, pedestrians begin to be aware of other pedestrians, and to respond to their presence when selecting a walking path.
C	23 – 33	Space is sufficient for normal walking speeds, and for bypassing other pedestrians in primarily unidirectional streams. Reverse-direction or crossing movements can cause minor conflicts, and speeds and flow rate are somewhat lower.
D	33 – 49	Freedom to select individual walkway speeds and to bypass other pedestrians is restricted. Crossing or reserve-flow movements face a high probability of conflict, requiring frequent changes in speed and position. The LOS provides reasonably fluid flow, but friction and interaction between pedestrians is likely.
E	49 – 75	Virtually all pedestrians restrict their normal walking speed, frequently adjusting their gait. At the lower range, forward movement is possible only by shuffling. Space is not sufficient for passing slower pedestrians. Cross- or reverse-flow movements are possible only with extreme difficulties. Design volumes approach the limit of walkway capacity, with stoppages and interruptions to flow.
F	> 75	All walking speeds are severely restricted, and forward progress is made only by shuffling. There is frequent, unavoidable contact with other pedestrians. Cross- and reverse-flow movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristic of queued pedestrians than of moving pedestrian streams.

3.3.3 To derive the pedestrian flow per 5-minute, a peak factor of 1.2 was applied to the peak hour pedestrian flow to reflect the peak 5-minute in the peak hour. For assessment purpose, the maximum pedestrian demands are adopted to assess the operational performance of the pedestrian walkways.

3.3.4 The operation performances of existing walkways are summarized in **Table 3.4**.

Table 3.4: Existing Operational Assessment for Pedestrian Walkways

Index [1]	Clear Width (m)	Effective Width (m) [2]	Pedestrian Demand (pph) [3]			Flow Rate (ppm/m) [4]			LOS [5]			V/C Ratio [6]		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P1 [7]	3.5	2.0	1,135	920	1,465	11.4	9.2	14.7	A	A	A	0.23	0.18	0.29
P2	3.5	2.5	315	175	235	2.5	1.4	1.9	A	A	A	0.05	0.03	0.04
P3 [7]	2.0	0.5	75	215	110	3.0	8.6	4.4	A	A	A	0.06	0.17	0.09
P4	4.0	3.0	95	45	75	0.6	0.3	0.5	A	A	A	0.01	0.01	0.01
P18	3.5	2.5	1,665	955	1,135	13.3	7.6	9.1	A	A	A	0.27	0.15	0.18
P5	4.0	3.0	900	770	795	6.0	5.1	5.3	A	A	A	0.12	0.10	0.11
P6	4.0	3.0	355	130	155	2.4	0.9	1.0	A	A	A	0.05	0.02	0.02
P7 [7]	3.6	2.1	1,370	1,465	1,560	13.0	14.0	14.9	A	A	A	0.26	0.28	0.30
P8 [7]	5.0	3.5	640	1,105	1,015	3.7	6.3	5.8	A	A	A	0.07	0.13	0.12
P9	3.0	2.0	185	25	25	1.9	0.3	0.3	A	A	A	0.04	0.01	0.01
P10 [7]	3.6	2.1	235	430	460	2.2	4.1	4.4	A	A	A	0.04	0.08	0.09
P11	2.5	1.5	2,630	1,960	2,050	35.1	26.1	27.3	D	C	C	0.70	0.52	0.55
P12	3.6	2.6	1,500	1,750	1,340	11.5	13.5	10.3	A	A	A	0.23	0.27	0.21
P13	2.2	1.2	1,170	940	980	19.5	15.7	16.3	B	A	B	0.39	0.31	0.33
P14	2.2	1.2	1,010	910	710	16.8	15.2	11.8	B	A	A	0.34	0.30	0.24
P15	3.0	2.0	980	1,260	780	9.8	12.6	7.8	A	A	A	0.20	0.25	0.16
P16	3.0	2.0	2,310	2,630	1,170	23.1	26.3	11.7	C	C	A	0.46	0.53	0.23
P17	4.5	3.5	25	10	25	0.1	0.1	0.1	A	A	A	0.003	0.001	0.003
P19	4.1	3.1	485	610	665	3.1	3.9	4.3	A	A	A	0.06	0.08	0.09

Remarks:
*(1) Refer to **Figure 3.1**.*
(2) Effective Width = Clear Width - Dead Width (0.5 m at each side of walkway).
(3) All figures are round up to nearest 5.
(4) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.
*(5) Refer to **Table 3.3**.*
(6) V/C Ratio = Flow Rate / Capacity (refer to TPDM Vol. 2 Ch. 3 Table 3.7.7.1 for capacity of walkway of 50ppm/m or ramp/ staircase of 40ppm/m).
(7) Effective Width is further reduced by 0.5 m accounting for obstruction of railings or bus stop facilities.

3.3.5 From **Table 3.4**, it shows that all of the existing walkways were operating at LOS "D" or better in year 2018.

3.4 Junction capacity Performance

3.4.1 A junction capacity assessment was carried out to reveal the existing performance of the critical junctions. The assessment results are tabulated in **Table 3.5** and correlated calculation sheets are attached in **Appendix A**.

Table 3.5: Existing Junction Performance

Index	Junctions	Reserved Capacity (RC) / Design Flow Capacity Ratio (DFC)	
		AM	PM
J1	Tsui Ping Road / Kai Lim Road	38%	24%
J2	Kwun Tong Road / Tsui Ping Road	39%	26%
J3	King Yip Street / Shing Yip Street	>100%	>100%
J4	Wai Fat Road / Shing Yip Street / Cha Kwo Ling Road	55%	34%
J5	Wai Fat Road / Wai Yip Street	3%	4%
J6	Lei Yue Mun Road / Cha Kwo Ling Road	32%	42%
J7	King Yip Street / Hung To Road	0.47	0.76
J8	King Yip Street / Hing Yip Street	0.58	0.89

*Remarks: (1) Refer to **Figure 3.1**.*

3.4.2 As shown in **Table 3.5**, it can be seen that most of the junctions assessed were found to operate within capacity (i.e. RC ≥ 10% for signal junctions & DFC ≤ 0.85 for priority junction) in year 2018 except for junction of Wai Fat Road/ Wai Yip Street (J5) and junction of King Yip Street / Hing Yip Street (J8) would operate at marginal performance.

3.5 Link Capacity Assessment

3.5.1 Capacity of critical road sections had been assessed for the purpose of assessment.

3.5.2 The existing link capacities of the road sections, assessed with reference to Transport Planning and Design Manual (TPDM) Volume 2, Chapter 2.4, Table 2.4.1.1 and adopted appropriate passenger car unit (p.c.u.). factor to derive the adopted capacity for assessment.

3.5.3 General performance of carriageways is measured by Volume to Capacity (V/C) Ratios. Normally a V/C ratio below 1.0 is considered desirable. A V/C ratio between 1.0 and 1.2 would indicate a manageable degree of congestion. A V/C ratio greater than 1.2 indicates the onset more serious congestion.

3.5.4 The operation performances of the critical road section were assessed and the results expressed in term of V/C ratio are summarized in **Table 3.6**.

Table 3.6: Existing Link Capacity

Index (1)	Road Section	Direction	Carriageway Width (m)	Capacity (pcu/hr) (2)	Peak Hourly Flow (pcu/hr)		V/C Ratio	
					AM	PM	AM	PM
L1	Wai Yip Street	Northbound	6.6	2,280	1,610	1,080	0.71	0.47
		Southbound	7.0	2,280	1,680	1,840	0.74	0.81
L2	King Yip Street	Eastbound	8.0	3,120	1,160	1,490	0.37	0.48
L3	Wai Fat Road	Eastbound	7.3	2,400	150	260	0.06	0.11
		Westbound	7.3	2,400	850	1,160	0.35	0.48
L4	Kwun Tong Road	Northbound	12.7	5,040	3,990	3,710	0.79	0.74
L5	Tsui Ping Road	Eastbound	4.5	1,440	870	960	0.60	0.67
		Westbound	6.7	1,440	540	470	0.38	0.33

Remarks: *(1) Refer to **Figure 3.1.***
(2) The capacity is referring with TPDM Vol. Ch 2.4, Table 2.4.1.1 and adopted appropriate p.c.u. factor to derive the adopted capacity for assessment.

3.5.5 As shown in **Table 3.6**, the existing road section would operate desirably with V/C ratio <1.00.

4. TRAFFIC FORECAST

4.1 Methodology

4.1.1 The construction works of the Project is anticipated to be commenced in the fourth quarter of 2019 and completed in stages by year 2023. Years 2023 (construction and completion year) and 2028 (5 years after completion) were adopted as the design years for assessment purpose.

Background Vehicular Traffic

4.1.2 The background traffic forecasts for the design years 2023 and 2028 were projected by applying a growth rate to the observed traffic flows obtained from recent traffic survey. The adopted growth rate was determined by making reference to the Territory Population and Employment Data Matrices (TPEDM) planning data published by Planning Department (PlanD) and the historical traffic data from Annual Traffic Census (ATC) reports published by Transport Department (TD) of the Kwun Tong Area.

4.1.3 The vehicular traffic volume generated/ attracted by other planned/ committed developments in the vicinity were estimated and assigned onto the surrounding road network to produce the reference traffic forecasts at design years.

Background Pedestrian Traffic

4.1.4 Similarly, the background pedestrian forecasts for the design years 2023 and 2028 were projected by applying a growth rate to the observed pedestrian flows obtained from recent traffic survey. The adopted growth rate was determined by making reference to the TPEDM planning data published by PlanD and the historical traffic data from ATC reports published by TD of the in Kwun Tong Area.

4.2 Growth Factor Determination

Territory Population and Employment Data Matrices (TPEDM)

4.2.1 The growth factor was determined based on the population and employment growth of the Planning Data Districts (PDD) from the open 2014-based TPEDM available on PlanD's website, as summarized in **Table 4.1**.

Table 4.1: Territory Population and Employment Data Matrices (TPEDM) Planning Data for Selected Zone

PDD Zone	Population				Employment			
	2014	2021	2026	Growth Rate (p.a.)	2014	2021	2026	Growth Rate (p.a.)
Kwun Tong	645,400	677,200	718,750	**0.93%**	386,000	419,450	433,800	**0.94%**

4.2.2 As shown in the above table, the average annual growth rate determined from TPEDM is +0.93% and +0.94% per annum from year 2014 to year 2026 regarding population and employment data respectively.

Annual Traffic Census

4.2.3 An additional reference was made to the historical traffic growth trend in the area from ATC reports published by TD. The traffic count stations located in the vicinity of the Development were selected. Records of traffic flows were extracted from ATC and summarized in **Table 4.2**.

Table 4.2: Historical Annual Traffic Census (ATC) Data for Selected Roads

Stn No.	Road Name	Annual Average Daily Traffic (A.A.D.T.)							Growth Rate (p.a.)
		2011	2012	2013	2014	2015	2016	2017	
3833	Kwun Tong Rd	80,060	78,970	*80,550*	*80,210*	*80,540*	86,480	88,520	
3643	Kwun Tong Rd	33,530	*33,540*	*33,250*	*33,110*	31,170	30,870	*31,110*	
3834	Kwun Tong Rd	84,220	86,530	85,780	85,420	*85,770*	75,500	78,930	
3279	Wai Yip St	*29,320*	*29,580*	28,070	28,980	*29,930*	29,530	*29,350*	**1.00%**
3023	Kwun Tong Bypass <K77>	93,040	92,940	97,200	99,000	97,350	96,730	97,360	
Total		**320,170**	**321,560**	**324,850**	**326,720**	**324,760**	**319,110**	**325,270**	

Remarks: The italic A.A.D.T. figures are estimated values based on the ATC Reports. Those estimated figures are excluded in calculating the weighted average annual growth rate.

4.2.4 As shown in **Table 4.2**, the weighted average annual growth rate determined from ATC is about +1.00% per annum over the seven years from 2011 to 2017.

Adopted Growth Rate

4.2.5 As the derived growth rates from TPEDM are less than +1.00% per annum, a nominal growth rate of **+ 1.00%** per annum, that derived from ATC was adopted for assessment to produce the background traffic flows from the year 2018 observed traffic flows up to design year 2028.

4.2.6 The nominal growth rate (i.e. **+ 1.00%** per annum) that derived from ATC was also adopted for assessment to produce the background pedestrian trips from the year 2018 observed pedestrian trips up to design year 2028.

4.3 Other Planned Developments

Vehicular Traffic Forecast

4.3.1 Major planned/ approved developments in the vicinity of the Project were taken into account for the years 2023 and 2028 reference traffic flows.

4.3.2 The development schedule of major planned/ approved developments in the vicinity of the Project are summarized in **Table 4.3**.

4.3.3 The traffic generation from the other planned developments are making reference to MPC Paper No. 19/14 for information relating to Ex-Cha Kwo Ling Kaolin Mine Site, TIA report for King Yip Street Site Development and TIA report for Proposed Vocational Training Council (VTC) Complex at Government Land, Wai Yip Street, Kwun Tong (New Indicative Scheme). The adopted trip rates for the aforementioned studies under the Project are listed in **Table 4.4** for reference.

Table 4.3: Development Schedule of Major Planned/ Approved Developments in the Vicinity

Developments (1)	No. of Flats / GFA (m^2)	Development Component	Tentative Completion Year
Ex-Cha Kwo Ling Kaolin Mine Site (1)	2,000 Flats	Residential	2021
King Yip Street Site Development (2)	120,528 m^2	Commercial Development	2023
Vocational Training Council (VTC) (3)	165,710 m^2	Campus	2023
	14,290 m^2	Authentic Training Facilities	

Remarks:
(1) Residential Units reference to the latest MPC Paper No. 19/14 for information relating to Ex-Cha Kwo Ling Kaolin Mine Site.
(2) Reference to Technical Report 1: TIA for King Yip Street Site Development under Pedestrian Environment Improvement Scheme for Transformation of Kwun Tong Business Area – Feasibility Study (EKEO study) dated January 2015.
(3) Reference to the Traffic Impact Assessment Report for Proposed Vocational Training Council (VTC) Campus Development at Government Land, Wai Yip Street, Kwun Tong (New Indicative Scheme) dated August 2017.

Table 4.4: Adopted Trip Rates for the Committed / Planned Development

Development	Component	Trip Rates (pcu/hr/flat) / (pcu/hr/100m²) / (pcu/hr/space)			
		AM		PM	
		Generation	Attraction	Generation	Attraction
King Yip Street Site Development	Commercial	0.202	0.223	0.335	0.347
	Public Car Park – Private Car	0.124	0.207	0.227	0.171
	Public Car Park – Light Good Vehicle	0.404	0.087	0.163	0.471
Ex-Cha Kwo Ling Kaolin Mine Site	Residential	0.0718	0.0425	0.0286	0.037
Vocational Training Council (VTC)	Complex	0.1392	0.7425	0.8553	0.1392
	Authentic Training Facilities	0.1329	0.1457	0.1290	0.1546

Pedestrian Trips Forecast

4.3.4 Similarly, major planned/ approved developments in the vicinity of the Project were taken into account for the years 2023 and 2028 reference pedestrian trips. As stated in the TIA report for Proposed Vocational Training Council (VTC) Complex at Government Land, Wai Yip Street, Kwun Tong (New Indicative Scheme), the pedestrian trips generation to/from Kwun Tong MTR Station are listed in **Table 4.5** for reference.

Table 4.5: Adopted Pedestrian Trips Generation for the Committed / Planned Developments

Development	Component	Pedestrian Trips to/from Kwun Tong MTR Station			
		AM		PM	
		Generation	Attraction	Generation	Attraction
Vocational Training Council (VTC)	Authentic Training Facilities	4	103	110	11

Remarks: Reference from the TIA report for Proposed VTC Complex at Government Land, Wai Yip Street, Kwun Tong (New Indicative Scheme)

4.4 Reference Vehicular Traffic and Pedestrian Trips Forecast

4.4.1 The future traffic flows generated by other planned/ approved developments in the vicinity of the Project were assigned onto the road network and superimposed onto the background traffic flows to produce the reference traffic flows in the design years 2023 and 2028.

4.4.2 The future pedestrian trips generated by other planned/ approved developments in the vicinity of the Project were assigned onto the road network and superimposed onto the background pedestrian trips to produce the reference pedestrian trips in the design years 2023 and 2028.

4.5 Construction Traffic Generation

4.5.1 According to the construction vehicles generated under construction of Kai Tak River, about 47 nos. of construction vehicle trips were generated daily (from 08:00 – 18:00 hours) at peak. For assessment purpose, it is assumed that the Project would generate about 20 pcu/hr for each zone during construction period. It is considered that the additional traffic impact would be insignificant. The anticipated construction traffic routings are shown in **Figure 4.1**.

4.6 Pedestrian Trips Generation from the Project

4.6.1 The visitor trip rates of the Project were derived from the ratio of the surveyed peak hour visitor demand of Laguna Park, with site area about 10,840 m^2, adjacent to existing King Yip Street nullah as summarized in **Table 4.5**.

Table 4.6: Peak Hour Visitor Trip Rates for Laguna Park

Location	Site Area (m^2)	Visitors in Peak Hour (ped/hr)		Visitor Trip Rates (ped/hr/m2)	
		In	Out	In	Out
Laguna Park	10,840	331	781	0.0305	0.0720

4.6.2 Based on the visitor trip rates of the existing Laguna Park as listed in **Table 4.6** the estimated no. of visitors at each zone as listed in below,

- Zone A with site area about 1,950 m^2 – 200 visitors/hr,
- Zone B with site area about 3,060 m^2 – 300 visitors/hr,
- Zone C with site area about 5,420 m^2 – 600 visitors/hr, and
- Zone D with site area about 3,680 m^2 – 400 visitors/hr.

4.7 Design Traffic Flows during Construction Stage

4.7.1 Construction traffic generated by the Project were assigned onto the road network and superimposed onto the year 2023 reference traffic flows to produce the year 2023 construction design traffic flows. The year 2023 reference and construction design traffic flows are shown in **Figures 4.2** and **4.3** respectively.

4.8 Design Traffic Flows during Operation Stage

4.8.1 Due to the nature of the Project, traffic generation due to management/ maintenance of sewerage/ drainage works is anticipated to be minimal. It is anticipated that the additional traffic flow due to the Project in the operational phase would be negligible. Therefore, for the purpose of traffic assessment, it was assumed that the years 2023 and 2028 design traffic flows after the completion of the Project would be the same as the years 2023 and 2028 reference traffic flows.

4.9 Design Pedestrian Trips during Construction Stage

4.9.1 It is anticipated that there is no substantial increase of pedestrian trip before completion of the Project. As such, the year 2023 construction design pedestrian trips before the Project would be the same as the year 2023 reference pedestrian trips.

4.10 Design Pedestrian Trips during Operation Stage

4.10.1 The forecast visitor generation during the completion of the Project would be superimposed onto the years 2023 and 2028 reference pedestrian forecasts to create the design year forecasts for assessment at the design years. The design years 2023 and 2028 design pedestrian trips are shown in **Table 6.2** and **Table 6.3** respectively.

5. CONSTRUCTION TRAFFIC IMPACT ASSESSMENT

5.1 Temporary Traffic Management Scheme (TTMS)

5.1.1 The detail arrangements of TTMS in Zones A to D are shown in **Figures 5.1** to **5.9**.

5.1.2 TTMS proposed for construction purposes will comply with the requirement as stipulated in the TPDM published by TD and the "Code of Practice for Lighting and Signing and Guarding of Road Works" published by Highways Department (HyD).

5.1.3 For locations where proposed works affecting pedestrian facilities, a minimum of 1.5 m wide walkway should be maintained. Decking over pedestrian crossing within proposed works area will be provided where necessary to maintain adequate width of pedestrian crossing subject to the construction works nature.

5.1.4 Accessibility to premises, public transport facilities and pedestrian facilities should be maintained.

5.1.5 In anticipating the involvement of extensive road works, the following requirements shall be observed throughout the construction period as far as reasonably practicable;

a) A thoroughfare of 3.5 m wide shall be maintained for passage of fire appliances at all times;

b) Adequate space (6 m wide minimum) shall be provided in front of the major façade of the building for the free aerial rescue and firefighting operation. If such requirement cannot be achieved, the construction works shall be carried out by sections of not more than 20 m in length;

c) Any road opening affecting the EVA should be decked over, capable of withstanding 30-tonne loading for emergency traffic;

d) An inner turning radius of 6.1 m and an outer turning radius of 11 m should be maintained;

e) For roads other than expressways and with speed limit of 70 km/h or below, a minimum of 0.5 m lateral safety clearance should be maintained between the works area and any part of the trafficked carriageway;

f) For roads other than expressways and with speed limit of 70 km/h or below a minimum of 10 m in length longitudinal safety clearance zone should be provided; and

g) Any excavation/construction works should under no circumstances cause any obstruction to the nearby fire hydrants and ground valves. Should any fire hydrant be affected, comments from Fire Services Department (FSD) should be sought.

5.1.6 All related works will not clash with other work fronts in the vicinity. Trial runs will be conducted, if considered necessary, for individual TTM schemes to test the prevalent traffic condition before implementation with the aim to minimize the traffic impact to both pedestrians and motorists during construction.

5.1.7 The proposed TTM schemes will be submitted to TD and Hong Kong Police Force (HKPF) / Traffic Management and Liaison Group (TMLG) for endorsement as appropriate at construction stage by contractor.

Zone A – Figures 5.1 – 5.4

5.1.8 Stage 1 – Construction of the re-provisioned footbridge ramp (**Figure 5.1**)

- For construction of the re-provisioned footbridge ramp, the open space adjacent to Kwun Tong Swimming Pool would be occupied and fenced off for use as works area.
- A minimum 2.0 m wide walkway would be maintained between the existing nullah and works area.
- The existing footbridge, including staircase and lift to be constructed by CEDD, would be maintained.
- The proposed TTM scheme would be implemented 24 hours a day and is shown in **Figure 5.1**.
- The nearside lane of a section of Tsui Ping Road would be temporarily closed to all vehicular traffic for loading/unloading of construction plants and materials on a need basis.
- The TTM scheme for loading / unloading is shown in **Figure 5.4** (upper part).

5.1.9 Stage 2 – Removal of the existing footbridge ramp and Construction of Tsui Ping River north-western side (**Figure 5.2**)

- For construction of Tsui Ping River (north-western side) and removal of the existing footbridge ramp, the works area will occupy the existing King Yip Street nullah, the north-western walkway along Tsui Ping Road adjacent to the existing footbridge ramp and a portion of north-western walkway along Tsui Ping Road between Fuk Tong Road and Kai Lim Road.
- The section of northern-west walkway along Tsui Ping Road adjacent to the existing footbridge ramp would be temporarily closed to facilitate the construction works.
- Pedestrians would be diverted to use the walkway between King Yip Street nullah and Kwun Tong Swimming Pool temporarily.
- Besides, a minimum of 2.0 m wide walkway would be maintained at the affected walkway sections, including the north-western walkway along Tsui Ping Road between Fuk Tong Road and Kai Lim Road and the existing cross-nullah walkway near Kwun Tong Swimming Pool.
- The existing bus stop at Tsui Ping Road westbound would be maintained at all times during the implementation of the TTM scheme.
- Access to the existing footbridge, including the staircase and lift to be constructed by CEDD, would also be maintained.

- The proposed TTM scheme would be implemented 24 hours a day and is shown in **Figure 5.2**.
- Besides, the nearside lane of a section of Tsui Ping Road would be temporarily closed to all vehicular traffic for loading/unloading of construction plants and materials on a need basis as shown in **Figure 5.4 (upper part)**.
- In addition, similar TTM scheme would be implemented for removal of the footbridge ramp during night time between 23:00 and 05:30 hours for a few nights tentatively. Pedestrians would be diverted to use the walkway between King Yip Street nullah and Kwun Tong Swimming Pool.
- The proposed TTM scheme for removal of footbridge ramp is shown in **Figure 5.4 (lower part)**.

5.1.10 Stage 3 - Construction of Tsui Ping River south-eastern side (**Figure 5.3**)

- For construction of Tsui Ping River (south-eastern side) and the proposed engineered wetland, the works area will occupy the existing King Yip Street nullah and a portion of walkway between King Yip Street nullah and Kwun Tong Swimming Pool adjacent to the re-provisioned footbridge ramp. Besides, the open space at Kwun Tong Swimming Pool adjacent to Kai Lim Road will also be occupied for construction of the engineered wetland.
- The section of walkway between King Yip Street nullah and Kwun Tong Swimming Pool adjacent to Kai Lim Road would be temporarily closed to facilitate the construction works.
- Pedestrians would be diverted to use the north-western side walkway adjacent to Tsui Ping Road between Fuk Tong Road and Kai Lim Road temporarily.
- Besides, a minimum of 2.0 m wide walkway would be maintained at the affected walkway sections, including walkways between King Yip Street nullah and Kwun Tong Swimming Pool adjacent to the re-provisioned footbridge ramp and the existing cross-nullah walkway near Kwun Tong Swimming Pool.
- The existing bus stop at Tsui Ping Road westbound would be maintained at all times during the implementation of the TTM scheme.
- Access to the existing footbridge, including staircase and lift to be constructed by CEDD, would be maintained.
- The proposed TTM scheme would be implemented 24 hours a day and is shown in **Figure 5.3**.
- Besides, the nearside lane of a section of Tsui Ping Road would be temporarily closed to all vehicular traffic for loading/unloading of construction plant and materials on a need basis as shown in **Figure 5.4 (upper part)**.

Zone B – Figures 5.5 – 5.7

5.1.11 Construction works for revitalization of Tsui Ping River

- The works area will be located at the walkways alongside of existing nullah at King Yip Lane.
- A minimum 2.0m wide walkway would be maintained alongside of proposed works area.
- Access to the existing footbridge would be maintained at all times.
- The proposed TTM scheme would be implemented 24 hours a day for construction of the north-western and south-eastern sides of the nullah. The proposed TTM schemes in Zone B for construction of the north-western and south-eastern sides of Tsui Ping River are shown in **Figures 5.5** and **5.6** respectively.
- The nearside lane of a section of Shing Yip Street would be temporarily closed to all vehicular traffic between 10:00 and 16:00 hours for loading/unloading of construction plants and materials on a need basis. The TTM scheme for loading/unloading and swept path analysis are shown in **Figure 5.7**.
- Based on the swept path analysis shown in **Figure 5.7,** the result shows that there is sufficient manoeuvring space for 12.8m long vehicle turning from King Yip Street to Shing Yip Street southbound even with the proposed TTM scheme for loading/unloading implemented.

Zone C – Figures 5.8, 5.8.1 and 5.8.2

5.1.12 Construction of working platform on existing nullah & Construction works of Tsui Ping River **(Figure 5.8)**

- The works area will occupy the southern walkway along King Yip Street and the section of King Yip nullah at Zone C temporarily.
- Pedestrians would be temporary diverted to the opposite walkway using the signalized pedestrian crossing at junction of King Yip Street / Shing Yip Street and cautionary crossing at junction of King Yip Street near Wai Yip Street across King Yip Street.
- The existing bus stops along King Yip Street would be maintained at all times during the implementation of the TTM scheme.
- The proposed TTM scheme would be implemented 24 hours a day as shown in **Figure 5.8**.

5.1.13 Pedestrian path enhancement works at Hung To Road, Hing Yip Street and Shing Yip Street

- Heavy pedestrian demand was observed during AM, NOON, PM peak periods at Hung To Road, Hing Yip Street and Shing Yip Street currently.
- It is proposed that a minimum of 1.5m – 2.0m wide walkway and accessibility to premises should be maintained at all times during the enhancement works.
- The TTM schemes of the enhancement works would be implemented during off-peak period and decked over during peak periods to minimize the impact on pedestrians.
- The pedestrian path enhancement works are to improve the walking condition of the existing walkways and would be implemented on a section-by-section basis.
- Each section of the proposed works area should be kept to as minimal as possible in order to minimize the impact to the pedestrians in the vicinity.
- It is also suggested that partial closures of walkways should be at least be 50m apart each time to minimize the disturbance to pedestrians.

5.1.14 Construction of proposed signalized pedestrian crossing at Wai Fat Road **(Figures 5.8.1 & 5.8.2)**

- The construction works for the proposed signalized pedestrian crossing at Wai Fat Road would be carried out in stages on a lane-by-lane basis while maintaining one traffic lane adjacent to the works area.
- The TTM scheme of the construction of the proposed signalized pedestrian crossing at Wai Fat Road would be implemented during off-peak period, if considered necessary.
- The works area could be decked over with steel plates and all lane closure would reopen to traffic outside the working hours if considered necessary.
- Construction works would be carried out outside bus operation hours for modification works of the existing bus lay-by at Wai Fat Road westbound.
- Besides, accessibility to Laguna Park Substation should be maintained at all times during construction.
- A minimum of 2.0 m wide walkway would be maintained at all times during construction.
- The proposed TTM schemes for construction of the proposed signalized pedestrian crossing at Wai Fat Road are shown in **Figures 5.8.1** and **5.8.2**.

5.1.15 Construction of cautionary crossings at King Yip Street

- It is proposed that a minimum of 1.5 m – 2.0 m wide walkway and accessibility to premises should be maintained at all times during the construction works at walkway sections.
- Road marking works along King Yip Street would be implemented on a lane-by-lane basis.
- The TTM schemes of the road marking work would be implemented during off-peak period to minimize traffic impact.

5.1.16 Construction of disabled parking space at Hing Yip Street

- It is proposed that a minimum of 1.5 m – 2.0 m wide walkway should be maintained at all times during installation of traffic sign poles.
- The existing loading/unloading bay at Hing Yip Street would be partially closed for about 20 m long from the end taper to facilitate the road markings works.
- The existing carriageway width would be maintained during the construction of the disabled parking spaces.

Zone D – Figure 5.9

5.1.17 Construction of working platform on the existing nullah & construction works of Tsui Ping River

- Works area will be located at western walkway adjacent to Kwun Tong Preliminary Treatment Works at Wai Yip Street.
- A minimum of 2.0 m wide walkways would be maintained.
- The proposed TTM scheme would be implemented 24 hours a day along Wai Yip Street western side walkway.

5.1.18 Junction modification works at junction of Wai Yip Street/ Wai Fat Road/ Cha Kwo Ling Road **(Figure 5.9)**

- The junction modification works would be carried out on a lane-by-lane basis, all traffic movements would be maintained during the implementation period.
- The works area could be decked over with steel plates and all lane closure would reopen to traffic outside the working hours, if considered necessary.
- The proposed TTM schemes at Kwun Tong By-pass slip roads are shown in **Figure 5.9**.
- It is suggested that only one TTM scheme would be implemented at a time at the junction of Wai Yip Street/ Wai Fat Road/ Cha Kwo Ling Road to minimize the local disturbance.

5.2 Construction Traffic Impact Assessment

Pedestrian Traffic Impact Assessment

5.2.1 Operational assessment was carried out for critical walkways taken into account the proposed TTM schemes at year 2023 as mentioned in **Section 5.1**.

5.2.2 The assessment results without the proposed TTM schemes (Reference Scenario) at year 2023 are shown in **Table 5.1**. The assessment results of the affected critical walkways at year 2023 with proposed TTM schemes during construction stage (Construction Design Scenario) are shown in **Table 5.2**.

Table 5.1: Year 2023 Operational Assessment for Pedestrian Walkways (Reference Scenario)

Index [1]	Clear Width (m)	Effective Width (m) [2]	Pedestrian Demand (pph) [3]			Flow Rate (ppm/m) [4]			LOS [5]			V/C Ratio [6]		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P1 [7]	3.5	2.0	1,195	965	1,540	12.0	9.7	15.4	A	A	A	0.24	0.19	0.31
P2	3.5	2.5	335	185	245	2.7	1.5	2.0	A	A	A	0.05	0.03	0.04
P3 [7]	2.0	0.5	75	225	115	3.0	9.0	4.6	A	A	A	0.06	0.18	0.09
P4	4.0	3.0	100	45	80	0.7	0.3	0.5	A	A	A	0.01	0.01	0.01
P18	3.5	2.5	1,750	1,005	1,195	14.0	8.0	9.6	A	A	A	0.28	0.16	0.19
P5	4.0	3.0	945	805	835	6.3	5.4	5.6	A	A	A	0.13	0.11	0.11
P6	4.0	3.0	370	135	165	2.5	0.9	1.1	A	A	A	0.05	0.02	0.02
P7 [7]	3.6	2.1	1,440	1,540	1,640	13.7	14.7	15.6	A	A	A	0.27	0.29	0.31
P8 [7]	5.0	3.5	675	1,160	1,070	3.9	6.6	6.1	A	A	A	0.08	0.13	0.12
P9	3.0	2.0	195	25	25	2.0	0.3	0.3	A	A	A	0.04	0.01	0.01
P10 [7]	3.6	2.1	245	450	480	2.3	4.3	4.6	A	A	A	0.05	0.09	0.09
P11	2.5	1.5	2,800	2,100	2,195	37.3	28.0	29.3	D	C	C	0.75	0.56	0.59
P12	3.6	2.6	1,610	1,875	1,450	12.4	14.4	11.2	A	A	A	0.25	0.29	0.22
P13	2.2	1.2	1,230	990	1,030	20.5	16.5	17.2	B	B	B	0.41	0.33	0.34
P14	2.2	1.2	1,060	955	745	17.7	15.9	12.4	B	A	A	0.35	0.32	0.25
P15	3.0	2.0	1,030	1,325	820	10.3	13.3	8.2	A	A	A	0.21	0.27	0.16
P16	3.0	2.0	2,430	2,765	1,230	24.3	27.7	12.3	C	C	A	0.49	0.55	0.25
P17	4.5	3.5	65	50	65	0.4	0.3	0.4	A	A	A	0.01	0.01	0.01

Index (1)	Clear Width (m)	Effective Width (m) (2)	Pedestrian Demand (pph) (3)			Flow Rate (ppm/m) (4)			LOS (5)			V/C Ratio (6)		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P19	4.1	3.1	510	640	695	3.3	4.1	4.5	A	A	A	0.07	0.08	0.09

Remarks:
*(1) Refer to **Figure 3.1**.*
(2) Effective Width = Clear Width - Dead Width (0.5 m at each side of walkway).
(3) All figures are round up to nearest 5.
(4) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.
*(5) Refer to **Table 3.3**.*
(6) V/C Ratio = Flow Rate / Capacity (refer to TPDM Vol. 2 Ch. 3 Table 3.7.7.1 for capacity of walkway of 50ppm/m or ramp/ staircase of 40ppm/m).
(7) Effective Width is further reduced by 0.5 m accounting for obstruction of railings or bus stop facilities.

Table 5.2: Year 2023 Operational Assessment for Pedestrian Walkways (Construction Design Scenario)

Index (1)	Clear Width (m)	Effective Width (m) (2)	Pedestrian Demand (pph) (3)			Flow Rate (ppm/m) (4)			LOS (5)						V/C Ratio (6)			Figure No. / Mitigation Measure
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	20:00 – 06:00 hours	21:00 – 06:00 hours	22:00 – 06:00 hours	AM	Noon	PM	
P1 (7)	2.0	0.5	780	645	1,115	31.2	25.8	44.6	C	C	D	-	-	-	0.62	0.52	0.89	5.2
	3.5	2.0	1,530	1,150	1,785	15.3	11.5	17.9	A	A	B	-	-	-	0.31	0.23	0.36	5.3
P2	3.5	2.5	750	500	670	6.0	4.0	5.4	A	A	A	-	-	-	0.12	0.08	0.11	5.2
P3 (7)	2.0	0.5	75	225	115	3.0	9.0	4.6	A	A	A	-	-	-	0.06	0.18	0.09	5.3
P4	2.0	1.0	100	45	80	2.0	0.9	1.6	A	A	A	-	-	-	0.04	0.02	0.03	5.1
	4.0	3.0	730	715	780	4.9	4.8	5.2	A	A	A	-	-	-	0.10	0.10	0.10	5.2
	2.0	1.0	655	485	665	13.1	9.7	13.3	A	A	A	-	-	-	0.26	0.19	0.27	5.3
P18	2.0	1.0	1,325	855	880	26.5	17.1	17.6	C	B	B	-	-	-	0.53	0.34	0.35	5.2
	2.0	1.0	1,475	915	1,030	29.5	18.3	20.6	C	B	B	-	-	-	0.59	0.37	0.41	5.3
P5	2.0	1.0	945	805	835	18.9	16.1	16.7	B	B	B	-	-	-	0.38	0.32	0.33	5.5
P6	2.0	1.0	370	135	165	7.4	2.7	3.3	A	A	A	-	-	-	0.15	0.05	0.07	5.6
P7	2.0	1.0	1,635	1,565	1,665	32.7	31.3	33.3	C	C	D	-	-	-	0.65	0.63	0.67	Section 5.1.16 & with diverted pedestrian at P9
P8	2.0	1.0	870	1,185	1,095	17.4	23.7	21.9	B	C	B	-	-	-	0.35	0.47	0.44	
P9	Closed																	5.8
P10 (7)	3.6	2.1	440	475	505	4.2	4.5	4.8	A	A	A	-	-	-	0.08	0.09	0.10	-

Index (1)	Clear Width (m)	Effective Width (m) (2)	Pedestrian Demand (pph) (3)			Flow Rate (ppm/m) (4)			LOS (5)						V/C Ratio (6)			Figure No. / Mitigation Measure
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	20:00 – 06:00 hours	21:00 – 06:00 hours	22:00 – 06:00 hours	AM	Noon	PM	
P11	1.5	0.5	2,800	2,100	2,195	112.0	84.0	87.8	**F**	**F**	**F**	**E**	**E**	D	2.24	1.68	1.76	Off-peak works
P12	1.5	0.5	1,610	1,875	1,450	64.4	75.0	58.0	E	**F**	E	D	C	C	1.26	1.47	1.13	
P13	1.5	0.5	1,230	990	1,030	49.2	39.6	41.2	**E**	D	D	C	B	B	0.98	0.79	0.82	
P14	1.5	0.5	1,060	955	745	42.4	38.2	29.8	D	D	C	-	-	-	0.85	0.76	0.60	-
P15	1.5	0.5	1,030	1,325	820	41.2	53.0	32.8	D	**E**	C	C	B	B	0.82	1.06	0.66	Off-peak works
P16	1.5	0.5	2,430	2,765	1,230	97.2	110.6	49.2	**F**	**F**	**E**	**E**	D	D	1.94	2.21	0.98	
P17	2.0	1.0	65	50	65	1.3	1.0	1.3	A	A	A	-	-	-	0.03	0.02	0.03	-
P19	1.5	0.5	510	640	695	20.4	25.6	27.8	B	C	C	-	-	-	0.41	0.51	0.56	-

Remarks:
(1) Refer to **Figure 3.1**.
(2) Effective Width = Clear Width - Dead Width (0.5 m at each side of walkway).
(3) All figures are round up to nearest 10.
(4) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.
(5) Refer to **Table 3.4**.
(6) V/C Ratio = Flow Rate / Capacity (refer to TPDM Vol. 2 Ch. 3 Table 3.7.7.1 for capacity of walkway of 50ppm/m or ramp/ staircase of 40ppm/m).
(7) Effective Width is further reduced by 0.5 m accounting for obstruction of railings or bus stop facilities.

5.2.3 In **Table 5.2**, it shows all the affected pedestrian walkways would be operating at LOS "D" or better even with the implementation of proposed TTM schemes except for walkways at Shing Yip Street, Hing Yip Street and Hung To Road (P11 – P13 and P15 – P16).

5.2.4 As shown in **Table 5.2**, the problematic walkways P12 - P13, P16 and P11 would be operating at LOS "D" or better during off-peak period within 20:00 – 06:00 hours, 21:00 – 06:00 hours and 22:00 – 06:00 hours respectively. It is proposed that works along the aforementioned walkway sections will be implemented outside AM, Noon and PM peak periods. During the peak periods, the works areas will be decked over, if necessary, to maintain existing walkway width.

5.2.5 The section of the proposed works area should be kept as minimal as possible in order to minimize the impact to the pedestrians in the vicinity.

Vehicular Traffic Impact Assessment

5.2.6 In order to assess traffic impact due to the Project, junction assessments with the proposed TTM schemes were undertaken.

5.2.7 Junction improvement schemes for the junction of Wai Fat Road / Wai Yip Street (J5) had been proposed under the study of Ex-Cha Kwo Ling Kaolin Mine Site (see **Figure 5.11** which is extracted from MPC Paper No. 19/14) and would be implemented in year 2021.

5.2.8 Therefore, the proposed junction improvement schemes for the junction of Wai Fat Road / Wai Yip Street (J5) would be adopted in the assessment.

5.2.9 Junction capacities were assessed for design year 2023 construction design scenarios taking into account the construction traffic, proposed temporary lane closures for loading/ unloading of construction plants and materials and the proposed TTM schemes. The result of the junction performance of the concerned junctions are summarized in **Table 5.3**.

Table 5.3: Year 2023 Junctions Performance

Index (1)	Reserved Capacity (RC) / Design Flow Capacity Ratio (DFC)				Proposed TTMS
	Construction Design				
	With Construction Traffic & Proposed TTMS				
	AM	PM	Off-peak		
			10:00 – 16:00 hours	20:00 – 06:00 hours	
J2	**5%**	**5%**	15%	-	Figure 5.4 (upper part)
J3	>100%	25%	-	-	Figure 5.7
J5 (2) (3)	**-5%**	**-2%**	4%	70%	Figure 5.9 (upper part)
	-26%	**-20%**	**-19%**	30%	Figure 5.9 (lower part)

Remarks:
*(1) Refer to **Figure 3.1**.*
(2) Junction improvement under study of Ex-Cha Kwo Ling Kaolin Mine Site in MPC Paper No. 19/14 *refer to **Figure 5.11**.*
(3) The junction layout at J5 will be subject to further review under a separate study to be commissioned by EKEO / CEDD.

5.2.10 As shown in **Table 5.3**, most of the assessed junctions are operating within capacities. However, the junction of Kwun Tong Road / Tsui Ping Road (J2) would be operating at marginal performance (i.e. 10% ≥ RC ≥ 0%) under construction design scenario in year 2023.

5.2.11 Besides, junction of Wai Yip Street / Wai Fat Road (J5) would be operating beyond its capacity (i.e. 0% ≥ RC) under construction design scenario in year 2023.

5.2.12 Noting that junction of Kwun Tong Road/ Tsui Ping Road (J2) would operate at marginal performance under construction design scenario with the proposed TTM schemes shown in **Figure 5.4 (upper part)**, it is proposed that the loading/unloading activities in Zone A should be avoided during AM and PM peak periods to avoid worsening the traffic conditions in the vicinity at Zone A during the construction of Tsui Ping River. The loading/ unloading activities are suggested to be implemented during 10:00–16:00 hours and subject to review during construction stage.

5.2.13 As the junction of Wai Yip Street/ Wai Fat Road (J5) would be operating beyond its capacity under construction design scenario with the proposed TTM scheme shown in **Figure 5.9 (upper part)** & **Figure 5.9 (lower part)**, it is therefore suggested that the implementation of the TTM scheme should avoid AM and PM peak periods so as not to worsen the traffic conditions at J5 during the construction of additional crossing facilities at J5. It is suggested that TTM scheme would be implemented within 20:00 – 06:00 hours of the following day and subject to review during construction stage.

5.2.14 The capacity of critical road sections were assessed under design year 2023 reference and construction design scenarios taking into account the construction traffic and the proposed TTM schemes and are summarized in **Table 5.4** and **Table 5.5** respectively.

Table 5.4: Year 2023 Reference Link Capacity

Index (1)	Road Section	Direction	Carriageway Width (m)	Capacity (pcu/hr) (2)	Peak Hourly Flow (pcu/hr)		V/C Ratio	
					AM	PM	AM	PM
L1	Wai Yip Street	Northbound	6.6	2,280	1,720	1,150	0.75	0.50
		Southbound	7.0	2,280	1,780	1,950	0.78	0.86
L2	King Yip Street	Eastbound	8.0	3,120	1,210	1,570	0.39	0.50
L3	Wai Fat Road	Eastbound	7.2	2,400	160	280	0.07	0.12
		Westbound	7.2	2,400	890	1,210	0.37	0.50
L4	Kwun Tong Road	Northbound	9.6	5,040	4,190	3,890	0.83	0.77
L5	Tsui Ping Road	Eastbound	4.5	1,440	910	1,010	0.63	0.70
		Westbound	6.7	1,440	570	490	0.40	0.34

Remarks: *(1) Refer to **Figure 3.1**.*
(2) The capacity is referring with TPDM Vol. Ch 2.4, Table 2.4.1.1 and adopted appropriate p.c.u. factor to derive the adopted capacity for assessment.

5.2.15 As shown in **Table 5.4**, all of the concerned road sections will operate within an acceptable level in year 2023 reference design scenario (i.e. 1.00 ≥ VC ratio).

5.2.16 The estimated link capacities of the road sections, with the proposed TTM schemes implemented, were assessed with reference to the capacity listed in Table 2 of the Guidelines on Traffic Impact Assessment & Day-time Ban Requirements for Road Works on Traffic Sensitive Routes.

Table 5.5: Year 2023 Construction Design Link Capacity

Index (1)	Road Section	Direction	Carriageway Width (m)		Capacity (pcu/hr)		Peak Hourly Flow (pcu/hr)		V/C Ratio				Proposed TTMS
									With Construction Traffic Only		With Construction Traffic & Proposed TTMS		
			Existing	With Proposed TTMS	Existing (2)	With Proposed TTMS (3)	AM	PM	AM	PM	AM	PM	
L2	King Yip Street	Eastbound	8.0	-	3,120	-	1,230	1,590	0.39	0.51	-	-	-
L3	Wai Fat Road	Eastbound	7.2	3.7	2,400	1,240	170	290	0.07	0.12	0.14	0.23	Figure 5.8
		Westbound	7.2	3.7	2,400	1,240	910	1,230	0.38	0.51	0.73	0.99	Figure 5.8
L4	Kwun Tong Road	Northbound	9.6	-	5,040	-	4,190	3,890	0.83	0.77	-	-	-
L5	Tsui Ping Road	Eastbound	4.5	-	1,440	-	910	1,010	0.63	0.70	-	-	-
		Westbound	6.7	3.5	1,440	1,125	580	500	0.40	0.35	0.52	0.44	Figure 5.4

Remarks: *(1) Refer to Figure 3.1.*

(2) The capacity is referring with TPDM Vol. Ch 2.4, Table 2.4.1.1 and adopted appropriate p.c.u. factor to derive the adopted capacity for assessment.

(3) The *capacity with TTMS is in accordance with Table 2 of the Guidelines on Traffic Impact Assessment & Day Time Ban Requirements for Road Works on Traffic Sensitive Route.*

5.2.17 As shown in **Table 5.5**, it is noted that all of the critical road sections would be operating at an acceptable level in year 2023 design scenario (i.e. 1.00 ≥ V/C ratio) with the proposed TTM schemes implemented.

6. TRAFFIC IMPACT ASSESSMENT

6.1 Pedestrian Traffic Impact Assessment

6.1.1 As mentioned in **Section 4.3**, the forecast visitor generation during the operation of Tsui Ping River would be superimposed onto the years 2023 & 2028 reference pedestrian forecasts to create the design year forecasts for assessment at the design years.

6.1.2 The assessment results of the critical walkways at design years 2023 and 2028 reference scenario (before completion of the Project) are shown in **Table 6.1** and **Table 6.2** respectively.

Table 6.1: Year 2023 Operational Assessment for Pedestrian Walkways (Reference Scenario)

Index [1]	Clear Width (m)	Effective Width (m) [2]	Pedestrian Demand (pph) [3]			Flow Rate (ppm/m) [4]			LOS [5]			V/C Ratio [6]		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P1 [7]	3.5	2.0	1,195	965	1,540	12.0	9.7	15.4	A	A	A	0.24	0.19	0.31
P2	3.5	2.5	335	185	245	2.7	1.5	2.0	A	A	A	0.05	0.03	0.04
P3 [7]	2.0	0.5	75	225	115	3.0	9.0	4.6	A	A	A	0.06	0.18	0.09
P4	4.0	3.0	100	45	80	0.7	0.3	0.5	A	A	A	0.01	0.01	0.01
P18	3.5	2.5	1,750	1,005	1,195	14.0	8.0	9.6	A	A	A	0.28	0.16	0.19
P5	4.0	3.0	945	805	835	6.3	5.4	5.6	A	A	A	0.13	0.11	0.11
P6	4.0	3.0	370	135	165	2.5	0.9	1.1	A	A	A	0.05	0.02	0.02
P7 [7]	3.6	2.1	1,440	1,540	1,640	13.7	14.7	15.6	A	A	A	0.27	0.29	0.31
P8 [7]	5.0	3.5	675	1,160	1,070	3.9	6.6	6.1	A	A	A	0.08	0.13	0.12
P9	3.0	2.0	195	25	25	2.0	0.3	0.3	A	A	A	0.04	0.01	0.01
P10 [7]	3.6	2.1	245	450	480	2.3	4.3	4.6	A	A	A	0.05	0.09	0.09
P11	2.5	1.5	2,800	2,100	2,195	37.3	28.0	29.3	D	C	C	0.75	0.56	0.59
P12	3.6	2.6	1,610	1,875	1,450	12.4	14.4	11.2	A	A	A	0.25	0.29	0.22
P13	2.2	1.2	1,230	990	1,030	20.5	16.5	17.2	B	B	B	0.41	0.33	0.34
P14	2.2	1.2	1,060	955	745	17.7	15.9	12.4	B	A	A	0.35	0.32	0.25
P15	3.0	2.0	1,030	1,325	820	10.3	13.3	8.2	A	A	A	0.21	0.27	0.16
P16	3.0	2.0	2,430	2,765	1,230	24.3	27.7	12.3	C	C	A	0.49	0.55	0.25

Index (1)	Clear Width (m)	Effective Width (m) (2)	Pedestrian Demand (pph) (3)			Flow Rate (ppm/m) (4)			LOS (5)			V/C Ratio (6)		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P17	4.5	3.5	65	50	65	0.4	0.3	0.4	A	A	A	0.01	0.01	0.01
P19	4.1	3.1	510	640	695	3.3	4.1	4.5	A	A	A	0.07	0.08	0.09

Remarks:
*(1) Refer to **Figure 3.1**.*
(2) Effective Width = Clear Width - Dead Width (0.5 m at each side of walkway).
(3) All figures are round up to nearest 5.
(4) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.
*(5) Refer to **Table 3.3**.*
(6) V/C Ratio = Flow Rate / Capacity (refer to TPDM Vol. 2 Ch. 3 Table 3.7.7.1 for capacity of walkway of 50ppm/m or ramp/ staircase of 40ppm/m).
(7) Effective Width is further reduced by 0.5 m accounting for obstruction of railings or bus stop facilities.

Table 6.2: Year 2028 Operational Assessment for Pedestrian Walkways (Reference Scenario)

Index (1)	Clear Width (m)	Effective Width (m) (2)	Pedestrian Demand (pph) (3)			Flow Rate (ppm/m) (4)			LOS (5)			V/C Ratio (6)		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P1 (7)	3.5	2.0	1,255	1,015	1,615	12.6	10.2	16.2	A	A	B	0.25	0.20	0.32
P2	3.5	2.5	350	195	260	2.8	1.6	2.1	A	A	A	0.06	0.03	0.04
P3 (7)	2.0	0.5	80	240	125	3.2	9.6	5.0	A	A	A	0.06	0.19	0.10
P4	4.0	3.0	105	45	85	0.7	0.3	0.6	A	A	A	0.01	0.01	0.01
P18	3.5	2.5	1,840	1,055	1,255	14.7	8.4	10.0	A	A	A	0.29	0.17	0.20
P5	4.0	3.0	995	850	880	6.6	5.7	5.9	A	A	A	0.13	0.11	0.12
P6	4.0	3.0	390	140	175	2.6	0.9	1.2	A	A	A	0.05	0.02	0.02
P7 (7)	3.6	2.1	1,515	1,615	1,725	14.4	15.4	16.4	A	A	B	0.29	0.31	0.33
P8 (7)	5.0	3.5	705	1,220	1,120	4.0	7.0	6.4	A	A	A	0.08	0.14	0.13
P9	3.0	2.0	205	25	30	2.1	0.3	0.3	A	A	A	0.04	0.01	0.01
P10 (7)	3.6	2.1	260	475	505	2.5	4.5	4.8	A	A	A	0.05	0.09	0.10
P11	2.5	1.5	2,940	2,205	2,305	39.2	29.4	30.7	D	C	C	0.78	0.59	0.61
P12	3.6	2.6	1,695	1,970	1,520	13.0	15.2	11.7	A	A	A	0.26	0.30	0.23
P13	2.2	1.2	1,290	1,040	1,085	21.5	17.3	18.1	B	B	B	0.43	0.35	0.36
P14	2.2	1.2	1,115	1,005	785	18.6	16.8	13.1	B	B	A	0.37	0.34	0.26
P15	3.0	2.0	1,085	1,390	860	10.9	13.9	8.6	A	A	A	0.22	0.28	0.17

Index (1)	Clear Width (m)	Effective Width (m) (2)	Pedestrian Demand (pph) (3)			Flow Rate (ppm/m) (4)			LOS (5)			V/C Ratio (6)		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P16	3.0	2.0	2,550	2,905	1,290	25.5	29.1	12.9	C	C	A	0.51	0.58	0.26
P17	4.5	3.5	65	50	65	0.4	0.3	0.4	A	A	A	0.01	0.01	0.01
P19	3	2	540	675	730	5.4	6.8	7.3	A	A	A	0.11	0.14	0.15

Remarks:
*(1) Refer to **Figure 3.1**.*
(2) Effective Width = Clear Width - Dead Width (0.5 m at each side of walkway).
(3) All figures are round up to nearest 5.
(4) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.
*(5) Refer to **Table 3.3**.*
(6) V/C Ratio = Flow Rate / Capacity (refer to TPDM Vol. 2 Ch. 3 Table 3.7.7.1 for capacity of walkway of 50ppm/m or ramp/ staircase of 40ppm/m).
(7) Effective Width is further reduced by 0.5 m accounting for obstruction of railings or bus stop facilities.

6.1.3 From **Tables 6.1** and **6.2**, the assessed walkways are operating at LOS "D" or better, in both design years 2023 and 2028 under reference scenario.

6.1.4 The assessment results of the critical walkways at design years 2023 and 2028 design scenario (after the completion of the Project) are shown in **Tables 6.3** and **6.4** respectively.

Table 6.3: Year 2023 Operational Assessment for Pedestrian Walkways (Design Scenario)

Index (1)	Clear Width (m)	Effective Width (m) (2)	Pedestrian Demand (pph) (3)			Flow Rate (ppm/m) (4)			LOS (5)			V/C Ratio (6)		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P1 (7) (8)	3.3	1.8	1,245	1,015	1,590	13.8	11.3	17.7	A	A	B	0.28	0.23	0.35
P2 (8)	4.3	3.3	385	235	295	2.3	1.4	1.8	A	A	A	0.05	0.03	0.04
P3 (7) (8)	2.0	0.5	125	275	165	5.0	11.0	6.6	A	A	A	0.10	0.22	0.13
P4 (8)	4.0	3.0	150	95	130	1.0	0.6	0.9	A	A	A	0.02	0.01	0.02
P18	2.6	1.6	1,750	1,005	1,195	21.9	12.6	14.9	B	A	A	0.44	0.25	0.30
P5 (8)	4.0	3.0	1,195	1,055	1,085	8.0	7.0	7.2	A	A	A	0.16	0.14	0.14
P6 (8)	4.0	3.0	620	385	415	4.1	2.6	2.8	A	A	A	0.08	0.05	0.06
P7 (7)	3.6	2.1	1,480	1,580	1,680	14.1	15.0	16.0	A	A	B	0.28	0.30	0.32
P8 (7)	5.0	3.5	675	1,160	1,070	3.9	6.6	6.1	A	A	A	0.08	0.13	0.12
P9 (8)	2.7	1.2	450	280	285	7.5	4.7	4.8	A	A	A	0.15	0.09	0.10
P10 (7)	3.6	2.1	565	765	800	5.4	7.3	7.6	A	A	A	0.11	0.15	0.15

Index [1]	Clear Width (m)	Effective Width (m) [2]	Pedestrian Demand (pph) [3]			Flow Rate (ppm/m) [4]			LOS [5]			V/C Ratio [6]		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P11	2.5	1.5	2,810	2,110	2,205	37.5	28.1	29.4	D	C	C	0.75	0.56	0.59
P12	3.6	2.6	1,650	1,915	1,490	12.7	14.7	11.5	A	A	A	0.25	0.29	0.23
P13	2.2	1.2	1,230	990	1,030	20.5	16.5	17.2	B	B	B	0.41	0.33	0.34
P14	2.2	1.2	1,060	955	745	17.7	15.9	12.4	B	A	A	0.35	0.32	0.25
P15	3.0	2.0	1,030	1,325	820	10.3	13.3	8.2	A	A	A	0.21	0.27	0.16
P16	3.0	2.0	2,430	2,765	1,230	24.3	27.7	12.3	C	C	A	0.49	0.55	0.25
P17	4.5	3.5	280	265	280	1.6	1.5	1.6	A	A	A	0.03	0.03	0.03
P19	3.0	2.0	830	960	1,015	8.3	9.6	10.2	A	A	A	0.17	0.19	0.20

Remarks:
*(1) Refer to **Figure 3.1**.*
(2) Effective Width = Clear Width - Dead Width (0.5 m at each side of walkway).
(3) All figures are round up to nearest 5.
(4) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.
*(5) Refer to **Table 3.3**.*
(6) V/C Ratio = Flow Rate / Capacity (refer to TPDM Vol. 2 Ch. 3 Table 3.7.7.1 for capacity of walkway of 50ppm/m or ramp/ staircase of 40ppm/m).
(7) Effective Width is further reduced by 0.5 m accounting for obstruction of bus stop facilities.
(8) Designed walkway width under Revitalization of Tsui Ping River have been considered.

Table 6.4: Year 2028 Operational Assessment for Pedestrian Walkways (Design Scenario)

Index [1]	Clear Width (m)	Effective Width (m) [2]	Pedestrian Demand (pph) [3]			Flow Rate (ppm/m) [4]			LOS [5]			V/C Ratio [6]		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P1 [7] [8]	3.3	1.8	1,305	1,065	1,665	14.5	11.8	18.5	A	A	B	0.29	0.24	0.37
P2 [8]	4.3	3.3	400	245	310	2.4	1.5	1.9	A	A	A	0.05	0.03	0.04
P3 [7] [8]	2.0	0.5	130	290	175	5.2	11.6	7.0	A	A	A	0.10	0.23	0.14
P4 [8]	4.0	3.0	155	95	135	1.0	0.6	0.9	A	A	A	0.02	0.01	0.02
P18	2.6	1.6	1,840	1,055	1,255	23.0	13.2	15.7	C	A	A	0.46	0.26	0.31
P5 [8]	4.0	3.0	1,240	1,095	1,130	8.3	7.3	7.5	A	A	A	0.17	0.15	0.15
P6 [8]	4.0	3.0	640	390	420	4.3	2.6	2.8	A	A	A	0.09	0.05	0.06
P7 [7]	3.6	2.1	1,555	1,655	1,765	14.8	15.8	16.8	A	A	B	0.30	0.32	0.34
P8 [7]	5.0	3.5	705	1,220	1,120	4.0	7.0	6.4	A	A	A	0.08	0.14	0.13
P9 [8]	2.7	1.2	460	285	290	4.6	2.9	2.9	A	A	A	0.09	0.06	0.06

Index [1]	Clear Width (m)	Effective Width (m) [2]	Pedestrian Demand (pph) [3]			Flow Rate (ppm/m) [4]			LOS [5]			V/C Ratio [6]		
			AM	Noon	PM	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
P10 [7]	3.6	2.1	575	790	825	5.5	7.5	7.9	A	A	A	0.11	0.15	0.16
P11	2.5	1.5	2,950	2,215	2,315	39.3	29.5	30.9	D	C	C	0.79	0.59	0.62
P12	3.6	2.6	1,730	2,010	1,560	13.3	15.5	12.0	A	A	A	0.27	0.31	0.24
P13	2.2	1.2	1,290	1,040	1,085	21.5	17.3	18.1	B	B	B	0.43	0.35	0.36
P14	2.2	1.2	1,115	1,005	785	18.6	16.8	13.1	B	B	A	0.37	0.34	0.26
P15	3.0	2.0	1,085	1,390	860	10.9	13.9	8.6	A	A	A	0.22	0.28	0.17
P16	3.0	2.0	2,550	2,905	1,290	25.5	29.1	12.9	C	C	A	0.51	0.58	0.26
P17	4.5	3.5	280	265	280	1.6	1.5	1.6	A	A	A	0.03	0.03	0.03
P19	3.0	2.0	855	990	1,050	8.6	9.9	10.5	A	A	A	0.17	0.20	0.21

Remarks:
*(1) Refer to **Figure 3.1**.*
(2) Effective Width = Clear Width - Dead Width (0.5m at each side of walkway).
(3) All figures are round up to nearest 5.
(4) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.
*(5) Refer to **Table 3.3**.*
(6) V/C Ratio = Flow Rate / Capacity (refer to TPDM Vol. 2 Ch. 3 Table 3.7.7.1 for capacity of walkway of 50ppm/m or ramp/ staircase of 40ppm/m).
(7) Effective Width is further reduced by 0.5 m accounting for obstruction of bus stop facilities.
(8) Designed walkway width under Revitalization of Tsui Ping River have been considered.

6.1.5 From **Tables 6.3** to **6.4**, all assessed pedestrian walkways would be operating at LOS "D" or better in both design years 2023 and 2028 after completion of the Project.

6.1.6 Based on the above findings, it is anticipated that the Project would not induce adverse traffic impact to the surrounding pedestrian road network. The Project is considered acceptable from a traffic engineering point of view.

6.2 Operational Vehicular Traffic Impact Assessment

6.2.1 As the Project will not encroach onto any existing carriageway during the operational phase and the traffic generation due to the management/ maintenance of sewerage/ drainage works is anticipated to be minimal, the traffic impact due to the Project in the operational phase is anticipated to be negligible.

7. PEDESTRIAN TRAFFIC ENHANCEMENT MEASURES

7.1 Introduction

7.1.1 There has been strong aspiration from the public and Kwun Tong District Council (KTDC) for transforming King Yip Street nullah into Tsui Ping River to enhance the environment, provide quality leisure and greenery space for the public and improve the pedestrian accessibility and connectivity to the major streets and urban spaces in the vicinity.

7.1.2 In the District Facilities Management Committee meeting held on 12 January 2017, members of the Committee recommended the strengthening of the connection between Tsui Ping River with the nearby residential areas and facilities, to cope with the continuing development of the area.

7.1.3 In the Community Workshop held on 11 February 2017, participants expressed the need for additional pedestrian crossing(s) between Tsui Ping River and Wai Fat Road to further link up Laguna Park and Zone C of Tsui Ping River.

7.1.4 Besides, as requested by DSD, in order to improve the pedestrian accessibility and strengthen the connection between Tsui Ping River Zone C and Zone D, additional crossings across Kwun Tong By-pass slip roads at existing signalized junction of Wai Yip Street / Wai Fat Road (J5) have been proposed under the Project.

7.1.5 Based on the above, additional signalized pedestrian crossing facilities across Wai Fat Road (J9) and additional signalized pedestrian crossing facilities across Kwun Tong By-pass slip road at existing junction of Wai Yip Street / Wai Fat Road (J5) are proposed and discussed in **Sections 7.2** and **7.3** respectively.

7.1.6 Apart from the aforementioned crossings facilities, based on the Agreement, the existing northern footbridge ramp beside Kwun Tong Swimming Pool of Footbridge KF90 near junction of Kwun Tong Road/ Tsui Ping Road (J2) will be demolished and re-provided accordingly. This would significantly improve the visual appearance of the area and provide more open space for enjoyment of the public following the completion of the Project.

7.1.7 The re-provisioning of the northern footbridge ramp of KF90, adjacent to Kwun Tong Swimming Pool, was investigated and discussed in **Section 7.4**.

7.1.8 The landscaped walkway FB06, which will be located adjacent to the waterfront at Zone D, has been proposed under this Agreement. The design considerations were discussed in **Section 7.5**.

7.2 Proposed Additional Crossing Facilities at Wai Fat Road (J9)

7.2.1 Currently, there is no direct linkage between the entrance of Laguna Park at Wai Fat Road and the future Tsui Ping River. Pedestrians are using crossing facilities at junctions of Wai Yip Street/ Wai Fat Road (J5) and Shing Yip Street/ Cha Kwo Ling Road/ Wai Fat Road (J4). However, it is observed that the waiting time for pedestrians crossing Wat Fat Road is relatively long at these two heavily trafficked junctions (i.e. J4 & J5).

7.2.2 As such, there are initiatives to link up the new Tsui Ping River Garden with the surrounding public open spaces including the existing Laguna Park to the southeast side of Tsui Ping River (Zone C). It is proposed to provide a direct pedestrian linkage between the two public open spaces which are currently segregated by Wai Fat Road at-grade as well as Kwun Tong By-pass viaducts and ramps along its length.

7.2.3 The proposed pedestrian linkage across Wai Fat Road will be in a form of at-grade pedestrian crossing controlled by traffic signals as shown in **Figure 7.1**.

7.2.4 Wai Fat Road is a 7.3 m wide dual carriageway connecting Shing Yip Street and Cha Kwo Ling Road on the east and Kwun Tong bypass and Wai Yip Street on its west underneath Kwun Tong By-pass.

7.2.5 The existing available pedestrian crossings at the signal junctions at both ends of Wai Fat Road are located at approximately 350 m apart, so that pedestrians will have to make a detour to walk between the future Tsui Ping River and Laguna Park.

7.2.6 The proposed new at-grade pedestrian crossing will be aligned to connect with the key entrance points of both the future Tsui Ping River and Laguna Park, such that a direct and convenient pedestrian linkage and accessibility can be achieved.

Design Considerations

7.2.7 According to the TPDM, a minimum of 3.5 m headroom should be maintained at the proposed pedestrian crossing section and walkway at Wai Fat Road.

7.2.8 A minimum 60m distance should be maintained between the stop-line and existing run-ins for Laguna Park substation at Wai Fat Road south-west bound.

7.2.9 Based on the aforementioned design considerations, an at-grade pedestrian crossing is proposed near the entrance of Laguna Park adjacent to the existing bus stop as shown in **Figure 7.1**.

7.2.10 The existing dwarf wall that segregates Wai Fat Road eastbound and westbound traffic would be demolished and converted to a refuge island for pedestrians crossing Wai Fat Road.

7.2.11 The existing bus layby is bounded by the proposed pedestrian crossing on the west and a run-in of Laguna Park substation on the east. In order to keep the bus layby as far away as the proposed pedestrian crossing and not to affect the day to day operation of bus service, the bus stop would be slightly modified based on TPDM requirements.

7.2.12 Moreover, the visibility of the proposed pedestrian crossing has been reviewed. The result shows that the minimum required sight distance of the proposed pedestrian crossing could be achieved. The proposed pedestrian crossing is located about 130 m and over 200 m apart from Wai Fat Road/ Shing Yip Street/ Cha Kwo Ling Road (J4) and Wai Fat Road/ Wai Yip Street (J5) respectively, the required minimum junction spacing of 100 m on local distributors as stated in TPDM could be complied with.

7.2.13 Based on the above, the location of the proposed pedestrian crossing is considered technical feasible from traffic engineering point of view.

7.2.14 In additional, the proposed pedestrian crossing with push buttons is suggested in order to minimize the impact to the vehicular traffic and reduce the waiting time for pedestrians with immediate response to the pedestrian phase, subject to TD's consideration.

Forecast Junction Performance

7.2.15 A similar methodology, as mentioned in **Section 4,** will be applied to derive the year 2028 design traffic flows.

7.2.16 In year 2023, junction improvement schemes for the junction of Wai Fat Road / Shing Yip Street / Cha Kwo Ling Road (J4) and the junction of Wai Yip Street / Wai Fat Road (J5) that were proposed under the Study of Ex-Cha Kwo Ling Kaolin Mine Site (see **Figures 5.10 and 5.11** which were extracted from MPC Paper No. 19/14) has been considered. The junction improvement schemes of J4 and J5 mentioned in MPC Paper No. 19/14 are shown in **Figures 5.10** and **Figure 5.11** respectively for reference. Furthermore, it is given that J4 would be further improved under the proposed King Yip Street Commercial Development (EKEO's study) expected to be completed in year 2023. Therefore, the latest design of junction of Wai Fat Road/ Shing Yip Street/ Cha Kwo Ling Road (J4) would be adopted to assess the likely traffic impact arising from the proposed signalized pedestrian crossing at Wai Fat Road (J9) in design years 2023 (completion of Tsui Ping River) and 2028 (5 years after the completion of Tsui Ping River).

7.2.17 The junction improvement schemes for the junction of Wai Fat Road/ Shing Yip Street/ Cha Kwo Ling Road (J4) under EKEO's study is shown in **Figure 7.2** for reference.

7.2.18 Besides, as mentioned in **Section 7.1**, additional crossings across Kwun Tong By-pass slip roads at the existing signalized junction of Wai Yip Street/ Wai Fat Road (J5) would be proposed under the Project (as discussed in **Section 7.3**). As such, the latest junction design for J5 would be adopted to assess the likely traffic impact arising from the proposed signalized pedestrian crossing at Wai Fat Road (J9).

7.2.19 The junction modification scheme for the junction of Wai Yip Street/ Wai Fat Road (J5) under the Project is shown in **Figure 7.3** for reference.

7.2.20 The proposed junction performance of the proposed signalized pedestrian crossing at Wai Fat Road (J9) for design years 2023 and 2028 are shown in **Table 7.1** and correlated calculation sheets are attached in **Appendix A**.

Table 7.1: Years 2023 & 2028 Junction Performance of Proposed Signalized Pedestrian Crossing at Wai Fat Road

Index	Junction	Reserved Capacity (RC)			
		Year 2023		Year 2028	
		AM	PM	AM	PM
J9	Proposed Wai Fat Road Crossing	>100%	80%	>100%	69%

7.2.21 As shown in **Table 7.1**, the proposed signalized pedestrian crossing at Wai Fat Road (J9) would be operating within capacity in design year 2023 and 2028 (RC > 10%).

7.2.22 The queue length analysis along Wai Fat Road at the junctions of Wai Fat Road/ Shing Yip Street/ Cha Kwo Ling Road (J4), Wai Yip Street/ Wai Fat Road (J5) and the proposed signalized pedestrian crossing at Wai Fat Road (J9) had been assessed. The calculated average queue lengths along Wai Fat Road are shown in **Table 7.2** for design years 2023 and 2028.

Table 7.2: Years 2023 & 2028 Calculated Average Queue Length along Wai Fat Road

Section	Estimated Average Queue Length (m)			
	Year 2023		Year 2028	
	AM	PM	AM	PM
Junction of Wai Fat Road / Shing Yip Street / Cha Kwo Ling Road (J4)				
Wai Fat Road eastbound	15	25	20	30
Junction of Wai Yip Street / Wai Fat Road (J5)				
Wai Fat Road westbound – Lane 1 (Straight ahead)	20	30	20	35
Wai Fat Road westbound – Lane 2 (Straight ahead)	20	30	20	35

Section	Estimated Average Queue Length (m)			
	Year 2023		Year 2028	
	AM	PM	AM	PM
Wai Fat Road westbound – Lane 3 Right Turn	75	60	160	95
Wai Fat Road westbound – Lane 4 Right Turn & U-turn	75	60	160	95
Proposed Wai Fat Road Signalized Pedestrian Crossing (J9)				
Wai Fat Road eastbound	5	5	5	10
Wai Fat Road westbound	10	15	10	15

Remarks: (1) Figures are rounded to nearest 5.

7.2.23 From **Table 7.2**, it is noted that the calculated average queues along Wai Fat Road would not be encroaching into the adjacent junctions at junctions of Wai Fat Road/ Shing Yip Street/ Cha Kwo Ling Road (J4), Wai Yip Street/ Wai Fat Road (J5) and the proposed signalized pedestrian crossing at Wai Fat Road (J9) for design years 2023 and 2028. Therefore, it is anticipated that the proposed signalized pedestrian crossing at Wai Fat Road (J9) would be technical feasible from traffic engineering point of view.

Forecast Pedestrian Demand

7.2.24 In order to determine an appropriate crossing width for the proposed signalized pedestrian crossing at Wai Fat Road (J9), pedestrian demand across Wai Fat Road at J9 should be predicted.

7.2.25 A manual classified pedestrian traffic count survey was conducted on a normal weekday, 16 March 2018 (Friday) during the morning, noon and evening peak hour periods from 07:30 to 09:30, from 11:30 to 14:00 and from 17:00 to 19:00 respectively at pedestrian crossings at the junctions of Wai Fat Road/ Shing Yip Street/ Cha Kwo Ling Road (J4) and Wai Fat Road/ Wai Yip Street (J5).

7.2.26 The observed total pedestrian demand at the crossings on Wai Fat Road near Shing Yip Street and Wai Yip Street are presented in **Table 7.3**.

Table 7.3: Existing Pedestrian Demand Across Wai Fat Road

Location	Pedestrian Demand [1] (ped/hr)		
	AM	Noon	PM
Across Wai Fat Road near Shing Yip Street	760	535	650
Across Wai Fat Road near Wai Yip Street	410	365	390

Remarks: (1) Figures are rounded to nearest 5.

7.2.27 Similarly, the background pedestrian forecasts for the design years 2023 and 2028 were projected by applying a growth rate, as mentioned in **Section 4.2.6** to the observed pedestrian flows at the junction of Wai Fat Road/ Shing Yip Street/ Cha Kwo Ling Road (J4), the junction of Wai Yip Street/ Wai Fat Road (J5) obtained from the traffic survey.

7.2.28 The forecast visitor generation after the completion of Tsui Ping River would be superimposed onto the years 2023 and 2028 reference pedestrian forecasts to create the design year forecasts for assessment at the design years.

7.2.29 Based on the observed pedestrian Origin and Destination (O-D) proportions at J4 and J5 and the forecast pedestrian demand after completion of Tsui Ping River, the estimated pedestrian demand to be diverted to the proposed signalized pedestrian crossing at Wai Fat Road (J9) is shown in **Table 7.4**.

Table 7.4: Estimated Pedestrian Demand at Proposed Wai Fat Road Crossing

Index	Location	Pedestrian Demand [1] (ped/hr)					
		Year 2023			Year 2028		
		AM	Noon	PM	AM	Noon	PM
J9	Wai Fat Road pedestrian crossing	555	490	410	600	540	450

Remarks: (1) Figures are rounded to nearest 5.

7.2.30 Based on the estimated pedestrian demand of the proposed crossing, it is anticipated that a minimum of 2.5 m wide crossing would be required to comply with the requirement stipulated in TPDM.

7.2.31 The proposed signalized pedestrian crossing at Wai Fat Road (J9) is shown in **Figure 7.1**.

Conclusion

7.2.32 As discussed above, the provision of the signalized pedestrian crossing across Wai Fat Road is found to be technical feasible in general from traffic engineering point of view.

7.2.33 The proposed signalized pedestrian crossing at Wai Fat Road (J9) is aimed to enhance connectivity between the north and south side of Wai Fat Road, thereby offering convenient access for the public from the south of Tsui Ping River to gain direct access to Tsui Ping River and Kwun Tong Business Area on the north, and vice versa.

7.3 Proposed Additional Crossings Facilities across Kwun Tong By-pass Slip Roads

7.3.1 As requested by DSD, additional crossing facilities across Kwun Tong By-pass slip roads at existing signalized junction of Wai Yip Street / Wai Fat Road (J5) have been proposed under the Project.

Design Consideration

7.3.2 The design of additional crossing facilities across Kwun Tong By-pass slips roads would be based on the junction improvement scheme proposed under the study of Ex-Cha Kwo Ling Kaolin Mine Site (see **Figure 5.11**) for the junction of Wai Yip Street/ Wai Fat Road (J5).

7.3.3 Based on the existing junction layout and site condition, a 3.0 m wide and 2.5 m wide signalized pedestrian crossings are proposed across the slip road leading to Wai Fat Road eastbound and the slip road leading to Kwun Tong By-pass respectively.

7.3.4 Junction markings at the slip road leading to Wai Fat Road eastbound would be slightly modified for additional signalized pedestrian crossing facilities

7.3.5 The proposed junction modification scheme and method of control (MOC) are shown in **Figure 7.3**.

Forecast Junction Performance

7.3.6 As mentioned above (**Sections 5.2.7** – **5.2.8)**, in year 2023, the junction improvement scheme for the junction of Wai Yip Street/ Wai Fat Road (J5) proposed under the Study of Ex-Cha Kwo Ling Kaolin Mine Site would be adopted to assess the likely traffic impact arising from the proposed junction modification works at J5.

7.3.7 It is considered that the phase for the proposed pedestrian crossings could match the proposed MOC under the Study of Ex-Cha Kwo Ling Kaolin Mine Site without affecting the intergreen time under the current proposal. Besides, the additional traffic generation from the Project would be minimal as mentioned in **Section 4.8** after the Project completion. Therefore, under the junction modification scheme, it is noted that the additional pedestrian crossings would not affect the junction performance of J5.

7.3.8 Therefore, it is considered that the traffic impact arising from the junction modification scheme of J5 would be negligible with the proposed junction modification scheme.

Conclusion

7.3.9 As demonstrated above, the proposed junction modification scheme of Wai Yip Street/ Wai Fat Road (J5) is aimed to enhance connectivity between Tsui Ping River and Kwun Tong Promenade thereby offering convenient access for the public from the northeast of Tsui Ping River to gain direct access to the Promenade on the southwest, and vice versa. The pedestrian route between Tsui Ping River and the Promenade is shown in **Figure 7.4**. The provision of the additional signalized pedestrian crossing facilities at the junction of Wai Yip Street / Wai Fat Road (J5) is found to be technical feasible in general from traffic engineering point of view.

7.4 Proposed Permanent Relocation of Existing Footbridge Ramp of Footbridge KF90

7.4.1 The existing northern footbridge ramp of Footbridge KF90 beside Kwun Tong Swimming Pool at the junction of Kwun Tong Road/ Tsui Ping Road (J2) will be demolished and re-provided under the Project.

7.4.2 The re-provisioning of the northern footbridge ramp of KF90 adjacent to Kwun Tong Swimming Pool was investigated and considered technical feasible under the Project.

7.4.3 The internal clear width of the re-provisioned ramp is about 3.1 m, which is the same as the clear width of the existing footbridge ramp proposed to be demolished under the Project. The design of the re-provisioned ramp is shown in **Figure 7.5**.

7.4.4 Currently, the subject footbridge KF90 provides an elevated pedestrian linkage between the northern and southern sides of Kwun Tong Road at its junction with Tsui Ping Road. The northern landing point is currently provided with a ramp and a staircase.

7.4.5 Under the project of Provision of Universal Access Facilities at Public Footbridges by CEDD, it is noted that an accessible lift will be constructed beside the Kwun Tong Swimming Pool for Footbridge KF90. The northern landing point will be retrofitted with a lift under CEDD's **Contract No. CV/2015/01** Provision of Universal Access Facilities for Highway Structure – Package 1 Contract 2 (hereinafter referred to as **CV/2015/01**). The lift retrofitting works will involve the demolition of the existing staircase and re-provision of a new staircase in association with an elevated platform linking the proposed lift as shown in CEDD's **Drawing No. UAP1-2/CV/KF90/0101** in **Appendix B**.

Forecast Pedestrian Demand

7.4.6 The observed peak pedestrian flows on the subject footbridge is approximately 765 ped/hr during AM peak period.

7.4.7 A similar methodology has been applied to derive the years 2023 and 2028 design traffic flows after the completion of the Project as mentioned in **Section 4**.

7.4.8 The year 2023 and year 2028 forecast pedestrian demand at the subject footbridge are approximately 805 ped/hr and 845 ped/hr during AM peak period respectively.

7.4.9 Based on the latest programme of the interfacing project of the **CV/2015/01**, it is anticipated that the project would be completed and opened to the public by the time construction works of the Project commences.

Operation Stage

7.4.10 Based on the above assumption, assuming all footbridge users will make use of the northern re-provisioned ramp with an internal width of 3.1 m under the Project, the capacity performance of the re-provisioned footbridge ramp would achieve LOS "A" for the years 2023 and 2028. The operational assessment for the re-provisioned footbridge ramp is shown in **Table 7.5**.

Table 7.5: Years 2023 & 2028 Operational Assessment for Re-Provisioned Footbridge Ramp

Location	Clear Width (m)	Effective Width (m)	Year 2023	Year 2028	Year 2023	Year 2028	Year 2023	Year 2028
			Pedestrian Demand (pph) (2)		Flow Rate (ppm/m) (3)		LOS	
Re-Provisioned Footbridge Ramp	3.1	2.1	805	845	7.7	8.0	A	A

Remarks: *(1) Effective Width = Clear Width - Dead Width (0.5m at each side of walkway).*
(2) All figures are round up to nearest 10.
(3) Flow Rate = Pedestrian Demand / 60 min x 1.2 / Effective Width.

Conclusion

7.4.11 As demonstrated above, from the point of view of pedestrian traffic flow, the re-provisioned footbridge ramp under the Project would provide adequate flow capacity for the existing footbridge.

7.5 Proposed Landscaped Walkway FB06

7.5.1 A landscaped walkway FB06, which will be located on the waterfront at Zone D, has been proposed under this Agreement.

7.5.2 Based on the latest design of the landscaped walkway FB06, it would provide a direct pedestrian linkage between Kwun Tong Promenade and Zone D underneath Kwun Tong By-pass as well as the future Cha Kwo Ling Promenade, which are currently segregated by the King Yip Street nullah.

7.5.3 The proposed landscaped walkway FB06 is anticipated to improve the connectivity and accessibility between Kwun Tong Promenade, Zone D underneath Kwun Tong By-pass and the future Cha Kwo Ling Promenade for leisure purpose. It is considered that the presence of the proposed landscaped walkway FB06 could provide quality leisure and greenery space for the public.

8. SUMMARY AND CONCLUSION

8.1 Summary

8.1.1 ACL was commissioned by DSD in December 2017 to undertake the Project "Agreement No. CE 58/2017 (DS) Energizing Kowloon East - Revitalization of Tsui Ping River – Design and Construction".

8.1.2 Pedestrian and vehicular traffic surveys were conducted to establish the current pedestrian and vehicular traffic condition in the vicinity of the Project.

8.1.3 The construction traffic to be generated under the Project had made reference to the construction traffic generated during the construction of Kai Tak River.

8.1.4 Junction and link capacity assessments as well as pedestrian walkway assessments have been carried out with respect to the disturbance of the proposed TTM schemes at critical junctions and walkways.

8.1.5 All the affected pedestrian walkways would be operating at LOS "D" or better even with the implementation of proposed TTM schemes except for walkways at Shing Yip Street, Hing Yip Street and Hung To Road (P11 – P13 and P15 – P16).

8.1.6 It is therefore proposed that works along the aforementioned walkway sections with estimated LOS "E" and "F" be implemented outside AM, Noon and PM peak periods. During the peak periods, the works area will be decked over, if applicable, to maintain the existing walkway width.

8.1.7 In addition, the extent of proposed works area should be kept to a minimum in order to minimize the impact to the pedestrians in the vicinity.

8.1.8 All the concerned critical junctions would be operating within capacities, except for the junctions of Kwun Tong Road/ Tsui Ping Road (J2) and Wai Fat Road/ Wai Yip Street (J5) which would be operating at marginal performance and beyond its capacity respectively in year 2023 during the construction design scenario.

8.1.9 Therefore, the loading/ unloading activities for the construction of Tsui Ping River at Tsui Ping Road are proposed to be carried out outside daily peak periods to minimize the traffic disturbance along Tsui Ping Road westbound.

8.1.10 In addition, the junction of Wai Yip Street/ Wai Fat Road (J5) would be operating beyond its capacity (i.e. 0% ≥ RC) in year 2023 construction design scenario with the proposed TTM schemes at Kwun Tong By-pass slip road. It is suggested that the TTM schemes should avoid AM and PM peak periods so as not to worsen the traffic conditions at J5 during the construction of additional crossing facilities at junction J5.

8.1.11 All of the concerned road sections would be operating at an acceptable level in year 2023 Reference and Construction Design scenarios (i.e. 1.00 ≥ V/C ratio).

8.1.12 The forecast visitors to be generated from the Project were derived from the surveyed peak hour visitor demand of Laguna Park in the vicinity.

8.1.13 As the Project will not encroach onto any existing carriageway during the operational phase and the traffic generation due to the management/ maintenance of sewerage/ drainage works is anticipated to be minimal, the traffic impact due to the Project during the operational phase is anticipated to be negligible.

8.1.14 Pedestrian walkway assessments have been carried out at critical walkways after completion of the Project.

8.1.15 All assessed pedestrian walkways would be operating at LOS "D" or better in both design years 2023 and 2028 after completion of the Project.

8.1.16 Therefore, it is anticipated that the Project would not induce significant traffic impact to the surrounding pedestrian road network. The Project is considered acceptable from a traffic engineering point of view in this respect.

8.1.17 The provision of the at-grade crossings at Wai Fat Road (J9), additional signalized pedestrian crossings at the junction of Wai Yip Street/ Wai Fat Road (J5) and the design width of the re-provisioned footbridge ramp of KF90 have been reviewed. Provision of the at-grade crossings at Wai Fat Road (J9) and additional pedestrian crossings at the junction of Wai Yip Street/ Wai Fat Road (J5) were found to be technical feasible in general and the design width of the re-provisioned footbridge ramp of KF90 would be adequate from traffic engineering point of view.

8.1.18 The landscaped walkway FB06, located on the waterfront at Zone D, has been proposed under this Agreement.

8.1.19 The proposed landscaped walkway FB06 is anticipated to improve the connectivity and accessibility between Kwun Tong Promenade and Zone D underneath Kwun Tong By-pass as well as the future Cha Kwo Ling Promenade for leisure purpose.

8.1.20 It is considered that the presence of the proposed landscaped walkway FB06 could provide quality leisure and greenery space for the public.

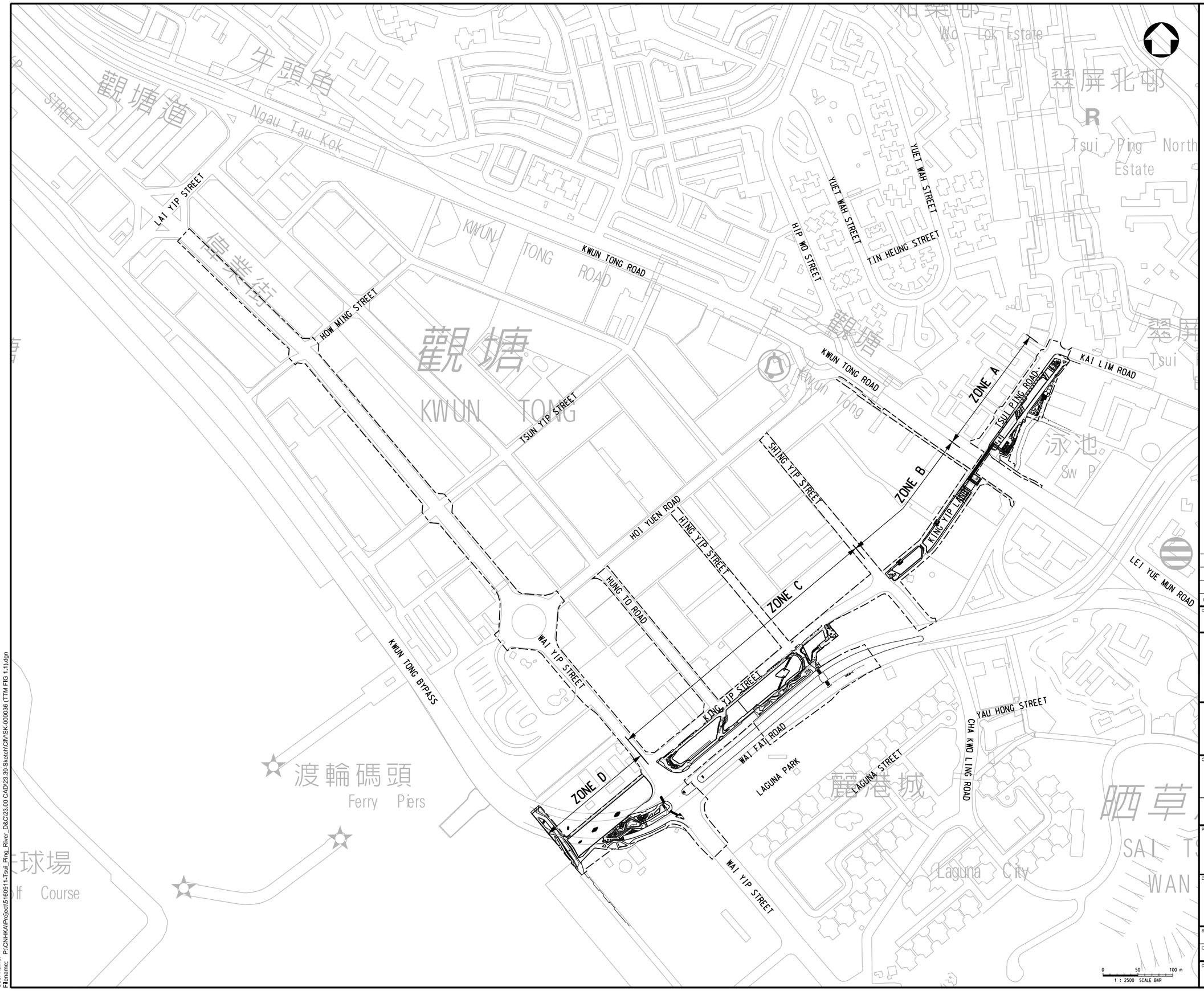
8.2 Conclusion

8.2.1 It is concluded that subject to the provision of appropriate temporary traffic arrangements and management measures to be developed during the construction stage, the Project would not induce insurmountable traffic impacts and it is considered tolerable during construction stage from a traffic perspective.

8.2.2 The Project would not induce insurmountable pedestrian traffic impacts and it is acceptable upon completion of the Project from a traffic perspective.

8.2.3 The proposed pedestrian traffic enhancement measures were all found technical feasible in general and acceptable upon completion of the Project from a traffic perspective.

Figures



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM UNLESS OTHERWISE SPECIFIED.

LEGEND:

———— PROJECT BOUNDARY

Rev.	Date	Description	By	Chk'd	App'd
A	09/18	REV. A	PK	JL	RS
-	05/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新通 spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
PROJECT LAYOUT PLAN

Scale	Designed	Drawn	Checked	Authorised
1 : 2500	PK	IT	JL	RS
Original Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

Drawing Number: FIGURE 1.1

Revision: -

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\Civ\SK-000036 (TTM FIG 1.1).dgn

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM UNLESS OTHERWISE SPECIFIED.

LEGEND:

- PROJECT BOUNDARY
- STUDY AREA
- J1 — CRITICAL JUNCTION & JUNCTION INDEX
- P1 — CRITICAL WALKWAY & INDEX
- L1 — CRITICAL ROAD LINK & INDEX

ZONE A
ZONE B
ZONE C
ZONE D
AT-GRADE

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	05/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新域 spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
LOCATION PLAN

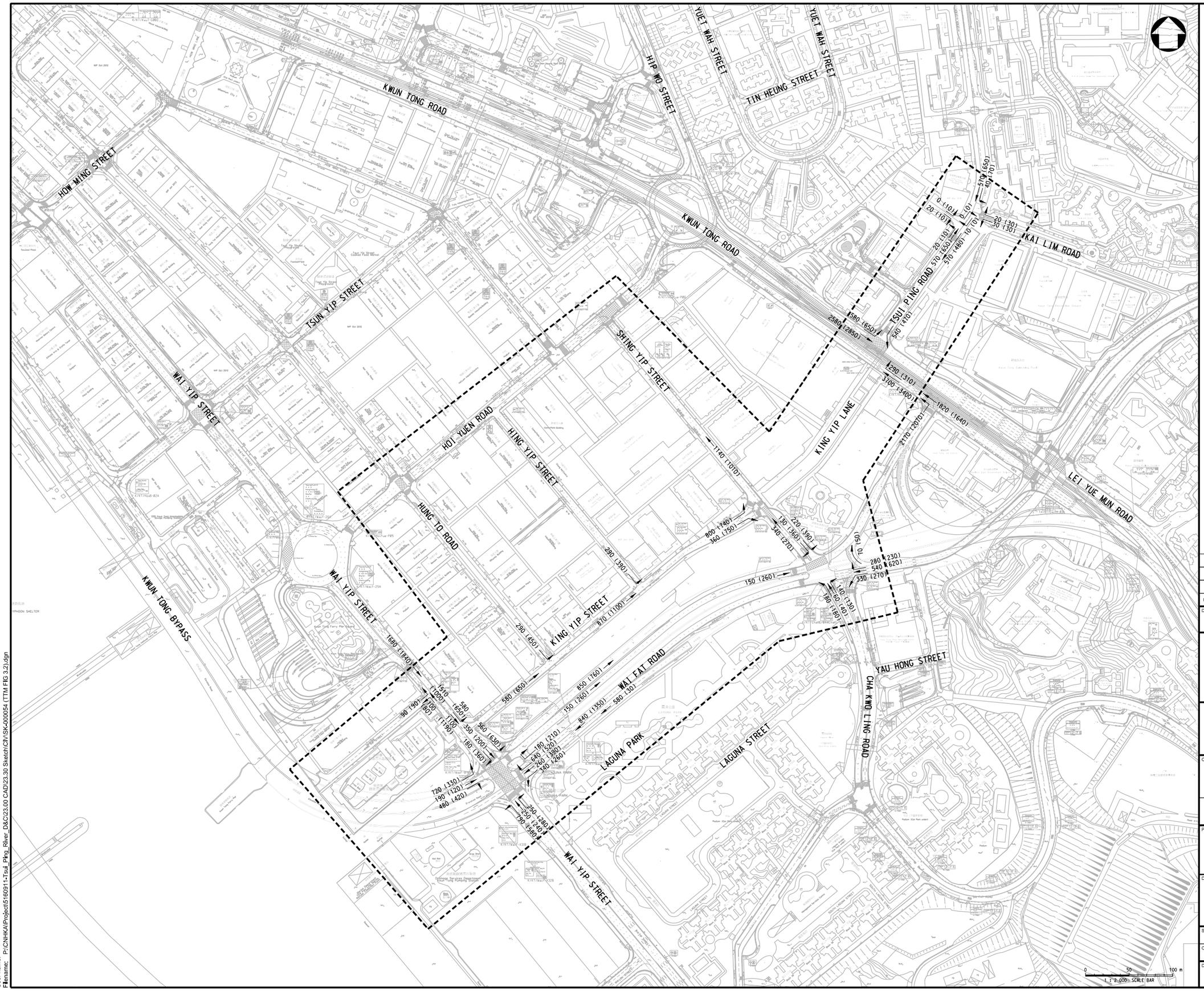
Scale	Designed	Drawn	Checked	Authorised
1 : 2500	PK	IT	JL	RS
Original Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

Drawing Number: FIGURE 3.1
Revision: A

0 50 100 m
1 : 2500 SCALE BAR

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\Civ\SK-000037 (TTM FIG 3.1).dgn



LEGEND:

PROPOSED STUDY AREA BOUNDARY

123 (123) AM (PM) PEAK HOURLY TRAFFIC FLOW IN (PCU/HOUR)

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	05/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新域

spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
EXISTING TRAFFIC FLOW

Scale	Designed	Drawn	Checked	Authorised
1 : 2000	PK	IT	JL	RS
Original Size: A1	Date: MAY 2018	Date: MAY 2018	Date: MAY 2018	Date: MAY 2018

Drawing Number: FIGURE 3.2

Revision: A

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000054 (TTM FIG 3.2).dgn

Copyright © Atkins Limited

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM UNLESS OTHERWISE SPECIFIED.

LEGEND:

- PROJECT BOUNDARY
- STUDY AREA
- EGRESS ROUTING
- INGRESS ROUTING

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	05/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新濠 | spawton architecture

Client: 渠務署 Drainage Services Department

排水工程部 Drainage Projects Division

Project Title: CE58/2017(DS) ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title: CONSTRUCTION TRAFFIC ROUTINGS

Scale	Designed	Drawn	Checked	Authorised
1 : 2500	PK	IT	JL	RS
Original Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

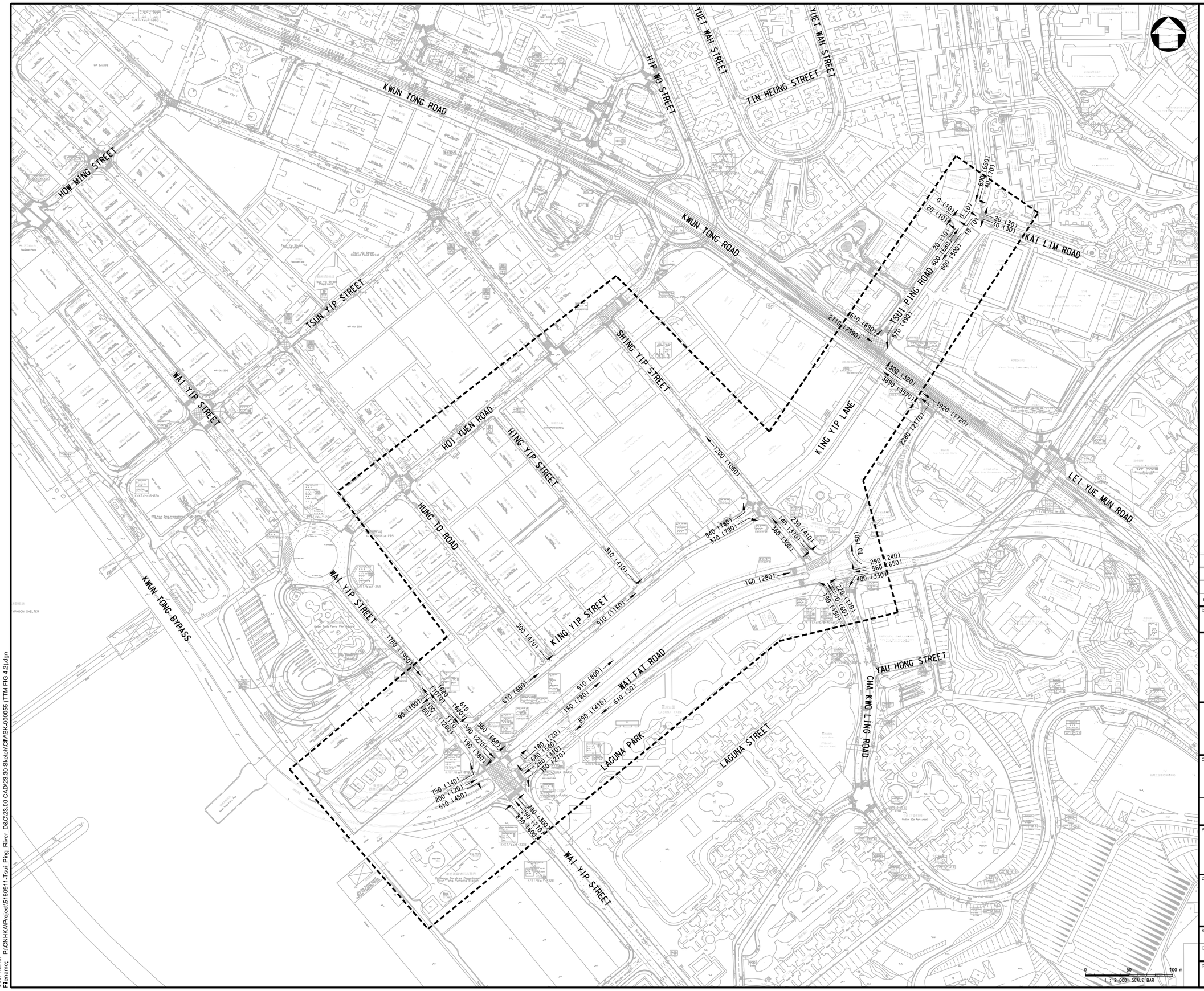
Drawing Number: FIGURE 4.1

Revision: A

0 50 100 m
1 : 2500 SCALE BAR

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000038 (TTM FIG 4.1).dgn



LEGEND:

PROPOSED STUDY AREA BOUNDARY

123 (123) AM (PM) PEAK HOURLY TRAFFIC FLOW IN (PCU/HOUR)

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	05/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新域

spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
YEAR 2023 REFERENCE TRAFFIC FLOW

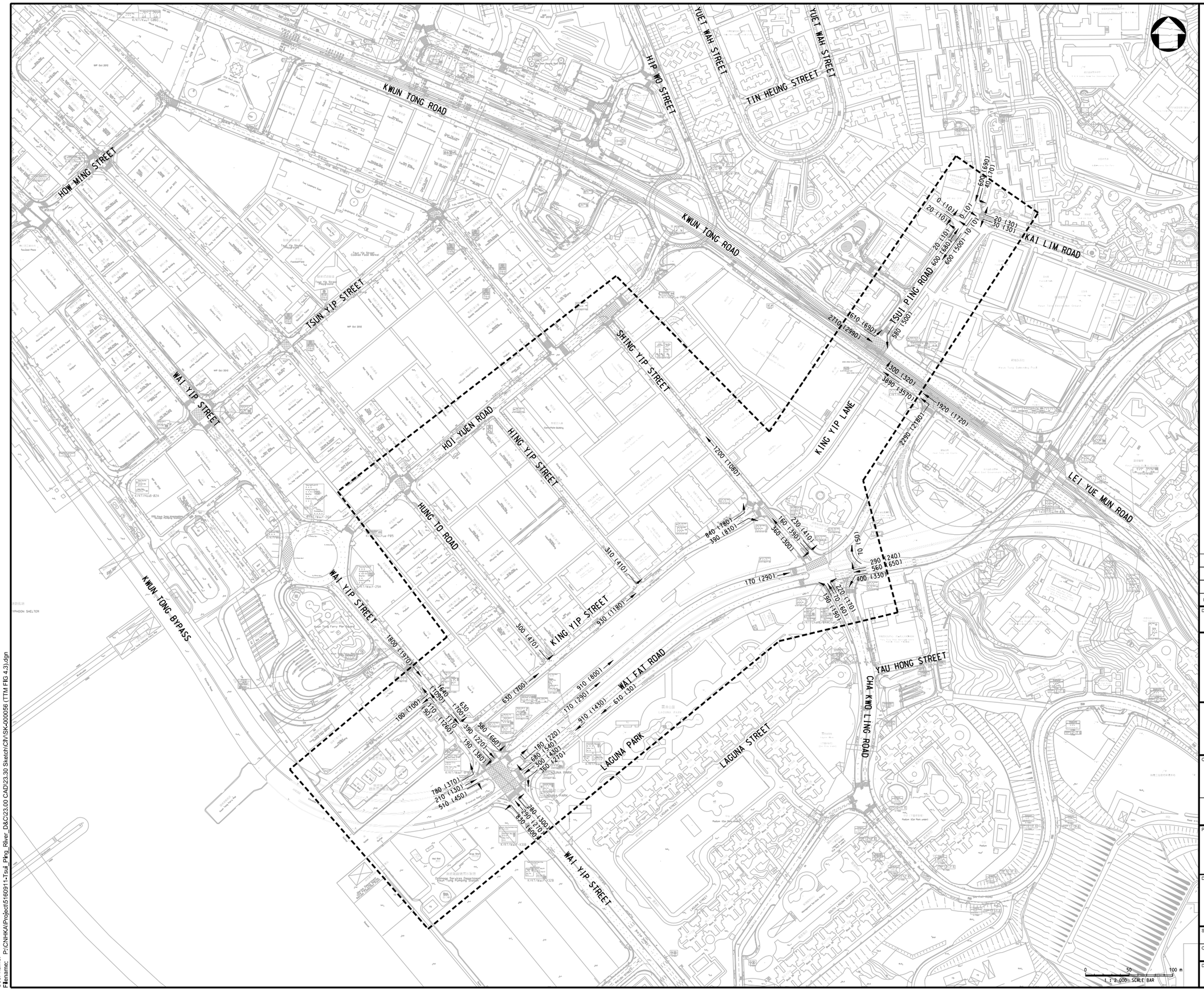
Scale	Designed	Drawn	Checked	Authorised
1 : 2000	PK	IT	JL	RS
Original Size: A1	Date: MAY 2018	Date: MAY 2018	Date: MAY 2018	Date: MAY 2018

Drawing Number: FIGURE 4.2

Revision: A

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000055 (TTM FIG 4.2).dgn



LEGEND:

PROPOSED STUDY AREA BOUNDARY

123 (123) AM (PM) PEAK HOURLY TRAFFIC FLOW IN (PCU/HOUR)

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	05/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新域 spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
YEAR 2023 CONSTRUCTION DESIGN TRAFFIC FLOW

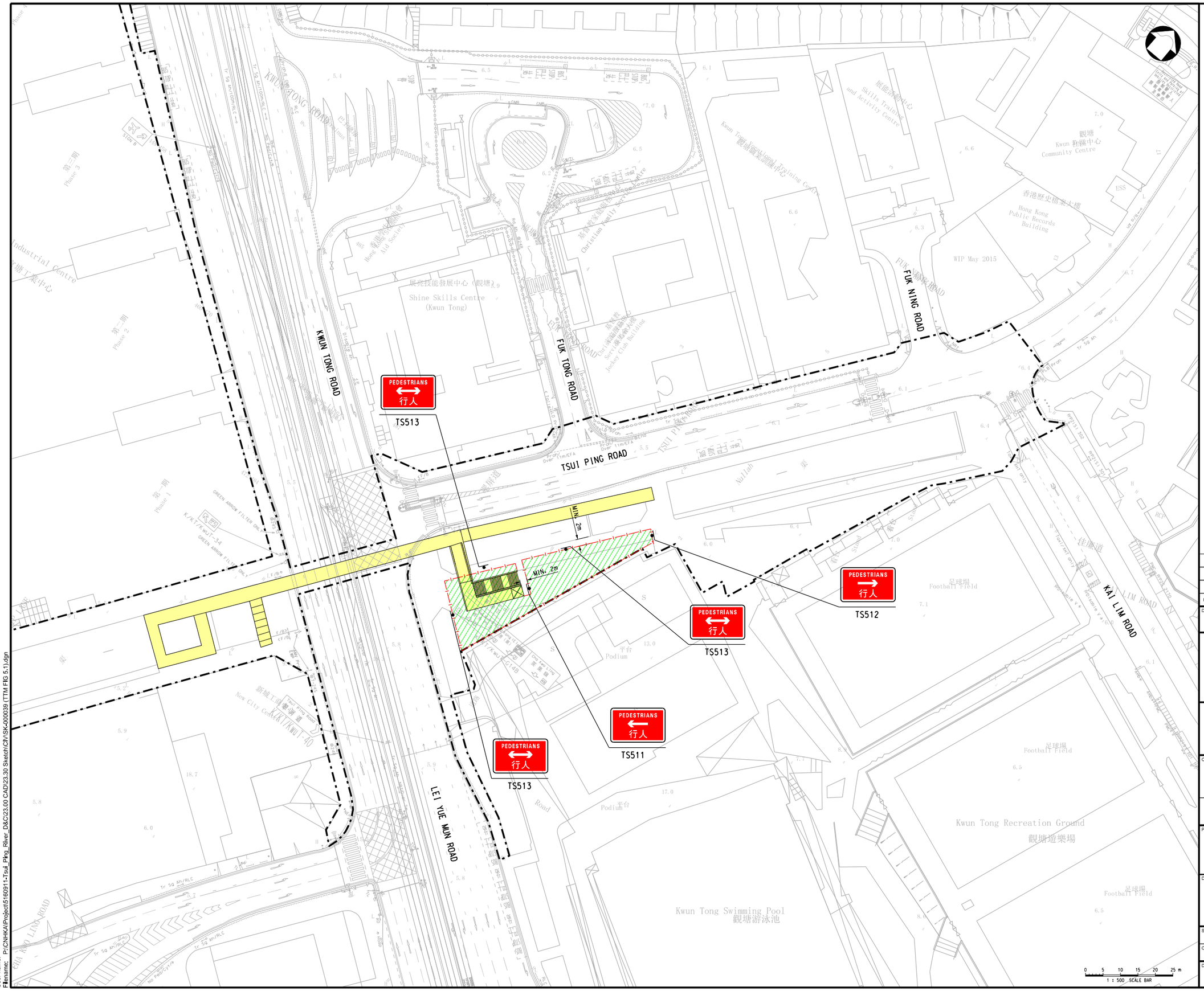
Scale	Designed	Drawn	Checked	Authorised
1 : 2000	PK	IT	JL	RS
Original Size: A1	Date: MAY 2018	Date: MAY 2018	Date: MAY 2018	Date: MAY 2018

Drawing Number: FIGURE 4.3

Revision: A

User name: TSEI3099
Filename: P:\CNHK\AIProject\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000056 (TTM FIG 4.3).dgn

Copyright © Atkins Limited



LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	FIRST ISSUE	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城 | spawton architecture

Client: 渠務署 Drainage Services Department
排水工程部 Drainage Projects Division

Project Title:
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title:
TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE A FOR CONSTRUCTION OF THE NEW RAMP FOR KF90

Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JL	RS
Original Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

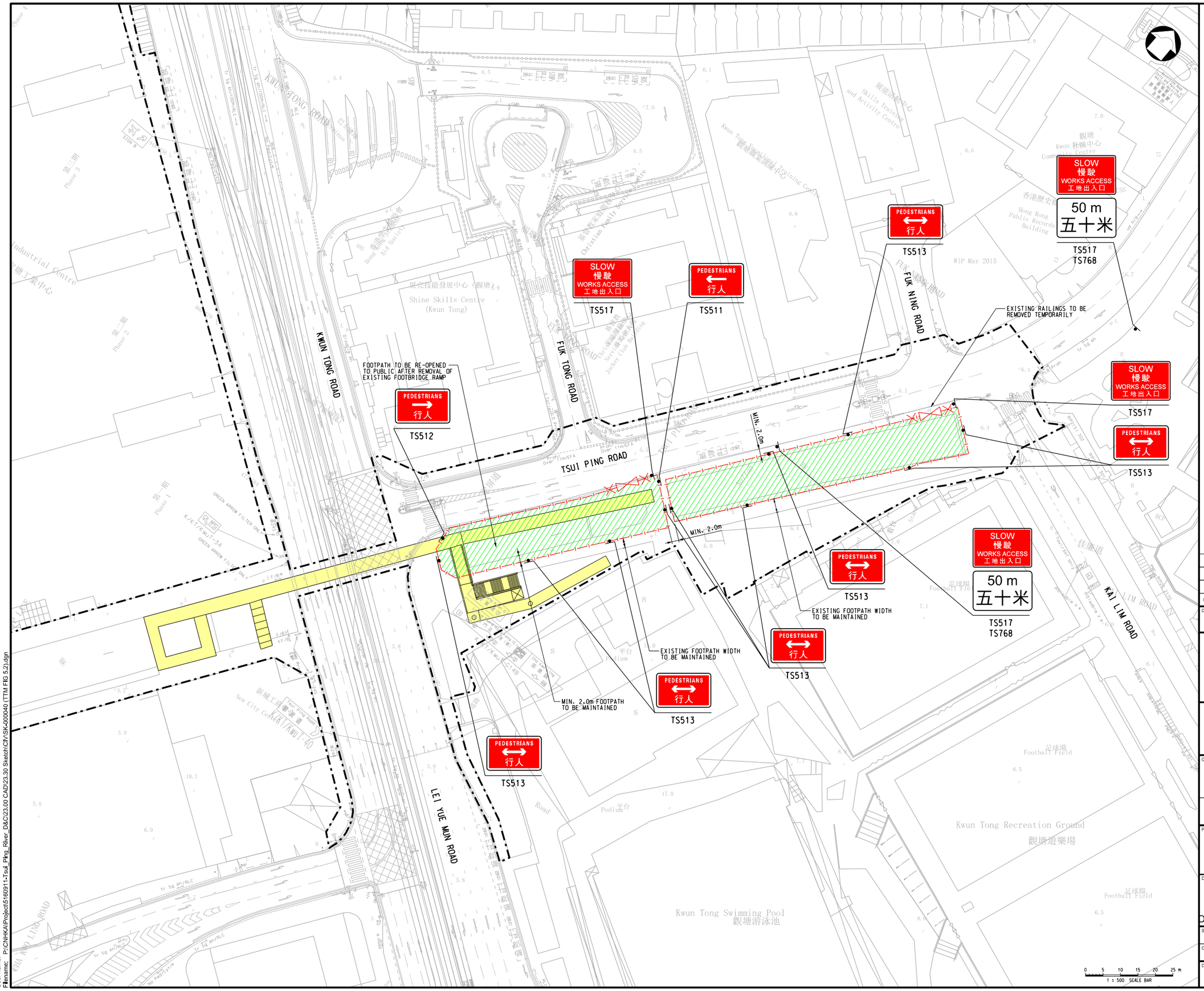
Drawing Number: FIGURE 5.1

Revision: A

0 5 10 15 20 25 m
1 : 500 SCALE BAR

User name: TSEI3099
Filename: P:\CNHK\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000039 (TTM FIG 5.1).dgn

Copyright © Atkins Limited



LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	JLL	NP	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境 | spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE A FOR REMOVAL OF FOOTBRIDGE RAMP AND CONSTRUCTION OF TSUI PING RIVER NORTH-WESTERN SIDE

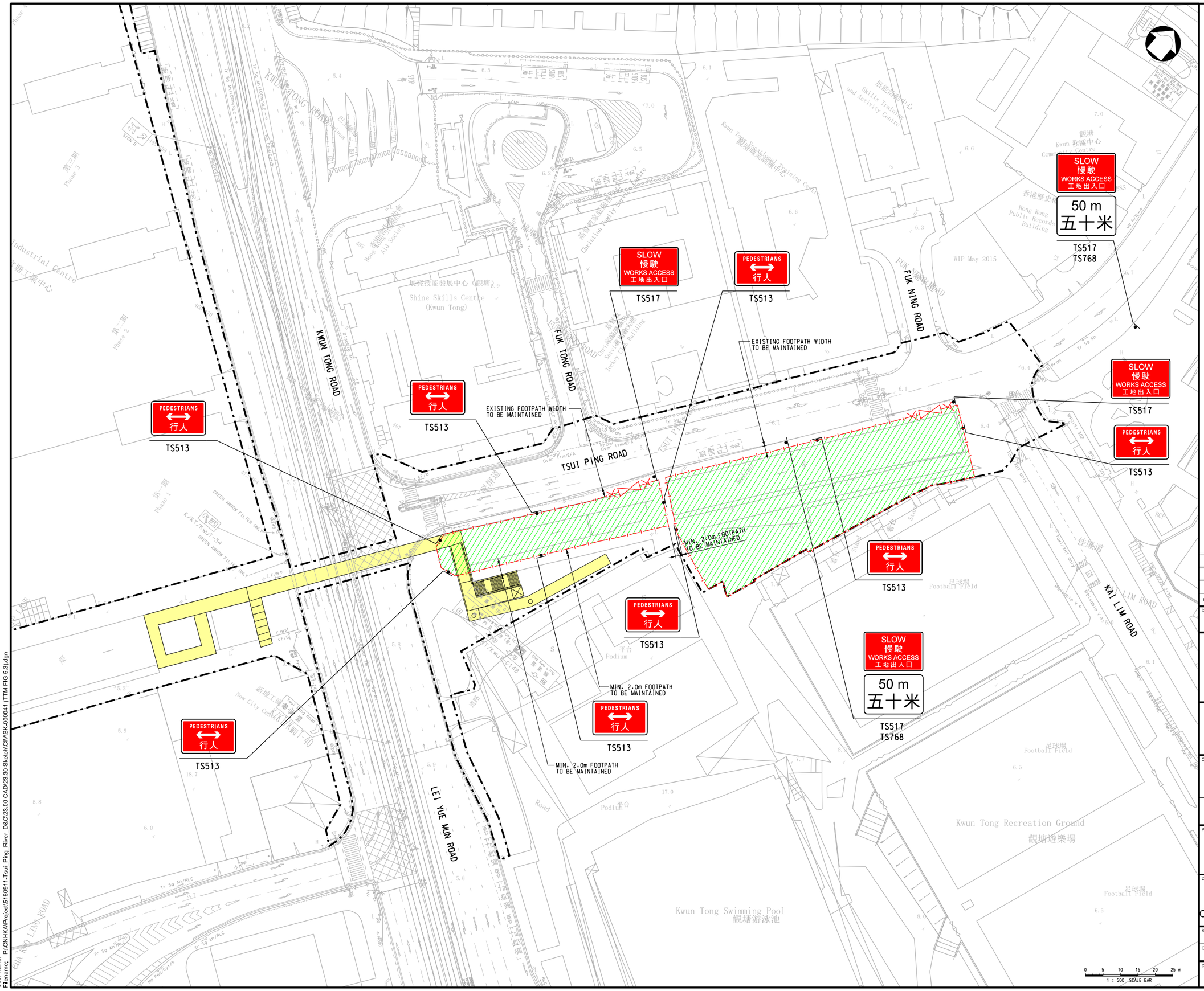
Scale	Designed	Drawn	Checked	Authorised
1 : 500	JLL	IT	NP	RS
Original Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

Drawing Number: FIGURE 5.2

Revision: A

User name: TSEI3099
Filename: P:\CNHK\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-A000040 (TTM FIG 5.2).dgn

Copyright © Atkins Limited



LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新域 spawton architecture

Client: 渠務署 Drainage Services Department
排水工程部 Drainage Projects Division

Project Title: CE58/2017(DS) ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title: TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE A FOR CONSTRUCTION OF TSUI PING RIVER SOUTH-EASTERN SIDE

Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JL	RS
Original Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

Drawing Number: FIGURE 5.3

Revision: A

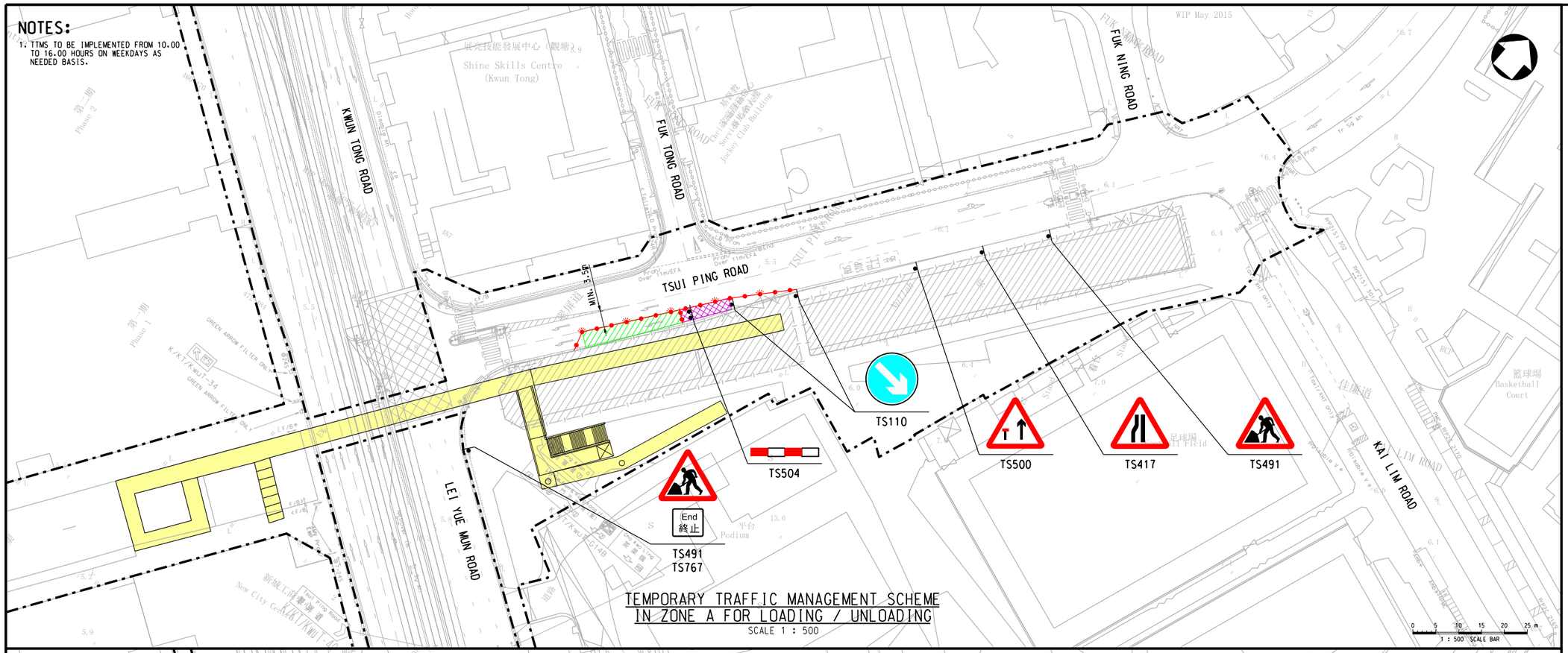
0 5 10 15 20 25 m
1 : 500 SCALE BAR

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000041 (TTM FIG 5.3).dgn

Copyright © Atkins Limited

NOTES:

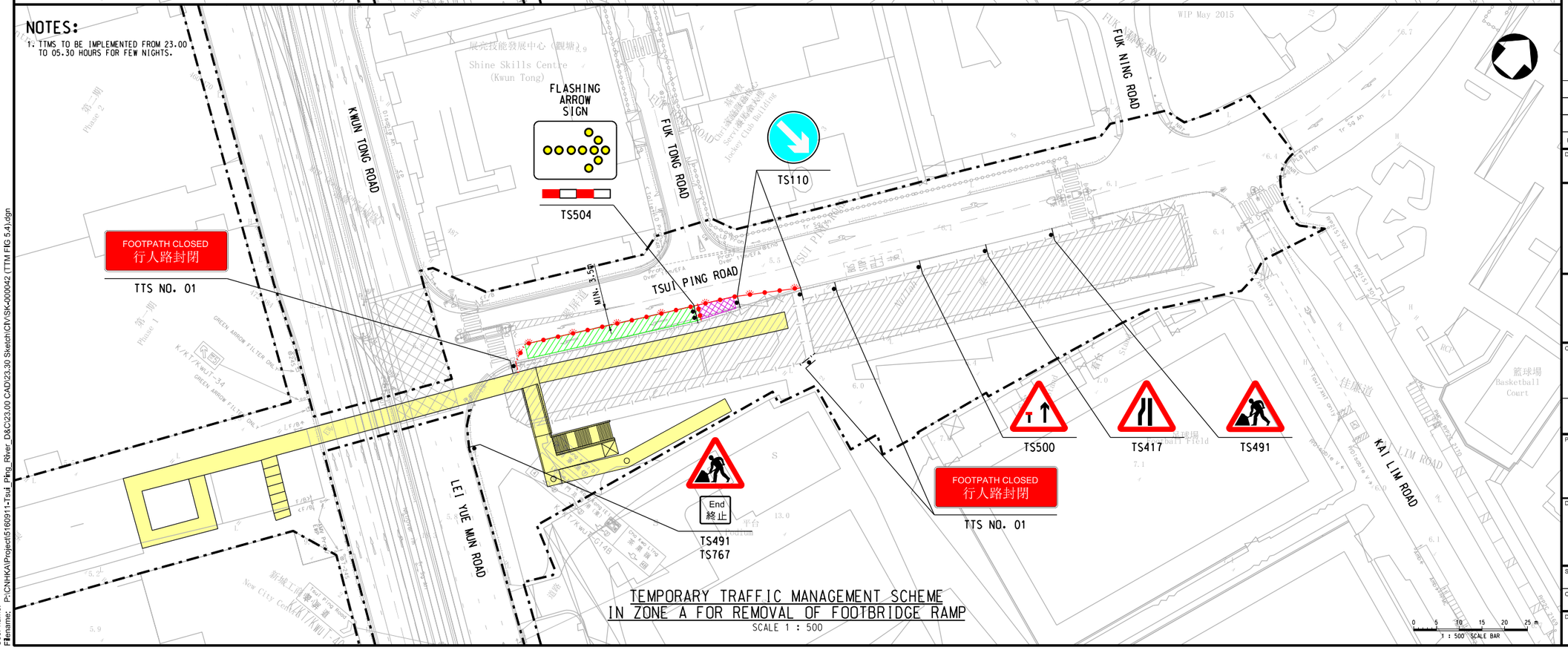
1. TTMS TO BE IMPLEMENTED FROM 10.00 TO 16.00 HOURS ON WEEKDAYS AS NEEDED BASIS.



TEMPORARY TRAFFIC MANAGEMENT SCHEME
IN ZONE A FOR LOADING / UNLOADING
SCALE 1 : 500

NOTES:

1. TTMS TO BE IMPLEMENTED FROM 23.00 TO 05.30 HOURS FOR FEW NIGHTS.



TEMPORARY TRAFFIC MANAGEMENT SCHEME
IN ZONE A FOR REMOVAL OF FOOTBRIDGE RAMP
SCALE 1 : 500

LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境 | spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

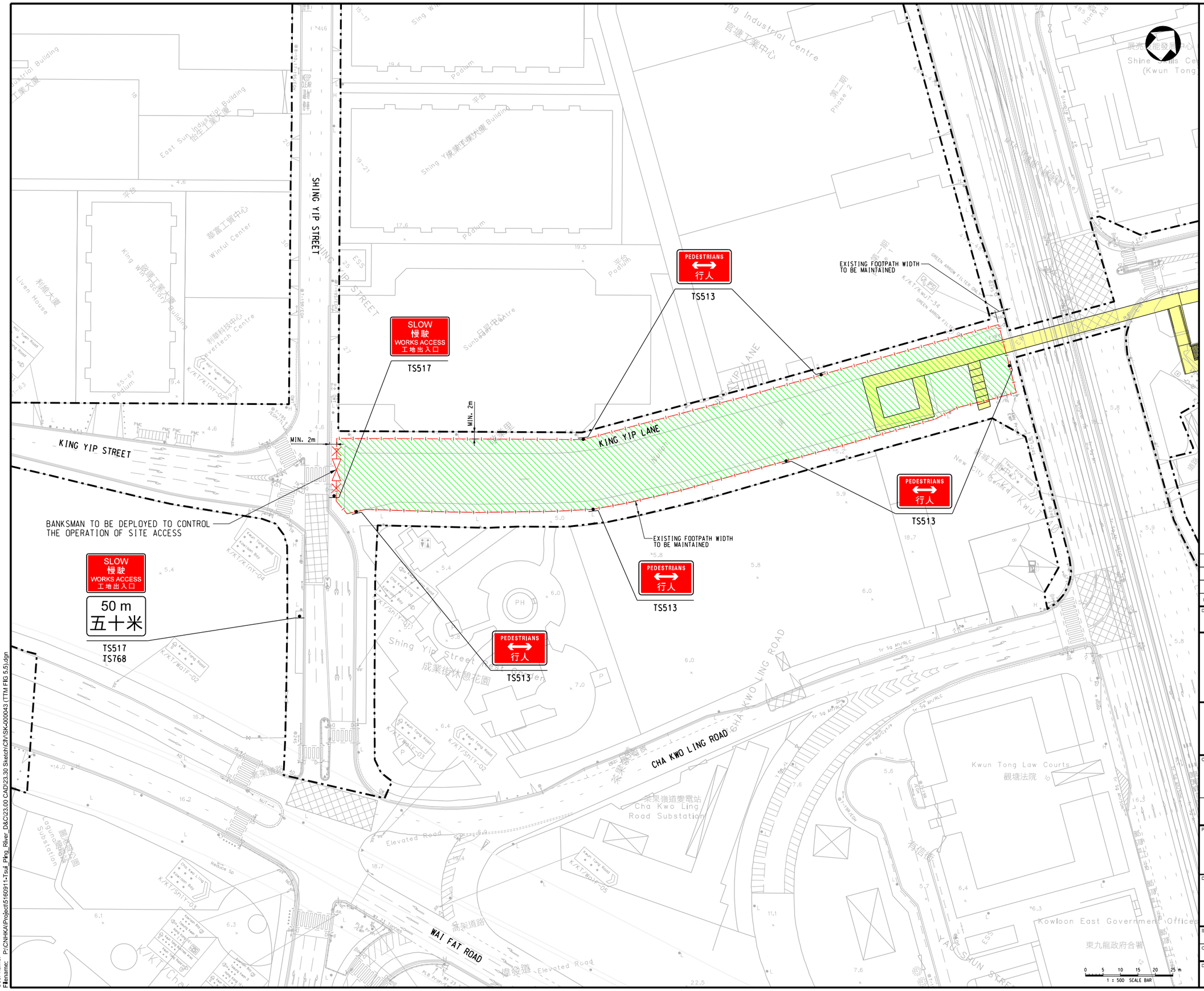
Drawing Title
TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE A FOR LOADING / UNLOADING

Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JY	RS
Orignal Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

Drawing Number: FIGURE 5.4
Revision: A

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000042 (TTM FIG 5.4).dgn

Copyright © Atkins Limited



LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- PEDESTRIAN ROUTING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境 spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE B FOR CONSTRUCTION OF TSUI PING RIVER NORTH - WESTERN SIDE

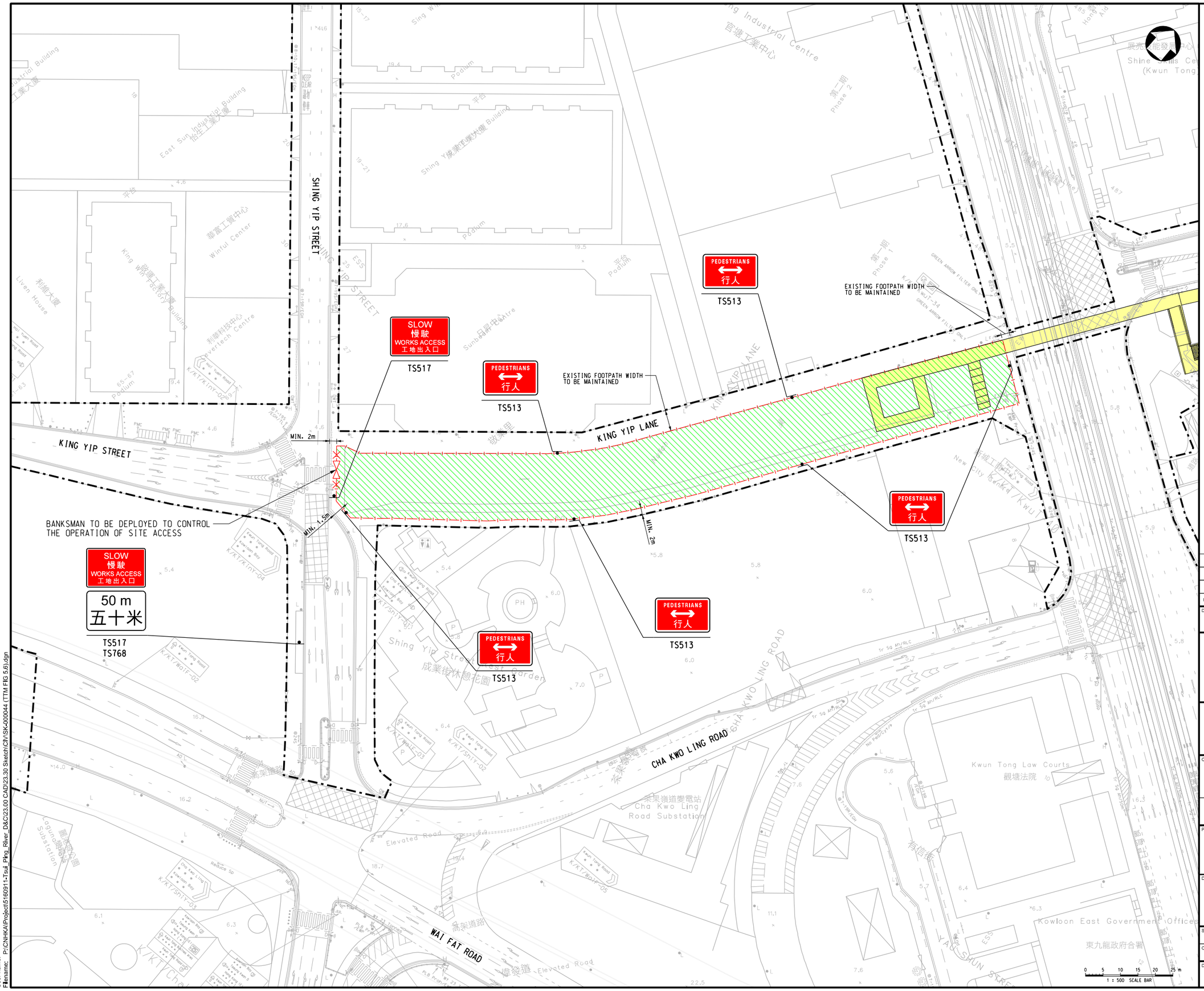
Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JL	RS
Orignal Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

Drawing Number: FIGURE 5.5

Revision: A

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000043 (TTM FIG 5.5).dgn



LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- PEDESTRIAN ROUTING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境 | spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE B FOR CONSTRUCTION OF TSUI PING RIVER SOUTH - EASTERN SIDE

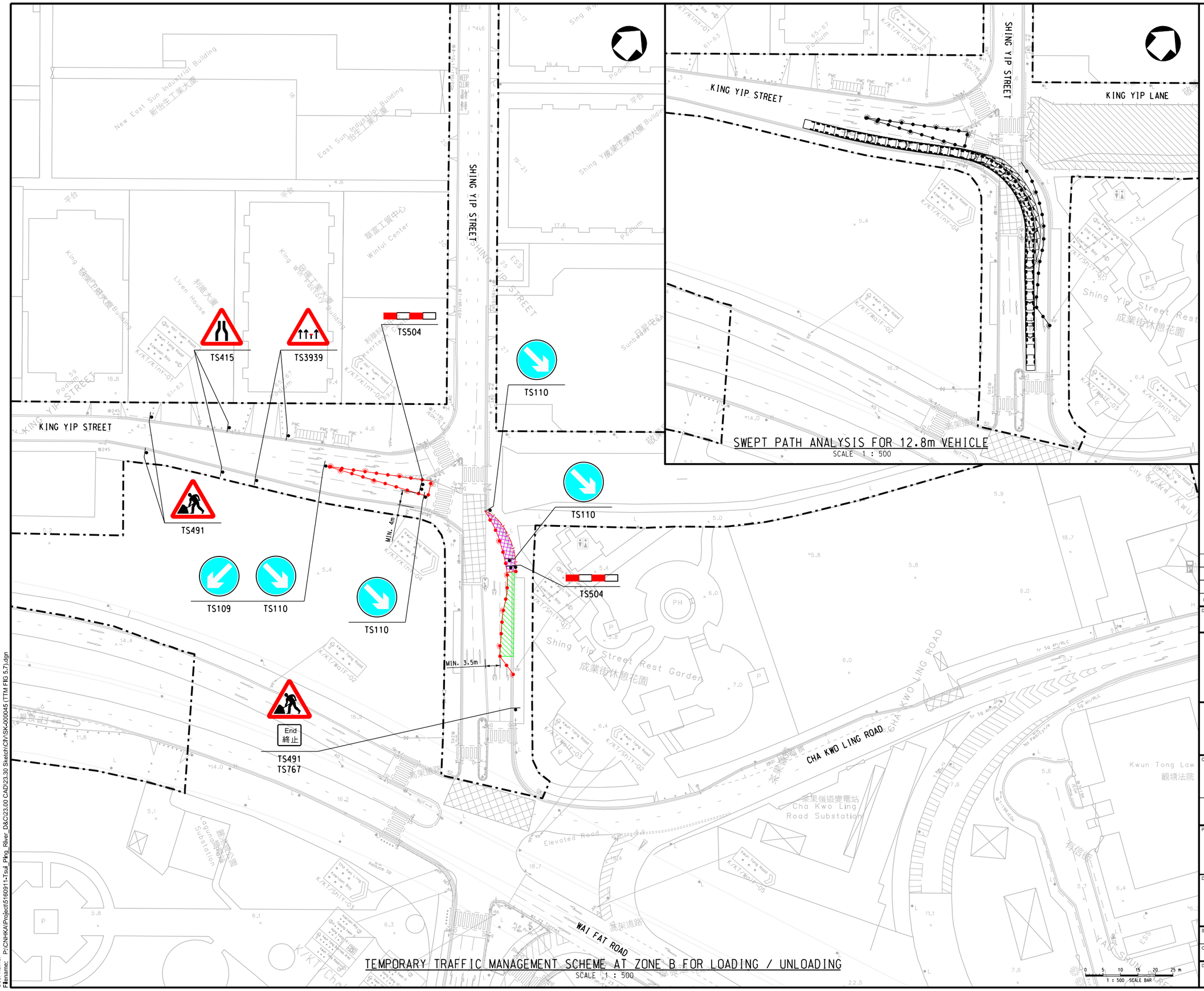
Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JL	RS
Orignal Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

Drawing Number: FIGURE 5.6

Revision: A

User name: TSEI3099
Filename: P:\CNHKAIProject\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000044 (TTM FIG 5.6).dgn

Copyright © Atkins Limited



LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- PEDESTRIAN ROUTING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境 | spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE B FOR LOADING / UNLOADING

Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JY	RS
Original Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

Drawing Number: FIGURE 5.7

Revision: A

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000045 (TTM FIG 5.7).dgn

Copyright © Atkins Limited

FOOTPATH CLOSED
行人路封閉
TTS NO. 01

PEDESTRIANS
行人
TS513

SLOW
慢駛
WORKS ACCESS
工地出入口
50 m
五十米
TS517
TS768

SLOW
慢駛
WORKS ACCESS
工地出入口
TS517

MIN. 3m

MIN. 2m

MIN. 7.3m

MIN. 7.3m

KING YIP STREET

HUNG TO ROAD

HING YIP STREET

WAI FAT ROAD

LAGUNA PARK
麗港公園

高架道路 Elevated Road

WIP Jun 2015

WIP Nov 2012

Contempo Place

Dorsett Regency Kwun Tong

New Media Tower

Manulife Financial Centre

EGL Tower

Kras Asia Industrial Building

Mai Hing Industrial Building

Ming Sang Industrial Building

Union Hing Yip Factory Building

Kin Sang Commercial Centre

King Palace Plaza

Yue Xiu Industrial Building

Doh Way Industrial Building

Roy Centre

New East Sun Ind. Building

Hing Yip Factory Building

LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- PEDESTRIAN ROUTING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新峰

spawton architecture

Client
渠務署
Drainage Services Department

排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE C FOR CONSTRUCTION OF TSUI PING RIVER

Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JY	RS
Orignal Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

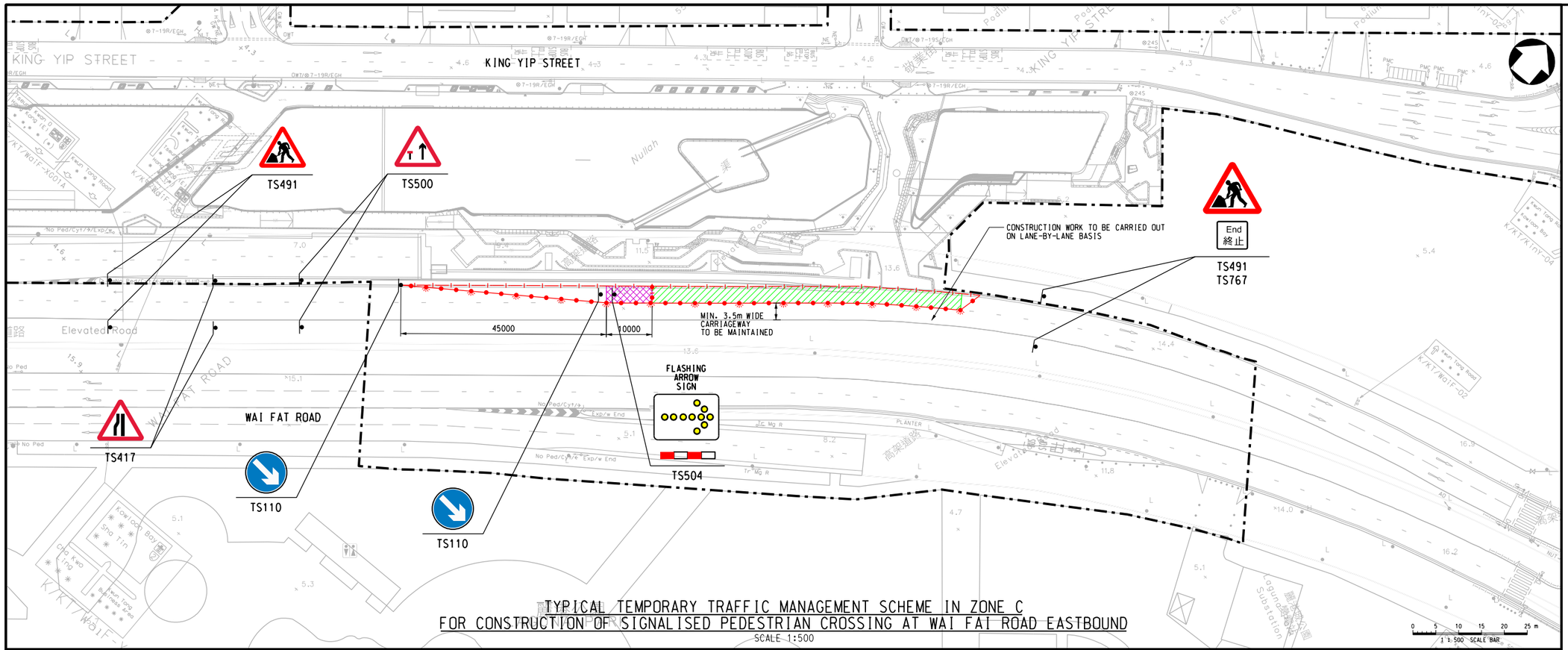
Drawing Number: FIGURE 5.8

Revision: A

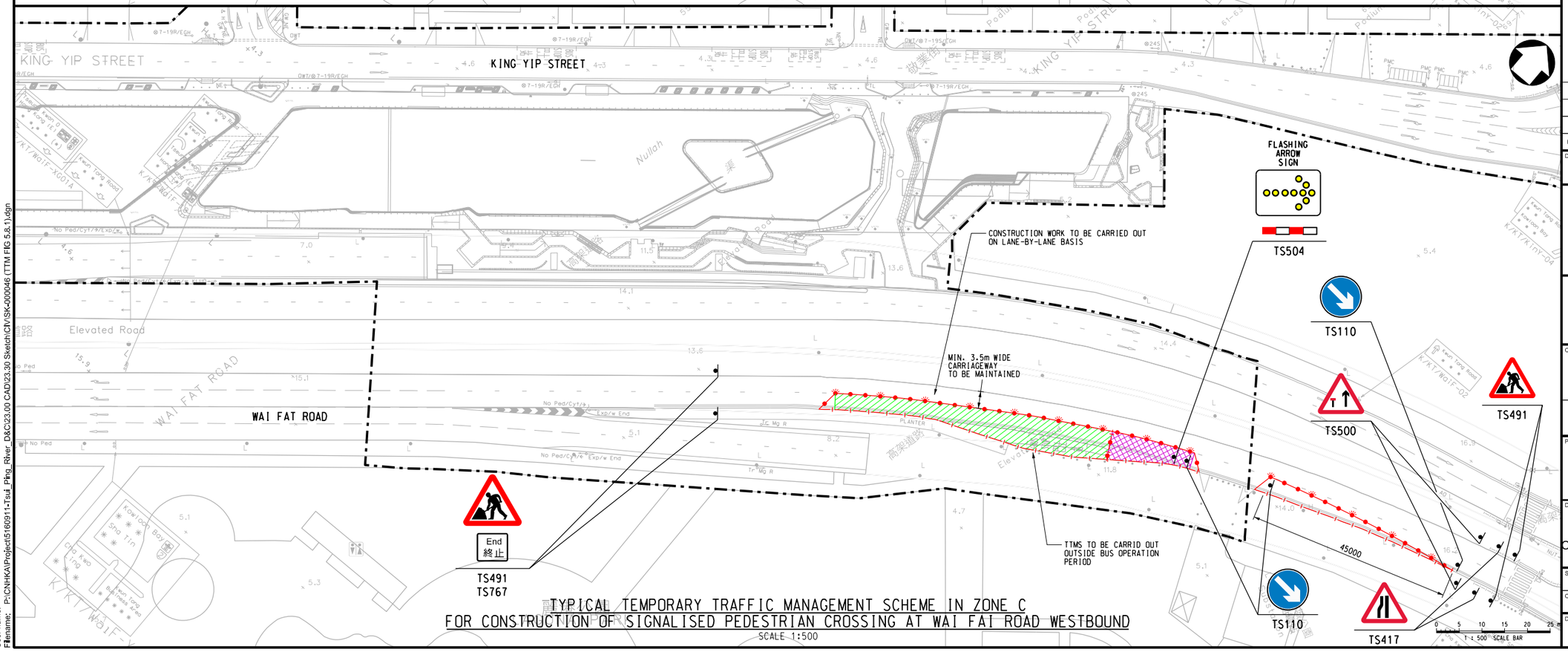
0 5 10 15 20 25 m
1 : 500 SCALE BAR

User name: TSEI3099
FIename: P:\CN\HKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000046 (TTM FIG 5.8).dgn

Copyright © Atkins Limited



TYPICAL TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE C
FOR CONSTRUCTION OF SIGNALISED PEDESTRIAN CROSSING AT WAI FAI ROAD EASTBOUND
SCALE 1:500



TYPICAL TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE C
FOR CONSTRUCTION OF SIGNALISED PEDESTRIAN CROSSING AT WAI FAI ROAD WESTBOUND
SCALE 1:500

LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- PEDESTRIAN ROUTING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
-	09/19	FIRST ISSUE	PK	JL	RS

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城
spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

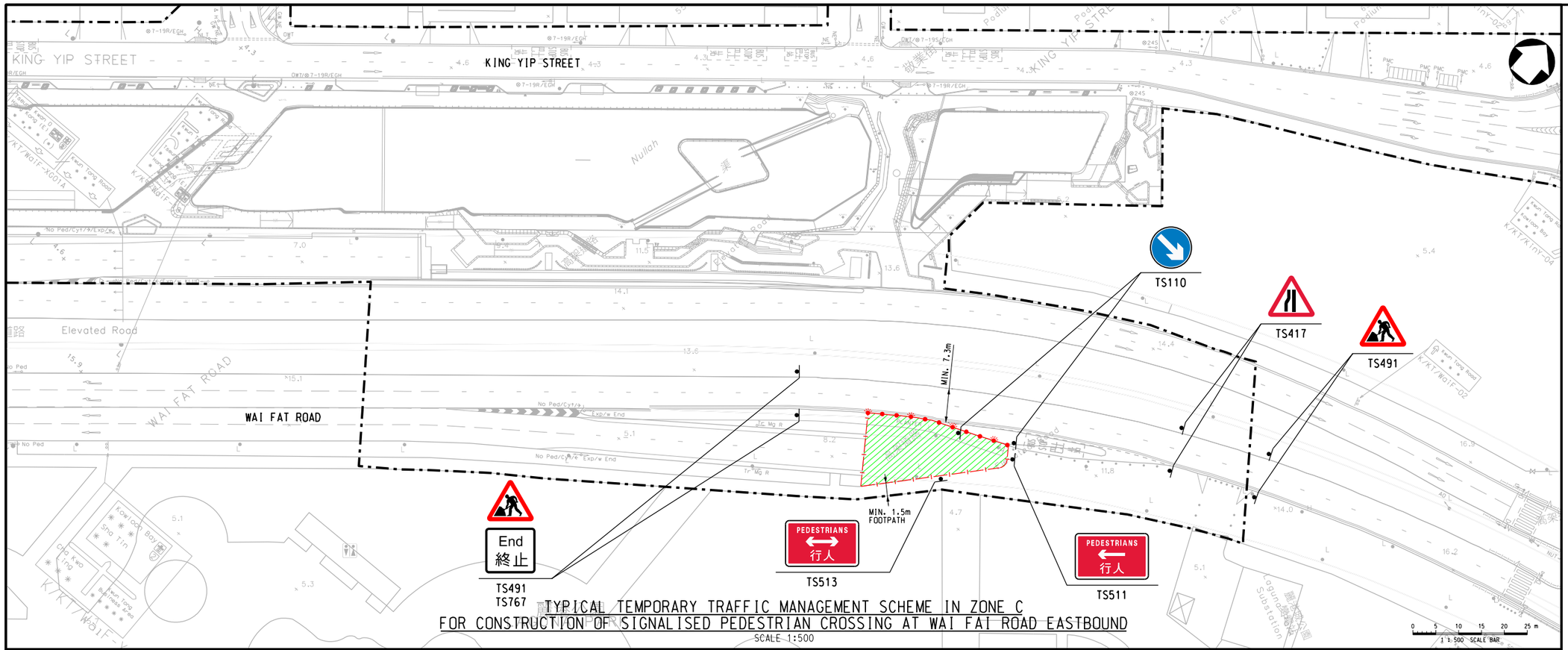
Drawing Title
CONCEPTUAL TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE C FOR CONSTRUCTION OF SIGNALIZED PEDESTRIAN CROSSING ACROSS WAI FAT ROAD

Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JL	RS
Original Size	Date	Date	Date	Date
A1	SEP 2019	SEP 2019	SEP 2019	SEP 2019

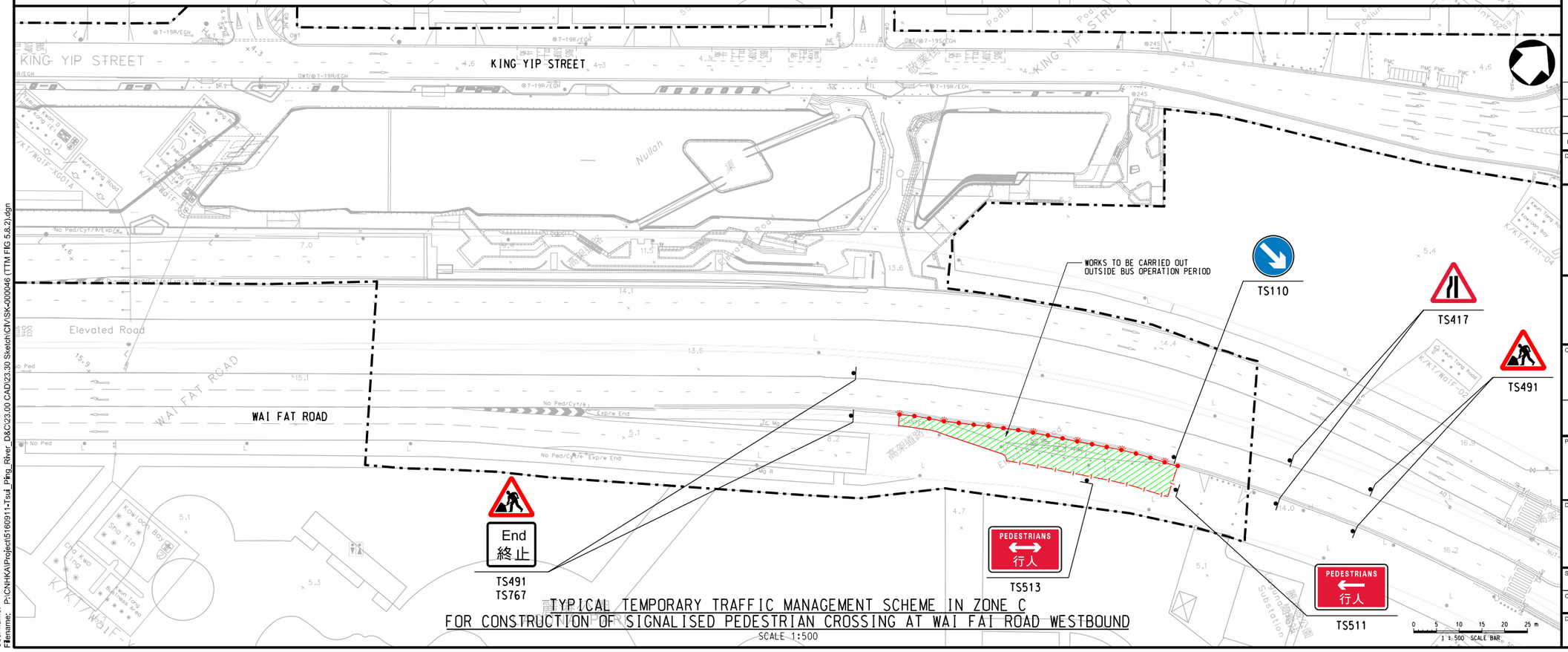
Drawing Number: FIGURE 5.8.1
Revision: -

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHK\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-A00046 (TTM FIG 5.8.1).dgn



TYPICAL TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE C
FOR CONSTRUCTION OF SIGNALISED PEDESTRIAN CROSSING AT WAI FAI ROAD EASTBOUND
SCALE 1:500



TYPICAL TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE C
FOR CONSTRUCTION OF SIGNALISED PEDESTRIAN CROSSING AT WAI FAI ROAD WESTBOUND
SCALE 1:500

LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- PEDESTRIAN ROUTING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
-	09/19	FIRST ISSUE	PK	JL	RS

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城
spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

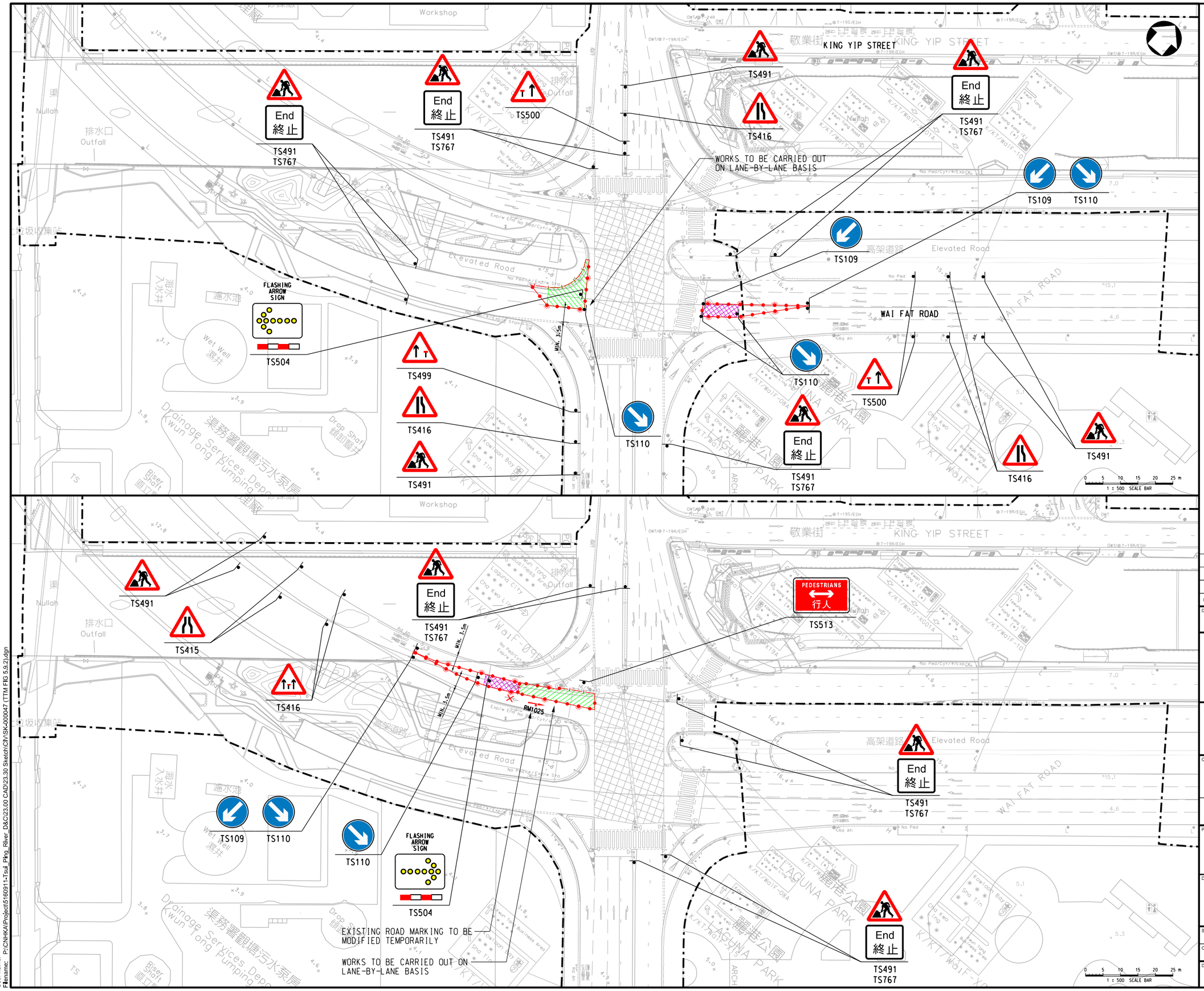
Drawing Title
CONCEPTUAL TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE C FOR BUS LAY-BY RE-CONSTRUCTION AND MODIFICATION OF FOOTPATH

Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JL	RS
Original Size	Date	Date	Date	Date
A1	SEP 2019	SEP 2019	SEP 2019	SEP 2019

Drawing Number: FIGURE 5.8.2
Revision: -

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHK\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-A00046 (TTM FIG 5.8.2).dgn



LEGEND:

- PROJECT BOUNDARY
- WORKS AREA
- LONGITUDINAL SAFETY CLEARANCE
- WORKS AREA TO BE DECKED OVER
- FOOTBRIDGE TO BE MAINTAINED
- RAILING / HOARDING
- WATER FILLED BARRIERS / TEMPORARY BARRIERS WITH CONTEINMENT LEVEL T2 OR ABOVE
- TRAFFIC CONES WITH FLASHING LIGHTS
- PROPOSED ROAD MARKING
- PEDESTRIAN ROUTING
- SITE ACCESS WITH RESOLVING LANTERN
- PROPOSED TRAFFIC SIGN

Rev.	Date	Description	By	Chk'd	App'd
-	09/19	FIRST ISSUE	PK	JL	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境

spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
CONCEPTUAL TEMPORARY TRAFFIC MANAGEMENT SCHEME IN ZONE D ALONG KWUN TONG BY-PASS

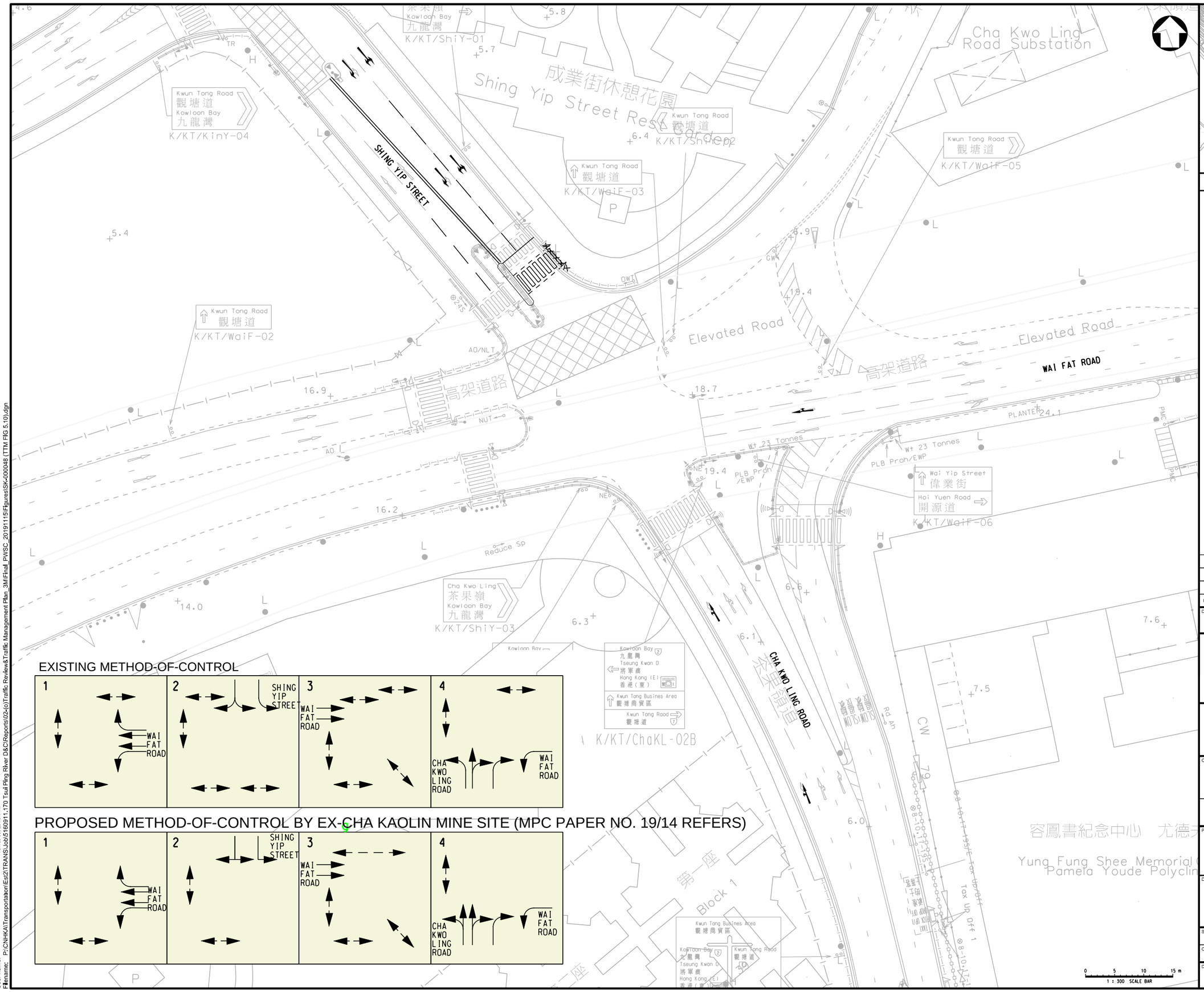
Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JL	RS
Original Size	Date	Date	Date	Date
A1	SEP 2019	SEP 2019	SEP 2019	SEP 2019

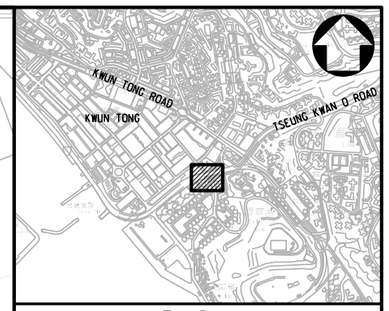
Drawing Number: FIGURE 5.9

Revision: -

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHK\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-A00047 (TTM FIG 5.9.2).dgn





KEY PLAN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	FS
-	04/18	FIRST ISSUE	PK	JY	FS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城 spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
JUNCTION IMPROVEMENT SCHEME AT JUNCTION OF WAI FAT ROAD/ CHA KWO LING ROAD/ SHING YIP STREET (J4) UNDER STUDY OF EX-CHA KWO LING KAOLIN MINE SITE IN MPC PAPER NO. 19/14

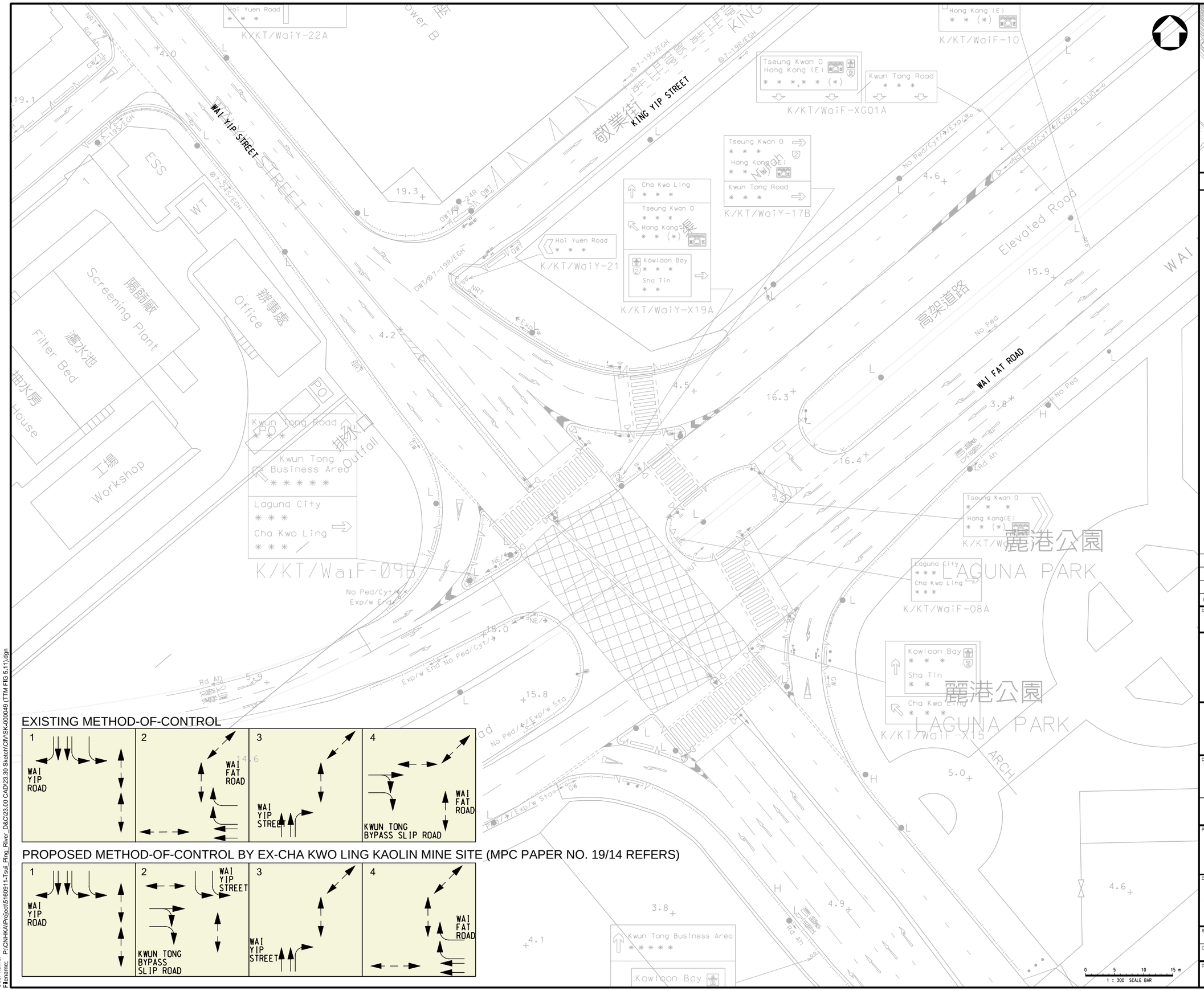
Scale	Designed	Drawn	Checked	Authorised
1 : 300	PK	IT	JY	RS
Original Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

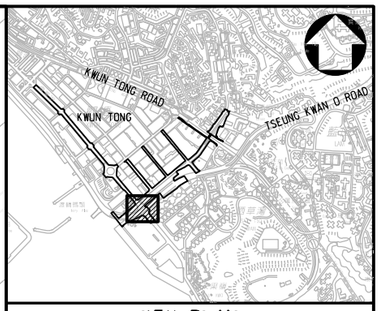
Drawing Number: FIGURE 5.10

Revision: A

Copyright © Atkins Limited

User name: HUK5188
File name: P:\CNHKA\Transportation\Est2\TRANS\Job\5160911.170 Tsui Ping River D&C\Reports\02-(o)Traffic Review&Traffic Management Plan_3M\Final_PWSC_20191115\Figures\SK-000048 (TTM FIG 5.10).dgn
Time: 5:02:16 PM





KEY PLAN

EXISTING METHOD-OF-CONTROL

PROPOSED METHOD-OF-CONTROL BY EX-CHA KWO LING KAOLIN MINE SITE (MPC PAPER NO. 19/14 REFERS)

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境

spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
JUNCTION IMPROVEMENT SCHEME AT JUNCTION OF WAI YIP STREET/ WAI FAT ROAD (J5) UNDER STUDY OF EX-CHA KWO LING KAOLIN MINE SITE IN MPC PAPER NO. 19/14

Scale	Designed	Drawn	Checked	Authorised
1 : 300	PK	IT	JY	RS
Original Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

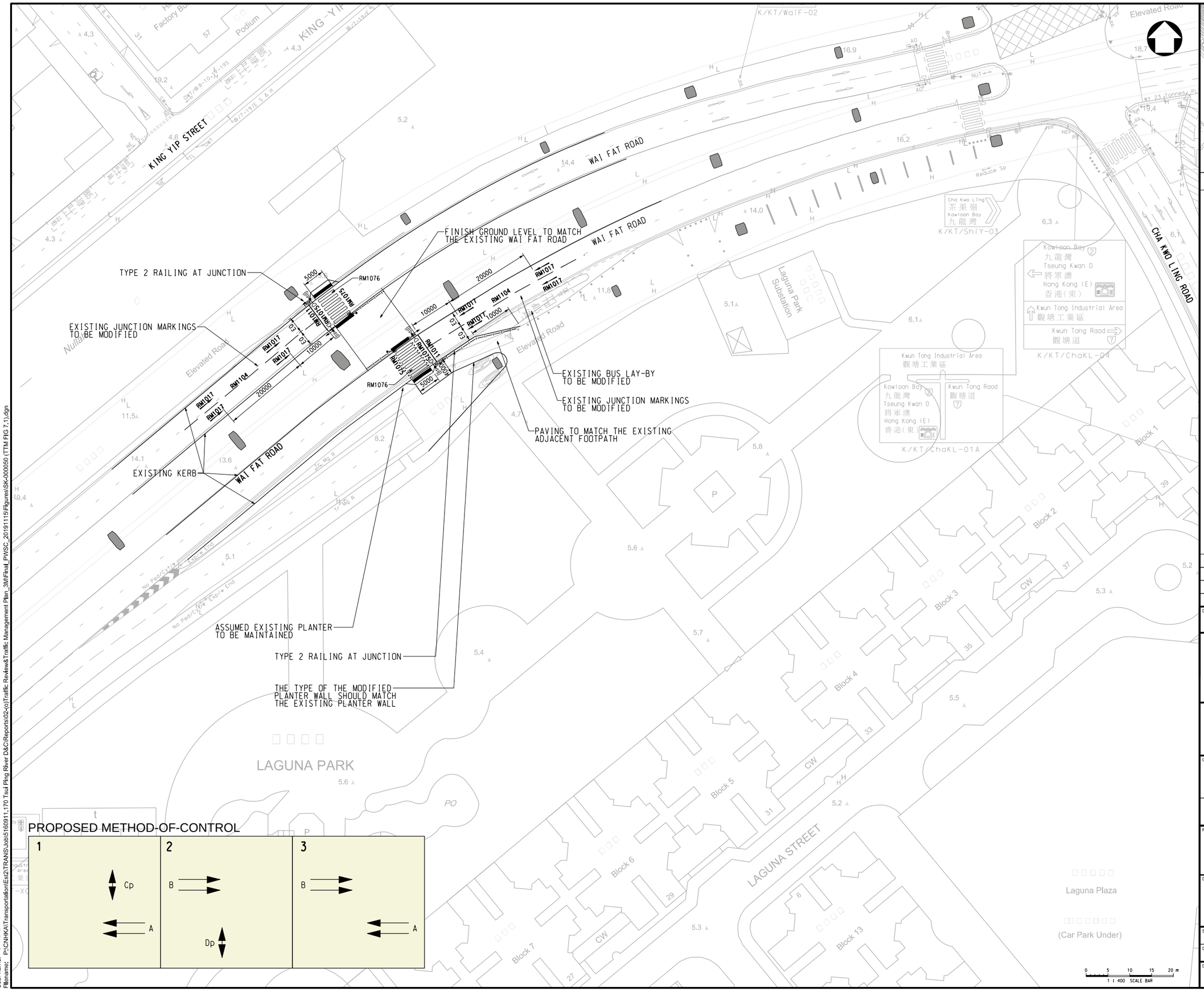
Drawing Number: FIGURE 5.11

Revision: A

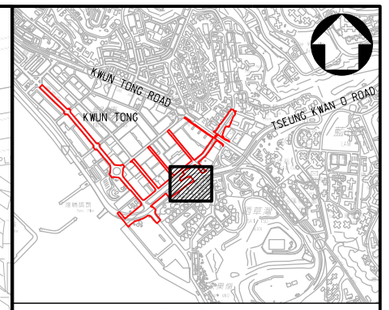
0 5 10 15 m
1 : 300 SCALE BAR

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CN\SK-J00049 (TTM FIG 5.11).dgn



PROPOSED METHOD-OF-CONTROL



KEY PLAN

LEGEND

- 3-LIGHT SIGNAL HEAD
- 3-LIGHT SIGNAL HEAD WITH LEFT TURN GREEN ARROW IN PLACE OF GREEN ROUNDEL (SIMILAR FOR RIGHT TURN AND STRIAGHT AHEAD ARROW)
- SECONDARY SIGNAL
- 2-LIGHT SIGNAL HEAD FOR PEDESTRIAN
- AUDIBLE AND TACTILE UNIT ATTACHED TO SIGNAL POLE
- TWIN 3-LIGHT SIGNAL HEAD
- BALLARD
- TYPE II RAILING AT JUNCTION
- COLUMN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城 | spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
PROPOSED SIGNALIZED PEDESTRIAN CROSSING AT WAI FAT ROAD (J9)

Scale	Designed	Drawn	Checked	Authorised
1 : 400	PK	IT	JY	RS
Original Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

Drawing Number: FIGURE 7.1
Revision: A

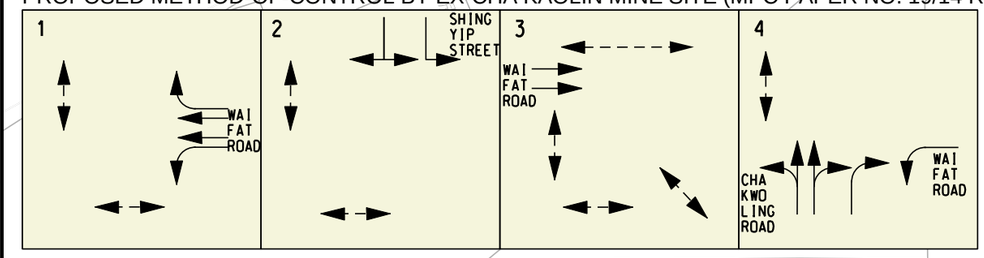
Copyright © Atkins Limited

User name: POAR3191
Filename: P:\CNHKA\Transportation\Est2\TRANS\Job\5160911,170 Tsui Ping River D&C\Reports\02-(o)Traffic Review&Traffic Management Plan_3M\Final_PWSC_20191115\Figures\SK-000050 (TTM FIG 7.1).dgn

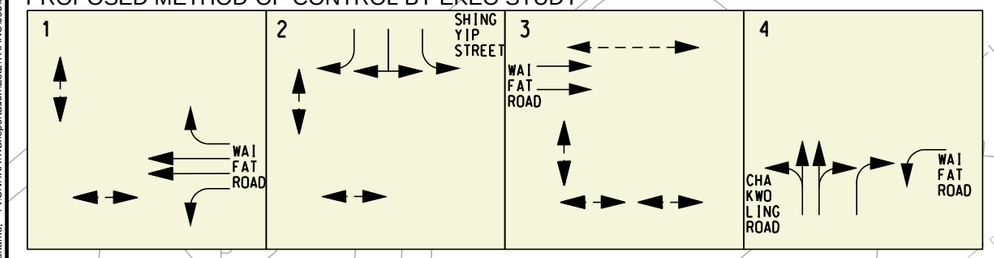
PROPOSED JUNCTION IMPROVEMENT BY KING YIP STREET DEVELOPMENT SITE (EKEO STUDY)

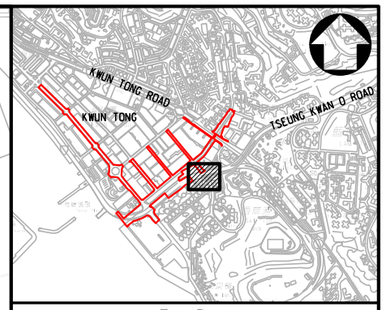
REFER TO CEDD PROPOSAL UNDER FIGURE 5.10

PROPOSED METHOD-OF-CONTROL BY EX-CHA KAOLIN MINE SITE (MPC PAPER NO. 19/14 REFERS)



PROPOSED METHOD-OF-CONTROL BY EKEO STUDY





KEY PLAN

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新輝

spawton architecture

Client: 渠務署 Drainage Services Department

排水工程部 Drainage Projects Division

Project Title: CE58/2017(DS) ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title: JUNCTION IMPROVEMENT SCHEME AT JUNCTION OF WAI FAT ROAD / CHA KWO LING ROAD / SHING YIP STREET (J4) BY ENERGIZING KOWLOON EAST OFFICE'S STUDY

Scale	Designed	Drawn	Checked	Authorised
1 : 300	PK	IT	JY	RS
Original Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

Drawing Number: FIGURE 7.2

Revision: A

0 5 10 15 m
1 : 300 SCALE BAR

Copyright © Atkins Limited

User name: HUK5188
Filename: P:\CNHKA\Transportation\Ess2\TRANS\Job\5160911.170 Tsui Ping River D&CR\Reports\02-(o)Traffic Review&Traffic Management Plan_3M\Final_PWSC_20191115\Figures\SK-000051 (TTM FIG 7.2).dgn
Time: 4:35:15 PM
PWSC_20191115\Figures\SK-000051 (TTM FIG 7.2).dgn

KING YIP STREET

WAI YIP STREET

KWUN TONG BY-PASS

CHA KWO LING ROAD

WAI FAT ROAD

EXISTING ROAD MARKINGS AT JUNCTION TO BE MODIFIED

EXISTING JUNCTION MARKINGS TO BE MODIFIED

RAISED ISLAND

RAISED ISLAND

RM1104

RM1011

RM1076

RM1075

EXISTING JUNCTION MARKINGS TO BE MODIFIED

EXISTING TRAFFIC ISLAND TO BE RECONSTRUCTED

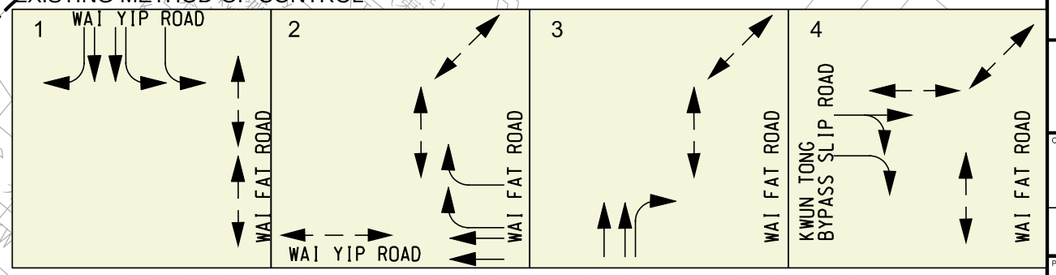
TYPE 2 RAILING AT JUNCTION

RM1076

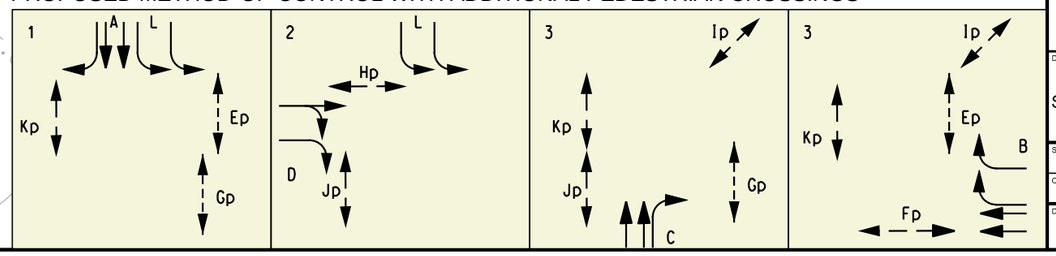
RM1075

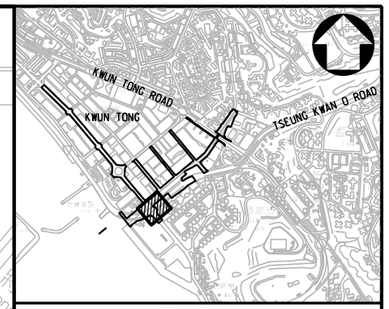
RAISED ISLAND

EXISTING METHOD-OF-CONTROL



PROPOSED METHOD-OF-CONTROL WITH ADDITIONAL PEDESTRIAN CROSSINGS





KEY PLAN

NOTES:

1. MAXIMUM GRADIENT OF RAMPING OF KERB IS 1:12.
2. COORDINATES ARE BSED ON HONG KONG METRIC GRID (1980).
3. LEVELS ARE IN METERS RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).
4. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
5. FIGURE DIMENSIONS ARE USED UNLESS NOT SPECIFIED.
6. ROAD MARKING AND TRAFFIC SIGNS COMPLY WITH THE REQUIREMENT BY TPDM.
7. ALL TRAFFIC SIGN NO. - e.g. TS 183(6) REFER TO DRAWING NOS. (T 174/51-1(1), 1(2), 1(3), 1(4), 1(5),2(1), 2(2), 3(1), 3(2), 3(3), 3(4), 3(5), 3(6), 3(7), 3(8), AND 4(1) BY TRANSPORT DEPARTMENT.
8. ALL ROAD MARKING NOS. SHOWN REFER TO DRAWING NOS. CT 174/51-5(1), 5(2), 6(1) AND 6(2) BY TRANSPORT DEPARTMENT.
9. ALL ROAD MARKINGS ARE REFLECTORISED THERMOPLASTIC MATERIAL IN ACCORDANCE WITH BS 3262 UNLESS OTHERWISE NOTED.
10. FOR TRAFFIC SIGN POST DETAILS, REFER TO HIGHWAYS DEPARTMENT DRAWING NO. H2147 & H2148.
11. ALL SIGN PLATE MATERIAL ARE CLASS 1 MATERIAL TO BS873 PART 6.
12. EXACT LOCATIONS OF SIGNAL POLES, DRAWPITS, DUCTING ALIGNMENT AND CONTROLLER SHALL BE DETERMINED AND AGREED ON SITE.
13. FOR TRAFFIC SIGNAL LAYOUT, REFER TO DRAWING NO. 5160911-D-EM-0202.

LEGEND:

- HAZARD WARNING TILES / BLOCKS
- ROAD STUD
- DROP KERB
- KERB LINE
- RAILING
- TYPE 2 RAILING AT JUNCTION
- RAISED ISLAND
- 3-LIGHT SIGNAL HEAD
- SECONDARY SIGNAL
- 2-LIGHT SIGNAL HEAD FOR PEDESTRIAN
- AUDIBLE AND TACTILE UNIT ATTACHED TO SIGNAL POLE

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	XY
-	04/18	FIRST ISSUE	PK	JY	XY

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城 spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
PROPOSED JUNCTION MODIFICATION SCHEME AT JUNCTION AT WAI YIP STREET / WAI FAT ROAD (J5)

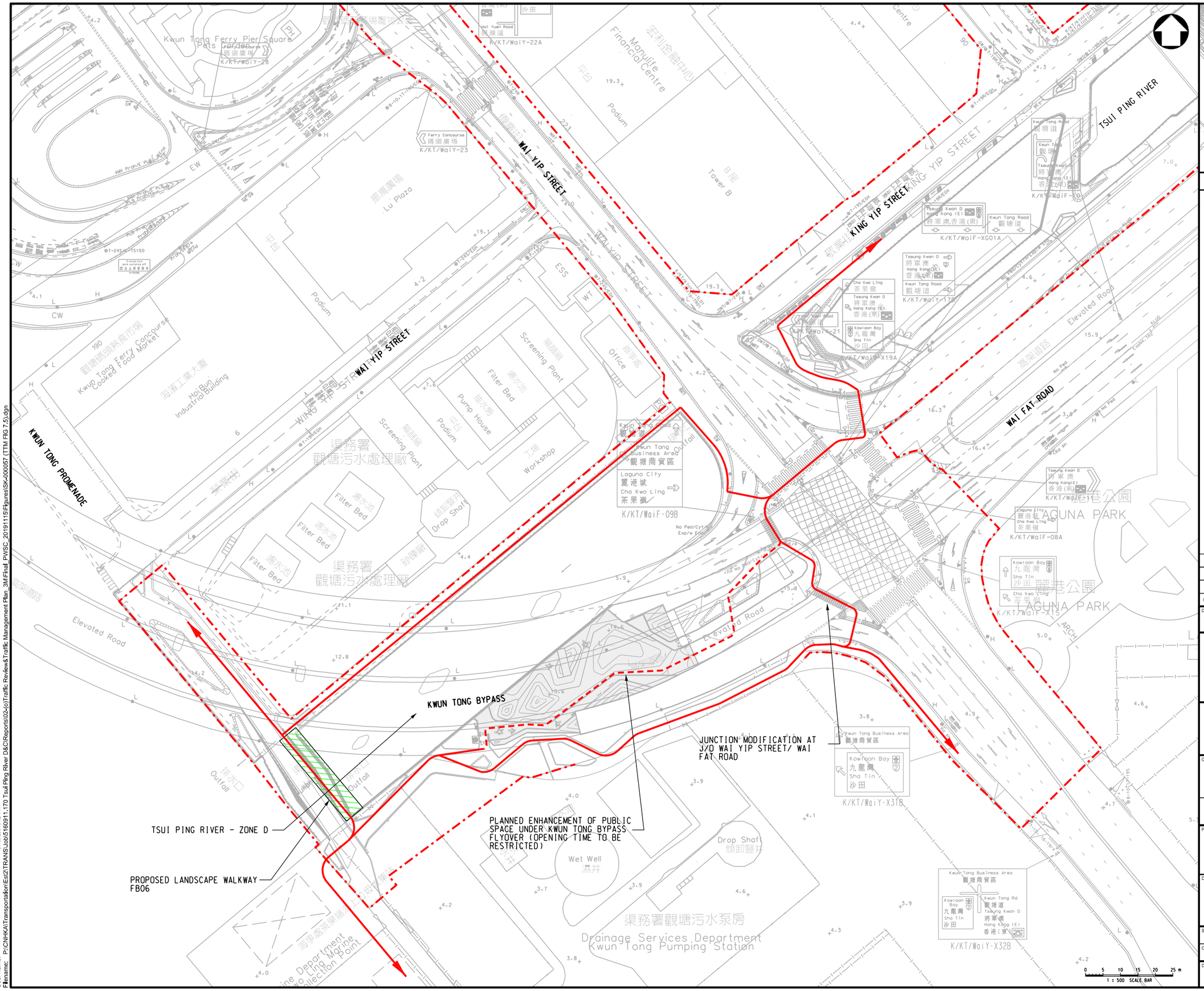
Scale	Designed	Drawn	Checked	Authorised
1:250	PK	IT	JY	XY
Original Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

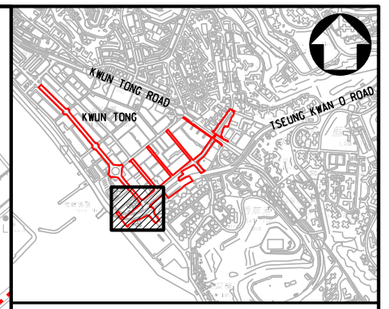
Drawing Number: FIGURE 7.3

Revision: A

Copyright © Atkins Limited

User name: HUIK5188
Filename: P:\CNHKA\Transportation\Est2\TRANS\Job\5160911.170 Tsui Ping River D&C\Reports\02-(o)Traffic Review&Traffic Management Plan_3M\Final_PWSC_20191115\Figures\SK-000052 (TTM FIG 7.3).dgn





KEY PLAN

LEGEND:

- PEDESTRIAN ROUTE
- PROPOSED LANDSCAPE WALKWAY FB06

Rev.	Date	Description	By	Chk'd	App'd
B	10/19	REV. B	PK	JL	RS
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城 spawton architecture

Client: 渠務署 Drainage Services Department
排水工程部 Drainage Projects Division

Project Title: CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title: PEDESTRIAN ROUTE BETWEEN TSUI PING RIVER AND PROMENADE

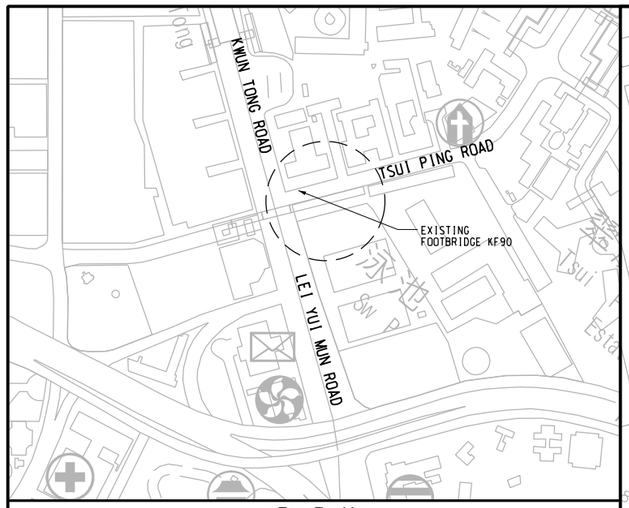
Scale	Designed	Drawn	Checked	Authorised
1 : 500	PK	IT	JY	RS
Orignal Size	Date	Date	Date	Date
A1	APR 2018	APR 2018	APR 2018	APR 2018

Drawing Number: FIGURE 7.4

Revision: B

Copyright © Atkins Limited

User name: HUK5188
FilName: P:\CN\HKA\Transportation\Est2\TRANS\Job\5166911.170 Tsui Ping River D&O\Reports\02-(o)Traffic Review&Traffic Management Plan_3MI\Final_PWSC_20191115\Figures\SK-000057 (TTM FIG.7.5).dgn
ime: 2:07:42 PM



KEY PLAN

展亮技能發展中心（觀塘）
Shine Skills Centre
(Kwun Tong)

FUK TONG ROAD

TSUI PING ROAD

EXISTING RAMP
TO BE DEMOLISHED

FUTURE PAVING FINISHED LEVELS AROUND FOOTBRIDGE
ENTRANCE TO BE GRADED AT 1:12 BETWEEN FOOTBRIDGE
ENTRANCE AND EXISTING FOOTPATH

EXISTING
FOOTBRIDGE KF90

+5.70

+6.30

+6.70

+6.50

+6.30

1:10

1:10

1:12

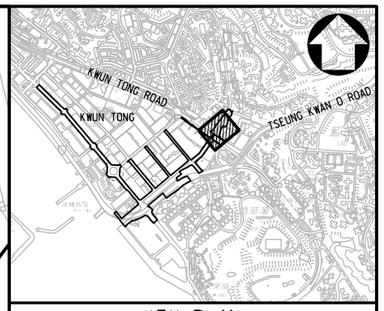
NEW FOOT BRIDGE EXTENSIONAL
DISABLE LIFT AND STAIRCASE
(BY OTHERS)

PROPOSED RE-PROVISIONED
FOOTBRIDGE RAMP

LEI YUI MUN ROAD

KWUN TONG SWIMMING POOL

0 5 10 15 m
1 : 300 SCALE BAR



KEY PLAN

LEGEND:

- NEW FOOTBRIDGE EXTENSIONAL DISABLE LIFT AND STAIRCASE (BY OTHERS)
- PROPOSED RE-PROVISIONED FOOTBRIDGE RAMP
- EXISTING FOOTBRIDGE EXTENSIONAL DISABLE LIFT AND STAIRCASE (BY OTHERS)

Rev.	Date	Description	By	Chk'd	App'd
A	09/19	REV. A	PK	JL	RS
-	04/18	FIRST ISSUE	PK	JY	RS

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新城 spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST -
REVITALIZATION OF TSUI PING RIVER -
DESIGN AND CONSTRUCTION

Drawing Title
PROVISION OF NORTHERN
FOOTBRIDGE RAMP OF KF90

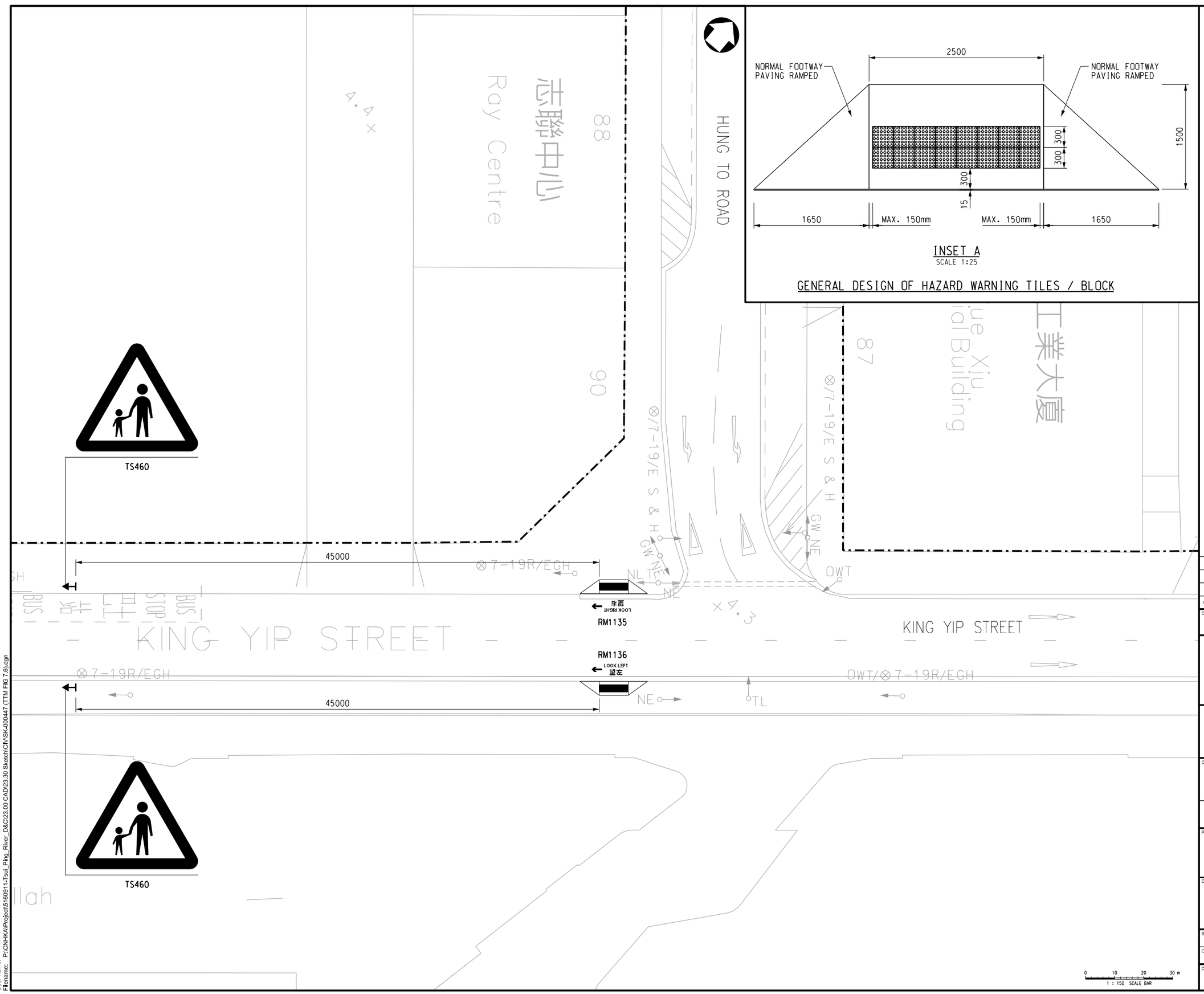
Scale	Designed	Drawn	Checked	Authorised
1 : 300	PK	IT	JY	RS
Original Size: A1	Date: APR 2018	Date: APR 2018	Date: APR 2018	Date: APR 2018

Drawing Number: FIGURE 7.5

Revision: A

User name: TSEI3099
Filename: P:\CNHK\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000058 (TTM FIG 7.5).dgn

Copyright © Atkins Limited



INSET A
SCALE 1:25

GENERAL DESIGN OF HAZARD WARNING TILES / BLOCK

NOTES:

1. MAXIMUM GRADIENT OF RAMPING OF KERB IS 1:12.
2. COORDINATES ARE BSED ON HONG KONG METRIC GRID (1980).
3. LEVELS ARE IN METERS RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).
4. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
5. FIGURE DIMENSIONS ARE USED UNLESS NOT SPECIFIED.
6. ROAD MARKING AND TRAFFIC SIGNS COMPLY WITH THE REQUIREMENT BY TPDM.
7. ALL TRAFFIC SIGN NO. - e.g. TS 183(6) REFER TO DRAWING NOS. (T 174/51-1(1), 1(2), 1(3), 1(4), 1(5), 2(1), 2(2), 3(1), 3(2), 3(3), 3(4), 3(5), 3(6), 3(7), 3(8), AND 4(1) BY TRANSPORT DEPARTMENT.
8. ALL ROAD MARKING NOS. SHOWN REFER TO DRAWING NOS. CT 174/51-5(1), 5(2), 6(1) AND 6(2) BY TRANSPORT DEPARTMENT.
9. ALL ROAD MARKINGS ARE REFLECTORISED THERMOPLASTIC MATERIAL IN ACCORDANCE WITH BS 3262 UNLESS OTHERWISE NOTED.
10. FOR TRAFFIC SIGN POST DETAILS, REFER TO HIGHWAYS DEPARTMENT DRAWING NO. H2147 & H2148.
11. ALL SIGN PLATE MATERIAL ARE CLASS 1 MATERIAL TO BS873 PART 6.
12. EXACT LOCATIONS OF SIGN POLES SHALL BE DETERMINED AND AGREED ON SITE.

LEGEND:

	HAZARD WARNING TILES / BLOCKS
	DROP KERB
	KERB LINE
	TRAFFIC SIGN
	DIRECTION SIGN
P	PLAIN BOLLARD
KL	KEEP LEFT BOLLARD
KR	KEEP RIGHT BOLLARD
RM1101	ROAD MARKING AND NO. (SEE NOTE 9)
TS115	TRAFFIC SIGN NO. (SEE NOTE 7)

Rev.	Date	Description	By	Chk'd	App'd
-	09/19	First issue	PK	RSAN	XY

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境
spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
PEDESTRIAN CROSSING FACILITIES AT JUNCTION OF KING YIP STREET AND HUNG TO ROAD

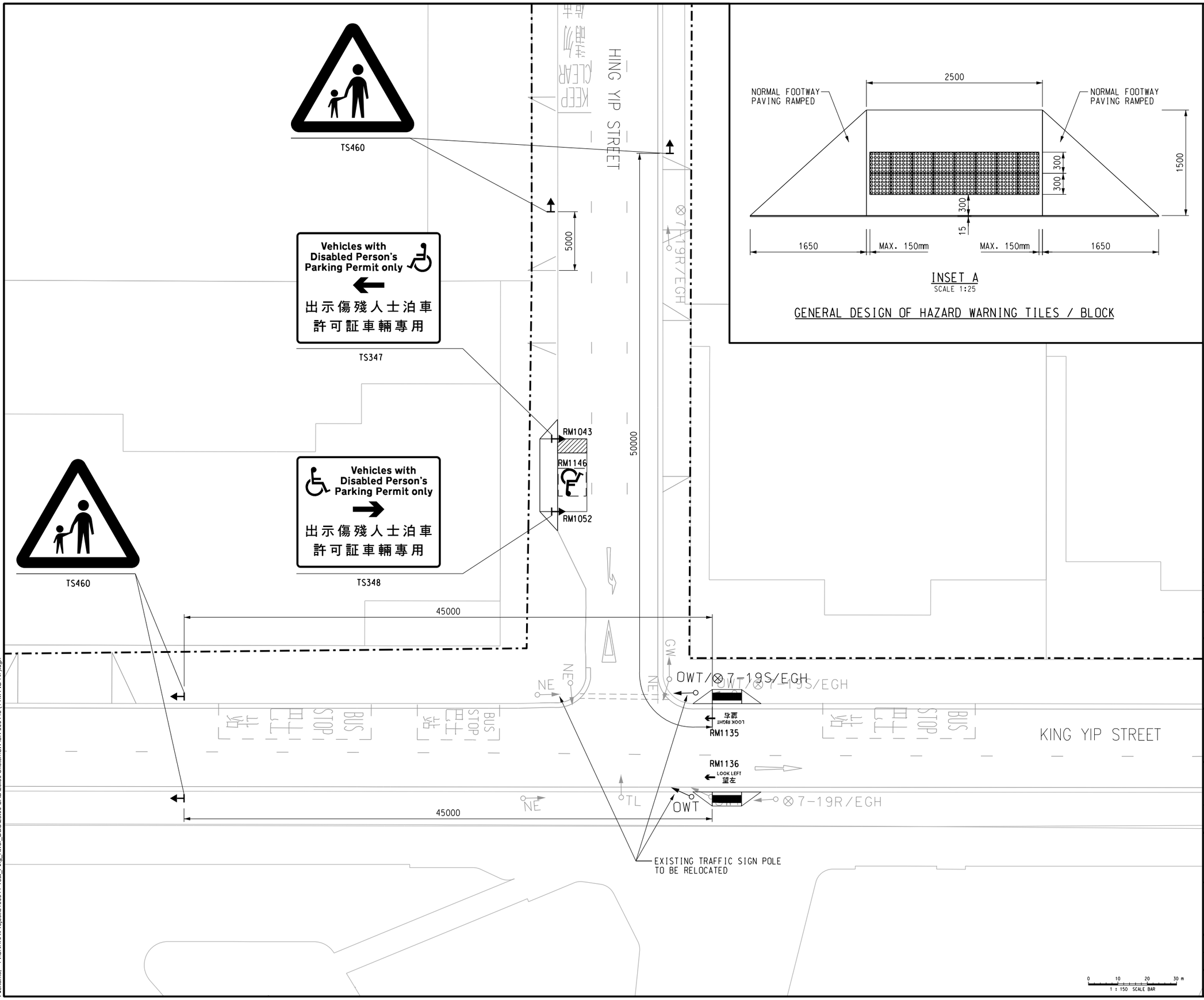
Scale	Designed	Drawn	Checked	Authorised
1:150	PK	IT	RSAN	XY
Orlginal Size	Date	Date	Date	Date
A1	SEP 2019	SEP 2019	SEP 2019	SEP 2019

Drawing Number: FIGURE 7.6
Revision: -

0 10 20 30 m
1 : 150 SCALE BAR

User name: TSEI3099
FIlename: P:\CN\HKA\Project\51160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CIV\SK-000447 (TTM FIG 7.6).dgn

Copyright © Atkins Limited



INSET A
SCALE 1:25

GENERAL DESIGN OF HAZARD WARNING TILES / BLOCK

NOTES:

1. MAXIMUM GRADIENT OF RAMPING OF KERB IS 1:12.
2. COORDINATES ARE BSED ON HONG KONG METRIC GRID (1980).
3. LEVELS ARE IN METERS RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).
4. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
5. FIGURE DIMENSIONS ARE USED UNLESS NOT SPECIFIED.
6. ROAD MARKING AND TRAFFIC SIGNS COMPLY WITH THE REQUIREMENT BY TPDM.
7. ALL TRAFFIC SIGN NO. - e.g. TS 183(6) REFER TO DRAWING NOS. (T 174/51-1(1), 1(2), 1(3), 1(4), 1(5), 2(1), 2(2), 3(1), 3(2), 3(3), 3(4), 3(5), 3(6), 3(7), 3(8), AND 4(1) BY TRANSPORT DEPARTMENT.
8. ALL ROAD MARKING NOS. SHOWN REFER TO DRAWING NOS. CT 174/51-5(1), 5(2), 6(1) AND 6(2) BY TRANSPORT DEPARTMENT.
9. ALL ROAD MARKINGS ARE REFLECTORISED THERMOPLASTIC MATERIAL IN ACCORDANCE WITH BS 3262 UNLESS OTHERWISE NOTED.
10. FOR TRAFFIC SIGN POST DETAILS, REFER TO HIGHWAYS DEPARTMENT DRAWING NO. H2147 & H2148.
11. ALL SIGN PLATE MATERIAL ARE CLASS 1 MATERIAL TO BS873 PART 6.
12. EXACT LOCATIONS OF SIGN POLES SHALL BE DETERMINED AND AGREED ON SITE.
13. PRIOR TO CONSTRUCTING THE DISABLED PARKING SPACE, THE CONTRACTOR SHALL IN ADVANCENOTIFY THE SUPERVISOR, WHO SHALL COORDINATE WITH TRANSPORT DEPARTMENT TO CONDUCT A LOCAL CONSULTATION. THE IMPLEMENTATION OF THE DISABLED PARKING SPACE SHALL BE SUBJECT TO THE RESULTS OF THE LOCAL CONSULTATION.

LEGEND:

	HAZARD WARNING TILES / BLOCKS
	DROP KERB
	KERB LINE
	TRAFFIC SIGN
	DIRECTION SIGN
P ▶	PLAIN BOLLARD
KL ▶	KEEP LEFT BOLLARD
KR ▶	KEEP RIGHT BOLLARD
RM1101 ▶	ROAD MARKING AND NO. (SEE NOTE 9)
TS115	TRAFFIC SIGN NO. (SEE NOTE 7)

Rev.	Date	Description	By	Chk'd	App'd
-	09/19	First Issue	PK	RSAN	XY

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

SCENIC 新境
spawton architecture

Client
渠務署
Drainage Services Department
排水工程部
Drainage Projects Division

Project Title
CE58/2017(DS)
ENERGIZING KOWLOON EAST - REVITALIZATION OF TSUI PING RIVER - DESIGN AND CONSTRUCTION

Drawing Title
PEDESTRIAN CROSSING FACILITIES AND DISABLED PARKING SPACE AT KING YIP STREET AND HING YIP STREET

Scale	Designed	Drawn	Checked	Authorised
1:150	PK	IT	RSAN	XY
Original Size	Date	Date	Date	Date
A1	SEP 2019	SEP 2019	SEP 2019	SEP 2019

Drawing Number: FIGURE 7.7
Revision: -

Copyright © Atkins Limited

User name: TSEI3099
Filename: P:\CNHKA\Project\5160911-Tsui_Ping_River_D&C\23.00 CAD\23.30 Sketch\CK\SK-A00448 (TTM FIG 7.7).dgn

Appendix A

Junction Calculations Sheets

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

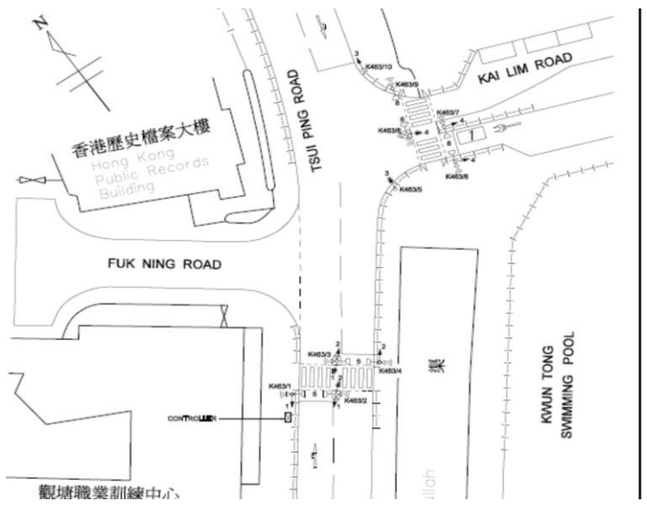
Junction : J1 **TSUI PING RD / FUK NING RD / KAI LIM RD**

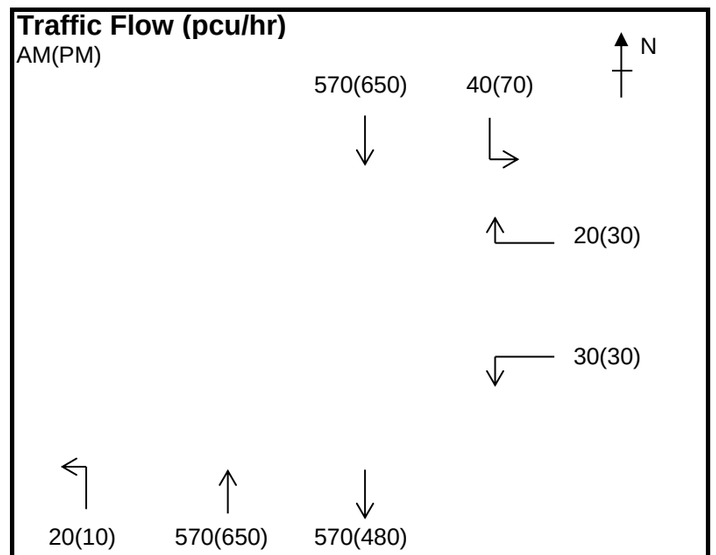
Design Year: 2018

Scheme : Existing

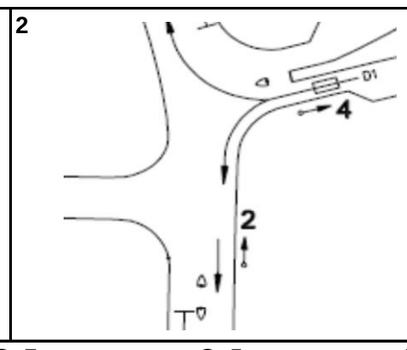
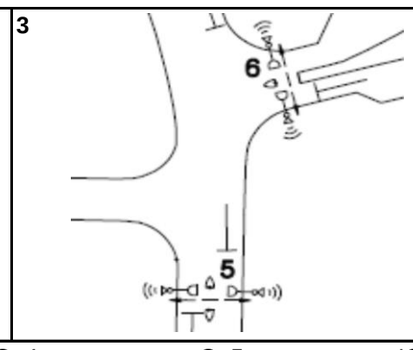
Designed by: PK

Checked by: JY





STAGE / PHASE DIAGRAM

1	2	3	4	5
				

1A+4A+5p	G=	IG=7	G=5	IG=4	G=5	IG=16	G=	IG=	G=
1A+4A+5p	G=	IG=7	G=5	IG=4	G=5	IG=16	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak: Design Flow ***q*** (pcu/hr)	AM Peak: Proportion turning (%) ***f***	AM Peak: Saturation flow ***S*** (pcu/hr)	AM Peak: Flow factor ***y***	PM Peak: Design Flow ***q*** (pcu/hr)	PM Peak: Proportion turning (%) ***f***	PM Peak: Saturation flow ***S*** (pcu/hr)	PM Peak: Flow factor ***y***
Tsui Ping Road NB														
1A	1	4.50	Y	N	10		590	3%	1645	**0.359**	660	2%	1650	**0.400**
Tsui Ping Road SB														
2A	1,2	4.50	Y	N			570		1650	0.345	480		1650	0.291
3A	1	5.00	Y	N	10		610	7%	2095	0.291	720	10%	2085	0.345
Kai Lim Road WB														
4A	2	3.00	Y	N	20/25		50	60% / 40%	1435	**0.035**	60	50% / 50%	1435	**0.042**
5p	3		5GM +	13FG =	18	sec								
6p	3		5GM +	10FG =	15	sec								

Notes:
Site factor applied on Tsui Ping Rd SB & Kai Lim Rd to consider bus stop downsteam
Site factor applied on Tsui Ping Rd NB to relect the congested condition

AM Peak	1A+4A+5p	PM Peak	1A+4A+5p
Sum of Critical *y* ***Y***	**0.359**	Sum of Critical *y* ***Y***	**0.400**
Lost Time ***L*** (sec)	36	Lost Time ***L*** (sec)	36
Cycle Time ***c*** (sec)	80	Cycle Time ***c*** (sec)	80
Practical *Y* ***Ypr***	0.495	Practical *Y* ***Ypr***	0.495
Reserve Capacity ***RC***	**38%**	Reserve Capacity ***RC***	**24%**

Junction : J1

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

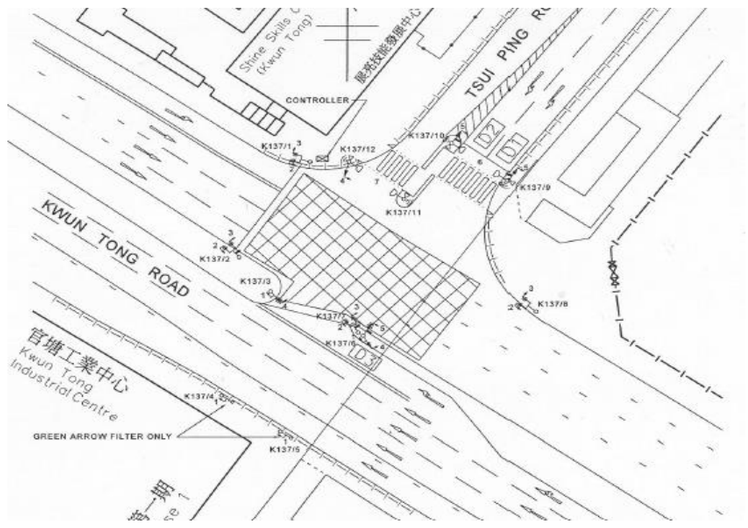
Junction : J2 KWUN TONG RD/TSUI PING RD / LEI YUE MUN RD

Design Year: 2018

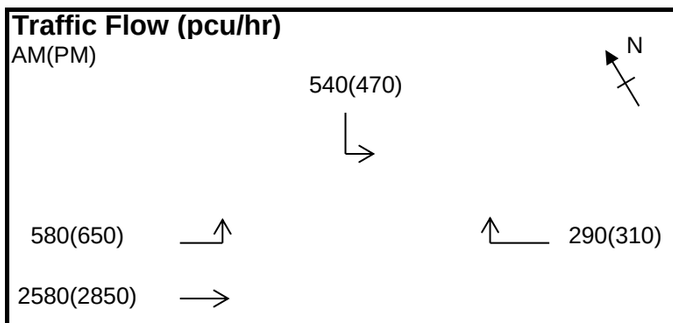
Scheme : Existing

Designed by: PK

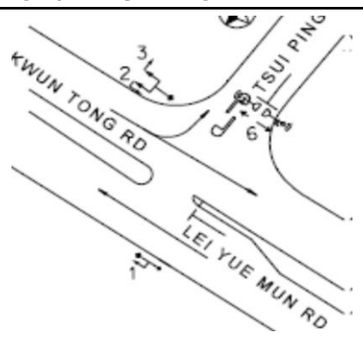
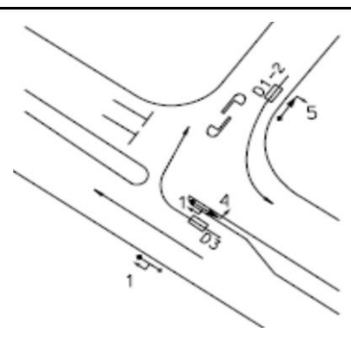
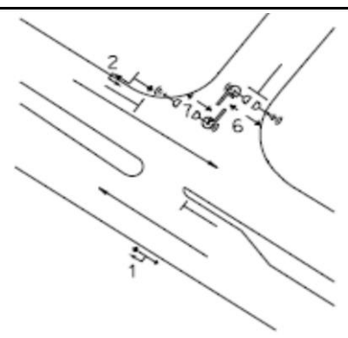
Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)



STAGE / PHASE DIAGRAM

1	2	3	4	5
				
3A+4A+7p G=	IG=5	G=	IG=11	G=6 IG=10 G= IG= G=
3A+4A+7p G=	IG=5	G=	IG=11	G=6 IG=10 G= IG= G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak: Design Flow ***q*** (pcu/hr)	AM Peak: Proportion turning (%) ***f***	AM Peak: Saturation flow ***S*** (pcu/hr)	AM Peak: Flow factor ***y***	PM Peak: Design Flow ***q*** (pcu/hr)	PM Peak: Proportion turning (%) ***f***	PM Peak: Saturation flow ***S*** (pcu/hr)	PM Peak: Flow factor ***y***
Lei Yue Mun Road WB														
4A	2	3.30	Y	N	10		290	100%	1690	**0.172**	310	100%	1690	**0.183**
Kwun Tong Road EB														
3A	1	3.30	Y	N	15		580	100%	1770	**0.328**	650	100%	1770	**0.367**
2A	1,3	3.30	N	N			860		2085	0.412	950		2085	0.456
2B	1,3	3.30	N	N			860		2085	0.412	950		2085	0.456
2C	1,3	3.30	N	N			860		2085	0.412	950		2085	0.456
Tsui Ping Road SB														
5A	2	3.30	Y	N	15		258	100%	1770	0.146	224	100%	1770	0.127
5B	2	3.30	N	N	20		282	100%	1940	0.145	246	100%	1940	0.127
6p	1,3		8GM +	10FG =	18	sec								
7p	3		6GM +	8FG =	14	sec								

Notes:

High Cycle = 130 seconds adopted

AM Peak	3A+4A+7p	PM Peak	3A+4A+7p
Sum of Critical *y* ***Y***	**0.499**	Sum of Critical *y* ***Y***	**0.551**
Lost Time ***L*** (sec)	30	Lost Time ***L*** (sec)	30
Cycle Time ***c*** (sec)	130	Cycle Time ***c*** (sec)	130
Practical *Y* ***Ypr***	0.692	Practical *Y* ***Ypr***	0.692
Reserve Capacity ***RC***	**39%**	Reserve Capacity ***RC***	**26%**

Junction : J2

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

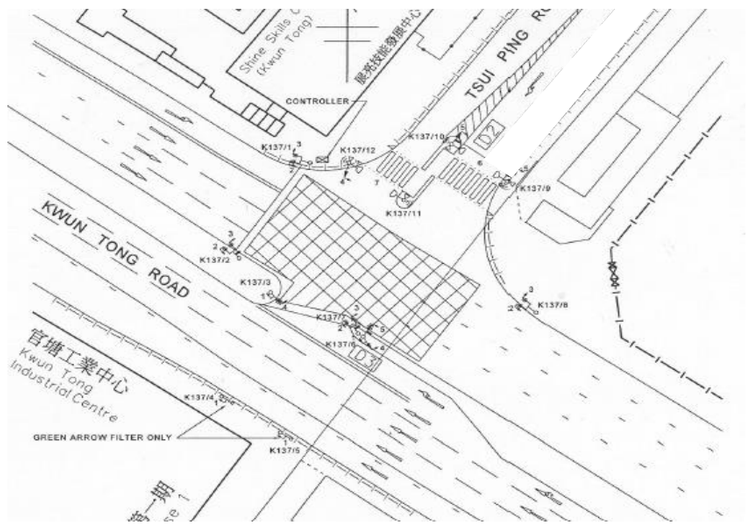
Junction : J2 KWUN TONG RD/TSUI PING RD / LEI YUE MUN RD

Design Year: 2023

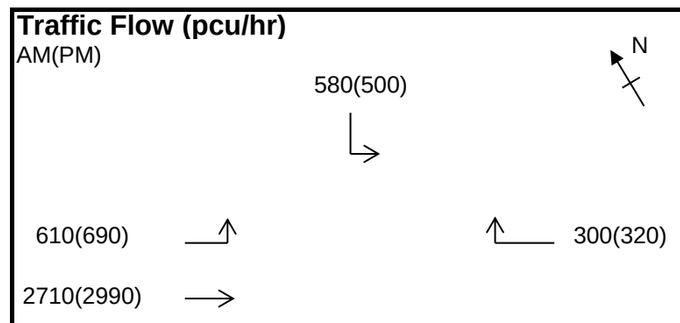
Scheme : 2023 Design (Construction) - with L/UL

Designed by: PK

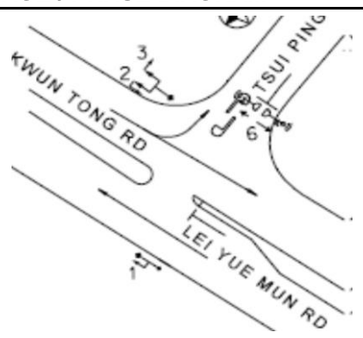
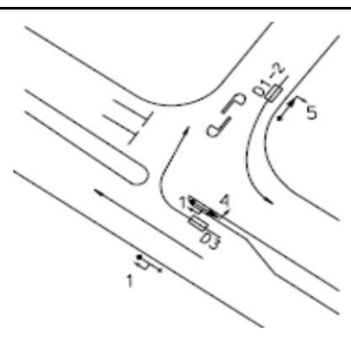
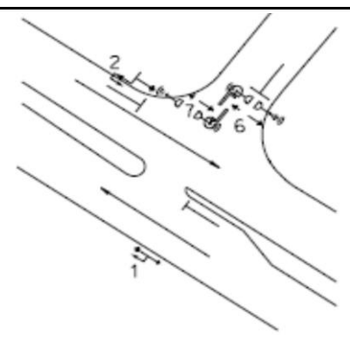
Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)



STAGE / PHASE DIAGRAM

1	2	3	4	5
				
3A+5A+7p G=	IG=6 G=	IG=9 G=6	IG=10 G=	IG= G=
3A+5A+7p G=	IG=6 G=	IG=9 G=6	IG=10 G=	IG= G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Lei Yue Mun Road WB														
4A	2	3.30	Y	N	10		300	100%	1690	0.178	320	100%	1690	0.189
Kwun Tong Road EB														
3A	1	3.30	Y	N	15		610	100%	1770	**0.345**	690	100%	1770	**0.390**
2A	1,3	3.30	N	N			903		2085	0.433	997		2085	0.478
2B	1,3	3.30	N	N			904		2085	0.434	996		2085	0.478
2C	1,3	3.30	N	N			903		2085	0.433	997		2085	0.478
Tsui Ping Road SB														
5A	2	3.30	Y	N	20		580	100%	1810	**0.320**	500	100%	1810	**0.276**
6p	1,3		8GM +	10FG =	18	sec								
7p	3		6GM +	8FG =	14	sec								

Notes:

High Cycle = 130 seconds adopted

AM Peak	3A+5A+7p	PM Peak	3A+5A+7p
Sum of Critical *y* ***Y***	**0.665**	Sum of Critical *y* ***Y***	**0.666**
Lost Time ***L*** (sec)	29	Lost Time ***L*** (sec)	29
Cycle Time ***c*** (sec)	130	Cycle Time ***c*** (sec)	130
Practical *Y* ***Ypr***	0.699	Practical *Y* ***Ypr***	0.699
Reserve Capacity ***RC***	**5%**	Reserve Capacity ***RC***	**5%**

Junction : J2

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

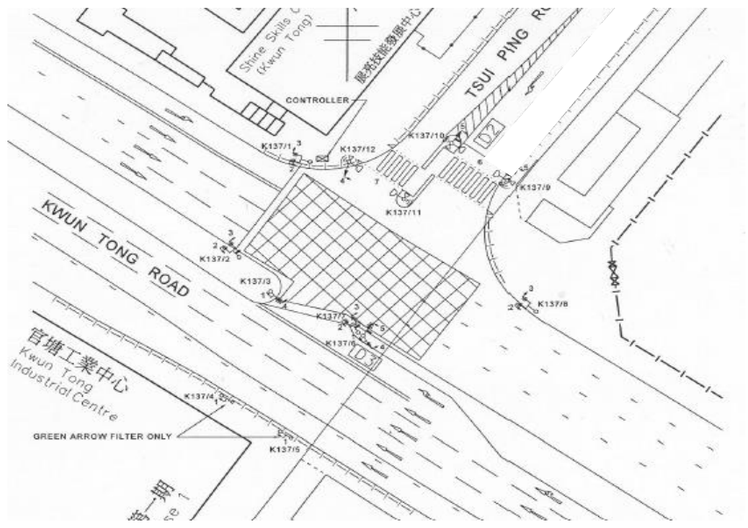
Junction : J2 KWUN TONG RD/TSUI PING RD / LEI YUE MUN RD

Design Year: 2023

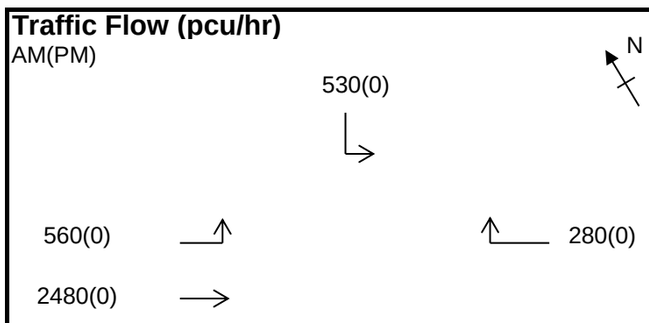
Scheme : 2023 Design (Construction) - with L/UL (off-peak)

Designed by: PK

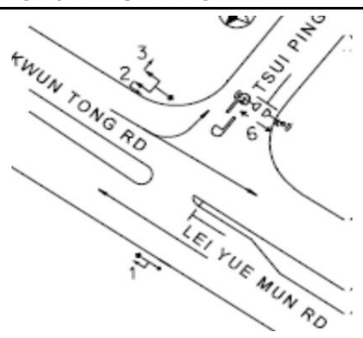
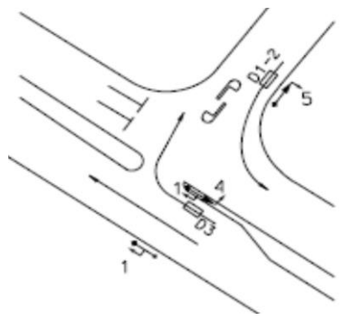
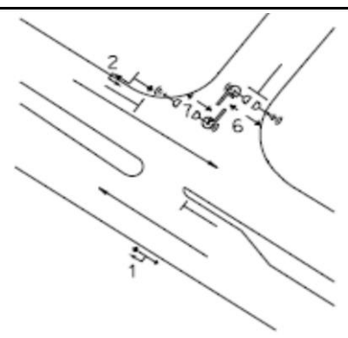
Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)



STAGE / PHASE DIAGRAM

1	2	3	4	5
				

3A+5A+7p	G=	IG=6	G=	IG=9	G=6	IG=10	G=	IG=	G=
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	**Off-Peak (within 10:00 - 16:00 hours)** Design Flow ***q*** (pcu/hr)	Proportion turning (%) ***f***	Saturation flow ***S*** (pcu/hr)	Flow factor ***y***	Design Flow ***q*** (pcu/hr)	Proportion turning (%) ***f***	Saturation flow ***S*** (pcu/hr)	Flow factor ***y***
Lei Yue Mun Road WB														
4A	2	3.30	Y	N	10		280	100%	1690	0.166				
Kwun Tong Road EB														
3A	1	3.30	Y	N	15		560	100%	1770	**0.316**				
2A	1,3	3.30	N	N			827		2085	0.397				
2B	1,3	3.30	N	N			826		2085	0.396				
2C	1,3	3.30	N	N			827		2085	0.397				
Tsui Ping Road SB														
5A	2	3.30	Y	N	20		530	100%	1810	**0.293**				
6p	1,3		8GM +	10FG =	18	sec								
7p	3		6GM +	8FG =	14	sec								

Notes:	**Off Peak**	**3A+5A+7p**
	Sum of Critical *y* ***Y***	**0.609**
High Cycle = 130 seconds adopted	Lost Time ***L*** (sec)	29
	Cycle Time ***c*** (sec)	130
	Practical *Y* ***Ypr***	0.699
	Reserve Capacity ***RC***	**15%**

Junction : J2

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

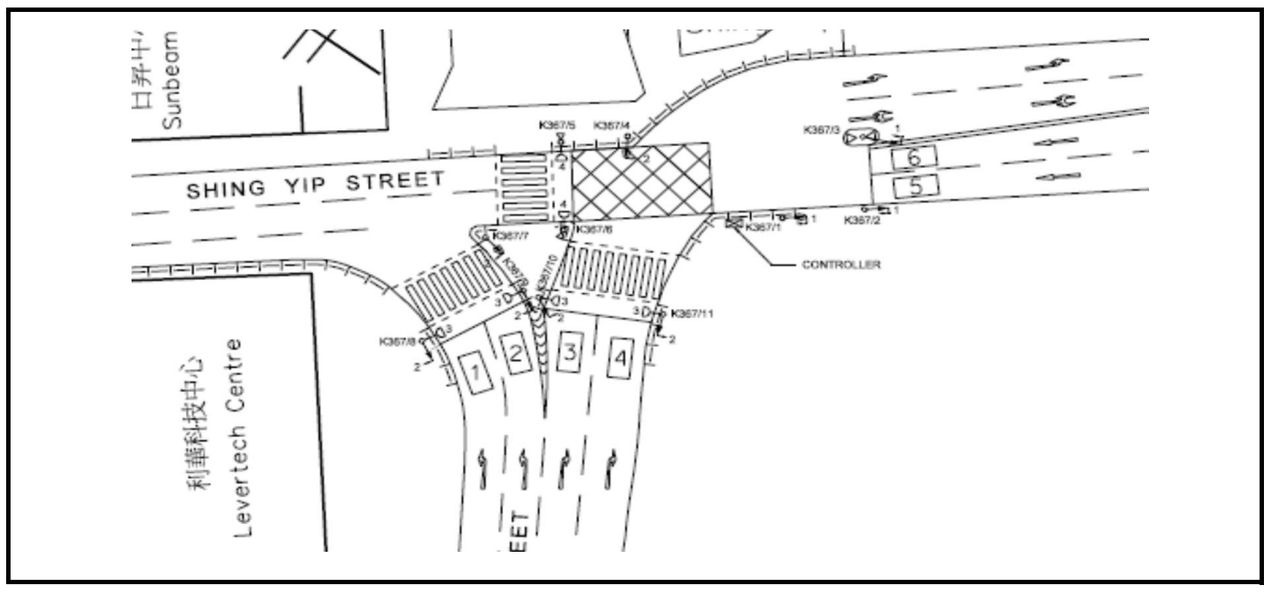
Junction : J3 SHING YIP ST/KING YIP ST

Design Year: 2018

Scheme : Exisitng

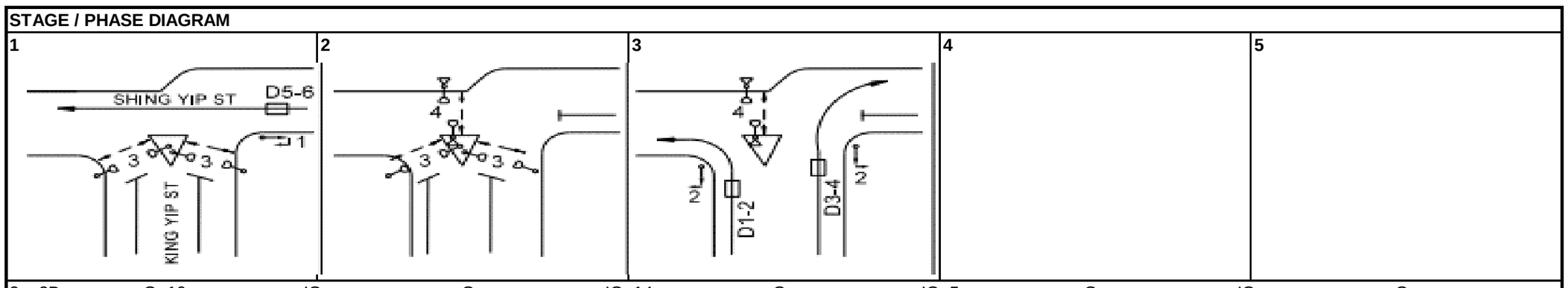
Designed by: PK

Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)

STAGE / PHASE DIAGRAM



3p+2B	G=10	IG=	G=	IG=14	G=	IG=5	G=	IG=	G=
3p+2A	G=10	IG=	G=	IG=14	G=	IG=5	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak Design Flow ***q*** (pcu/hr)	AM Peak Proportion turning (%) ***f***	AM Peak Saturation flow ***S*** (pcu/hr)	AM Peak Flow factor ***y***	PM Peak Design Flow ***q*** (pcu/hr)	PM Peak Proportion turning (%) ***f***	PM Peak Saturation flow ***S*** (pcu/hr)	PM Peak Flow factor ***y***
Shing Yip Street WB														
1A	1	3.50	Y	N			164		1375	0.119	130		1375	0.095
1B	1	3.50	N	N			176		1475	0.119	140		1475	0.095
King Yip Street NB														
2A	3	3.50	Y	N	20		381	100%	1280	0.298	353	100%	1280	**0.276**
2B	3	3.50	N	N	30		419	100%	1405	**0.298**	387	100%	1405	0.275
2C	3	3.50	N	N	30		187	100%	1805	0.104	390	100%	1805	0.216
2D	3	3.50	Y	N	25		173	100%	1670	0.104	360	100%	1670	0.216
3p	1,2		10GM +	12FG =	22	sec								
4p	2,3		7GM +	8FG =	15	sec								

Notes:
Considered the numerour run-in out , site factor have been appiled at King Yip St and ShingYip St.

High Cycle = 140 seconds adopted

AM Peak	3p+2B	PM Peak	3p+2A
Sum of Critical *y* ***Y***	**0.298**	Sum of Critical *y* ***Y***	**0.276**
Lost Time ***L*** (sec)	28	Lost Time ***L*** (sec)	28
Cycle Time ***c*** (sec)	140	Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.720	Practical *Y* ***Ypr***	0.720
Reserve Capacity ***RC***	**141%**	Reserve Capacity ***RC***	**161%**

Junction : J3

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

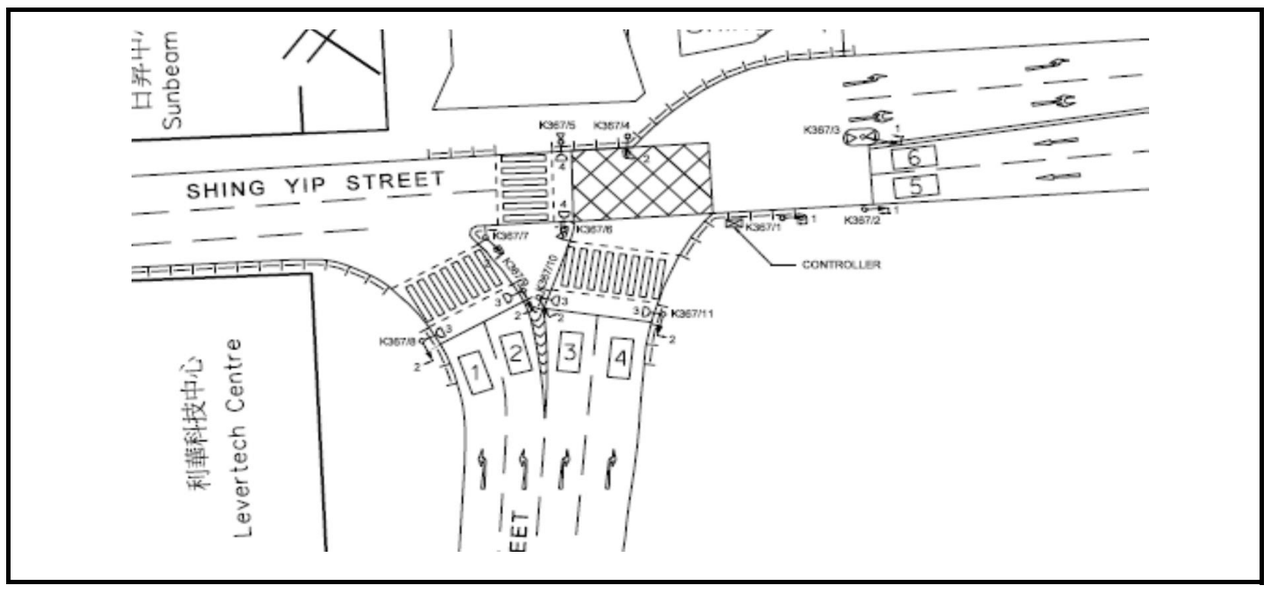
Junction : J3 SHING YIP ST/KING YIP ST

Design Year: 2023

Scheme : 2023 Design (Construction) - L/UL

Designed by: PK

Checked by: JY



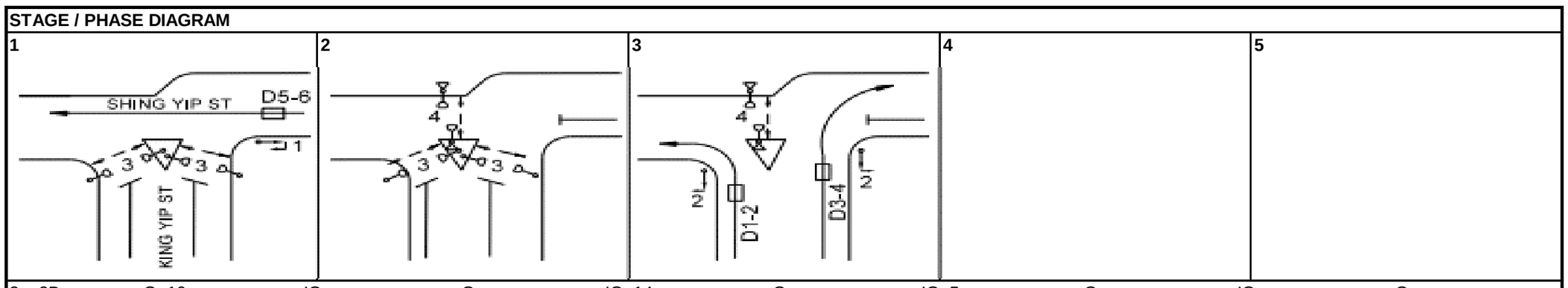
Traffic Flow (pcu/hr)
AM(PM)

N

360(300)

840(780) 390(810)

STAGE / PHASE DIAGRAM



3p+2B	G=10	IG=	G=	IG=14	G=	IG=5	G=	IG=	G=
3p+2C	G=10	IG=	G=	IG=14	G=	IG=5	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Shing Yip Street WB														
1A	1	3.50	Y	N			174		1375	0.127	145		1375	0.105
1B	1	3.50	N	N			186		1475	0.126	155		1475	0.105
King Yip Street NB														
2A	3	3.50	Y	N	20		400	100%	1280	0.313	372	100%	1280	0.291
2B	3	3.50	N	N	30		440	100%	1405	**0.313**	408	100%	1405	0.290
2C	3	3.50	N	N	30		390	100%	1405	0.278	810	100%	1405	**0.577**
3p	1,2		10GM +	12FG =	22	sec								
4p	2,3		7GM +	8FG =	15	sec								

Notes:	**AM Peak**	**3p+2B**	**PM Peak**	**3p+2C**
Considered the numerour run-in out, site factor have been appiled at King Yip St and ShingYip St.	Sum of Critical *y* ***Y***	**0.313**	Sum of Critical *y* ***Y***	**0.577**
	Lost Time ***L*** (sec)	28	Lost Time ***L*** (sec)	28
	Cycle Time ***c*** (sec)	140	Cycle Time ***c*** (sec)	140
High Cycle = 140 seconds adopted	Practical *Y* ***Ypr***	0.720	Practical *Y* ***Ypr***	0.720
	Reserve Capacity ***RC***	**130%**	Reserve Capacity ***RC***	**25%**

Junction : J3

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

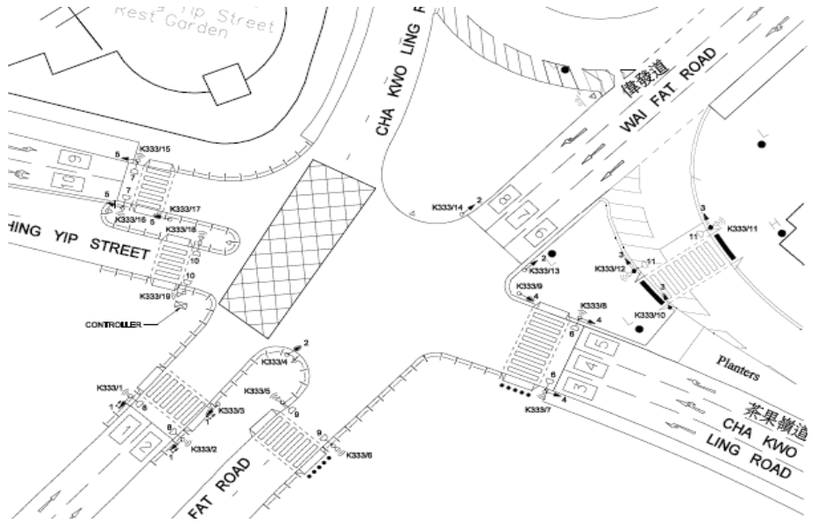
Junction : J4 CHA KWO LING RD / SHING YIP ST / WAI FAT RD

Design Year: 2018

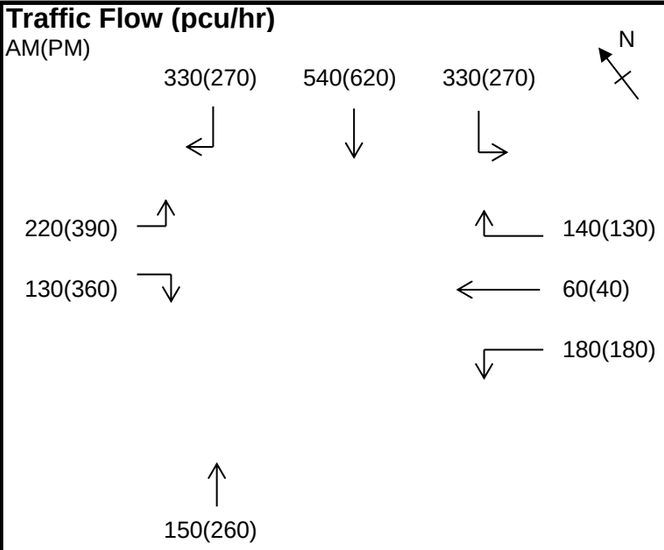
Scheme : Existing

Designed by: PK

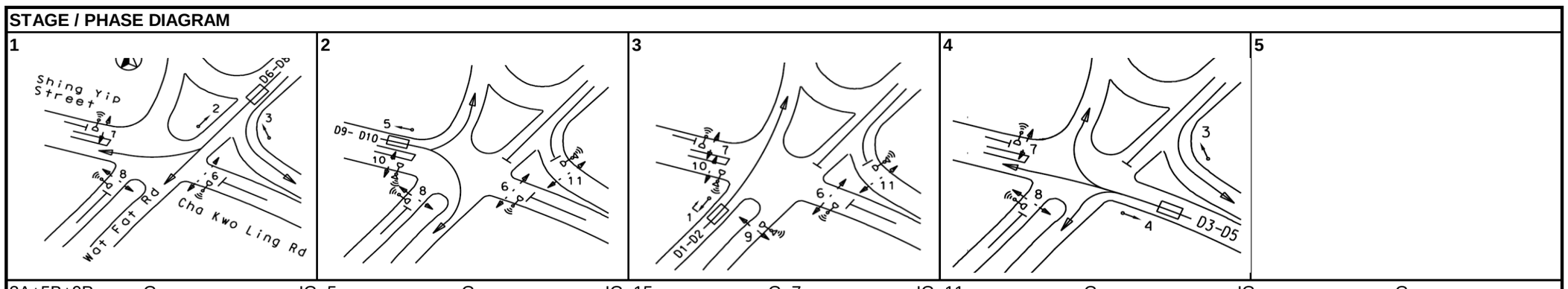
Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)



STAGE / PHASE DIAGRAM



3A+5B+9P	G=	IG=5	G=	IG=15	G=7	IG=11	G=	IG=	G=
2A+5B+9P+4A	G=	IG=5	G=	IG=15	G=7	IG=11	G=	IG=7	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak Design Flow ***q*** (pcu/hr)	AM Peak Proportion turning (%) ***f***	AM Peak Saturation flow ***S*** (pcu/hr)	AM Peak Flow factor ***y***	PM Peak Design Flow ***q*** (pcu/hr)	PM Peak Proportion turning (%) ***f***	PM Peak Saturation flow ***S*** (pcu/hr)	PM Peak Flow factor ***y***
Wai Fat Road EB														
1A	3	3.50	Y	N			72		1965	0.037	126		1965	0.064
1B	3	3.50	N	N			78		2105	0.037	134		2105	0.064
Wai Fat Road WB														
3A	1,4	5.00	Y	N	20		330	100%	985	**0.335**	270	100%	985	0.274
2A	1	3.00	N	N			256		1850	0.138	294		1850	**0.159**
2B	1	3.00	N	N			284		2055	0.138	326		2055	0.159
2C	1	3.00	N	N	30		280	100%	1955	0.143	230	100%	1955	0.118
Cha Kwo Ling Road NB														
4A	4	3.30	Y	N	15		180	100%	1770	0.102	180	100%	1770	**0.102**
4B	4	3.30	N	N	20		109	45%	2015	0.054	92	57%	2000	0.046
4C	4	3.30	N	Y	15		91	100%	1685	0.054	78	100%	1685	0.046
Shing Yip Street SB														
5A	2	3.00	Y	N	15		168	100%	1740	0.097	361	100%	1740	0.207
5B	2	3.00	N	N	20/15		182	29% / 71%	1880	**0.097**	389	7% / 93%	1870	**0.208**
6p	1,2,3		5GM +	12FG =	17	sec								
7p	1,3,4		5GM +	9FG =	14	sec								
8p	1,2,4		5GM +	9FG =	14	sec								
9p	3		7GM +	9FG =	16	sec								
10p	2,3		5GM +	6FG =	11	sec								
11p	2,3		5GM +	12FG =	17	sec								

Notes:
Site factor applied on Wai Fat Road WB for Left-turn traffic

High cycle 140sec adopted

AM Peak	3A+5B+9P	PM Peak	2A+5B+9P+4A
Sum of Critical *y* ***Y***	**0.432**	Sum of Critical *y* ***Y***	**0.469**
Lost Time ***L*** (sec)	36	Lost Time ***L*** (sec)	42
Cycle Time ***c*** (sec)	140	Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.669	Practical *Y* ***Ypr***	0.630
Reserve Capacity ***RC***	**55%**	Reserve Capacity ***RC***	**34%**

Junction : J4

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

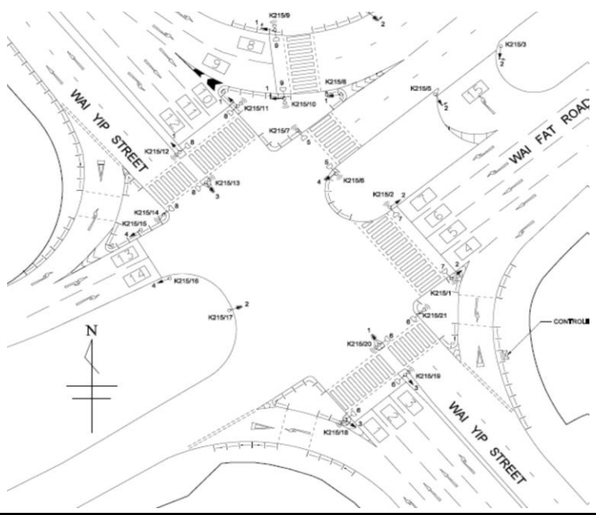
Junction : J5 WAI YIP ST / WAI FAT RD

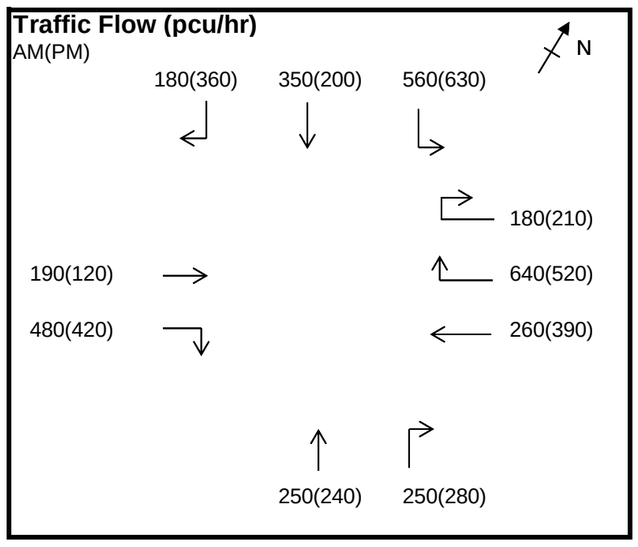
Design Year: 2018

Scheme : Existing

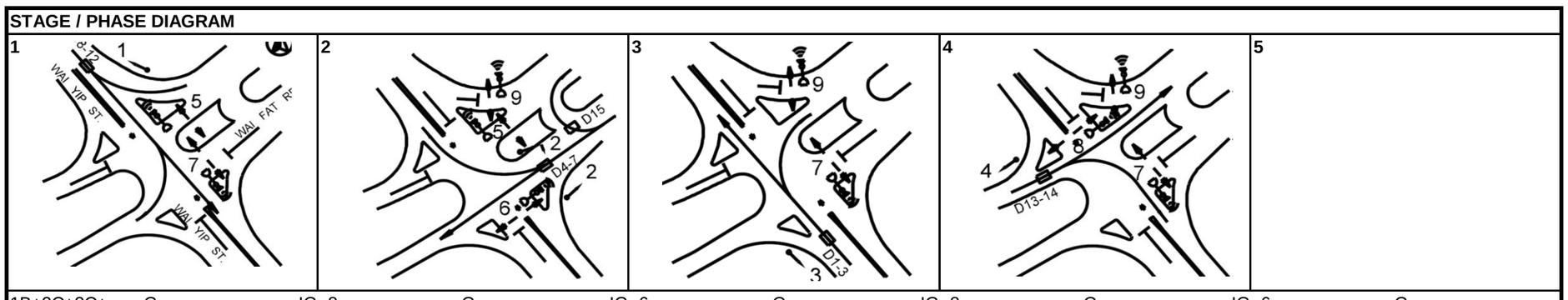
Designed by: PK

Checked by: JY





STAGE / PHASE DIAGRAM



1B+2C+3C+4	G=	IG=8	G=	IG=6	G=	IG=8	G=	IG=6	G=		
1B+2C+3C+4B	G=	IG=8	G=	IG=6	G=	IG=8	G=	IG=6	G=		

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Wai Yip Street SB														
1A	1	3.30	Y	N	30		155	100%			155	100%		
1B	1	3.30	N	N	35		405	100%	2000	**0.203**	475	100%	2000	**0.238**
1C	1	3.20	N	N			50				50			
1D	1	3.20	N	N			130				130			
1E	1	3.20	N	N	15		350	51%	1975	0.177	380	95%	1895	0.201
Wai Fat Street WB														
2A	2	3.60	N	N			130		2115	0.061	195		2115	0.092
2B	2	3.60	N	N			130		2115	0.061	195		2115	0.092
2C	2	3.50	N	N	20		408	100%	1960	**0.208**	359	100%	1960	**0.183**
2D	2	3.50	N	N	15		75	100%			75	100%		
2E	2	3.50	N	N	5		337	100%	1620	0.208	296	100%	1620	0.183
Wai Yip Street NB														
3A	3	3.80	N	N			125		2135	0.059	120		2135	0.056
3B	3	3.80	N	N			125		2135	0.059	120		2135	0.056
3C	3	3.80	N	N	10		250	100%	1855	**0.135**	280	100%	1855	**0.151**
Wai Fat Street EB														
4A	4	3.50	N	N	20		328	42%	1835	**0.179**	263	54%	1820	0.145
4B	4	3.50	N	N	15		342	100%	1915	0.179	277	100%	1915	**0.145**
5p	1,2		5GM +	7FG =	12	sec								
6p	2		11GM +	10FG =	21	sec								
7p	1,3,4		7GM +	14FG =	21	sec								
8p	4		10GM +	9FG =	19	sec								
9p	2,3,4		5GM +	9FG =	14	sec								

Notes: Cycle time: 140 sec (HCL) adopted

Flare Lane effect have been considered at WYS SB left-turn traffic

Flare Lane effect have been considered at WYS SB straight-ahead traffic

Flare Lane effect have been considered at WYS WB U-turn traffic

Junction Improvement from Ex-Cha Kwo Ling Kaolin Mine Site in MPC paper no. 19/14 considered (anti-clockwise MOC)

AM Peak	1B+2C+3C+4A	PM Peak	1B+2C+3C+4B
Sum of Critical *y* ***Y***	**0.724**	Sum of Critical *y* ***Y***	**0.716**
Lost Time ***L*** (sec)	24	Lost Time ***L*** (sec)	24
Cycle Time ***c*** (sec)	140	Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.746	Practical *Y* ***Ypr***	0.746
Reserve Capacity ***RC***	**3%**	Reserve Capacity ***RC***	**4%**

Junction : J5

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

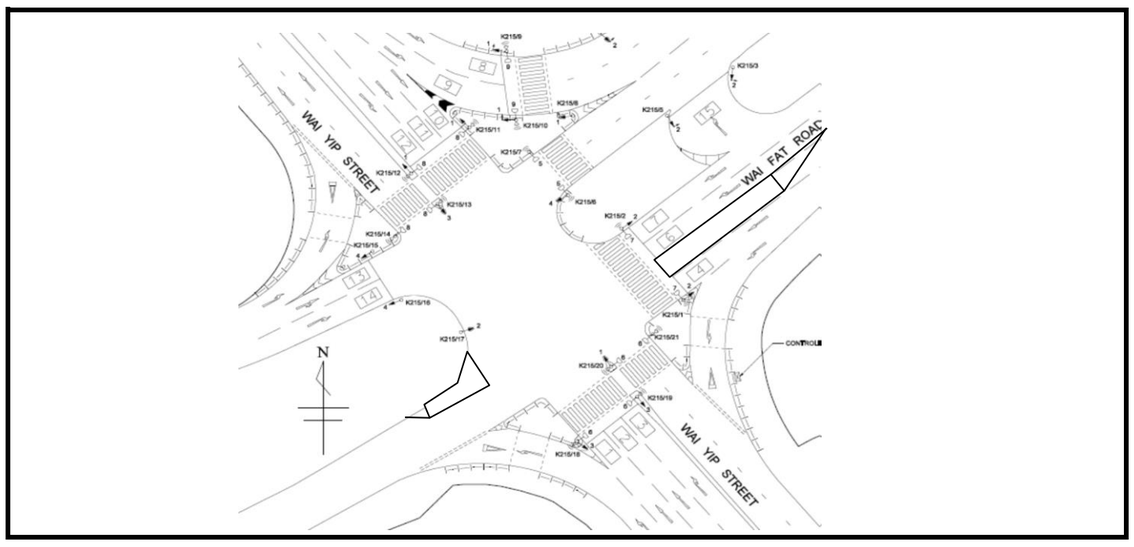
Junction : J5 WAI YIP ST / WAI FAT RD

Design Year: 2023

Scheme : Design with TTMS at Wai Fat Rd (Figure 5.9_upper Part)

Designed by: PK

Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)

N

210(40) 390(220) 580(660)

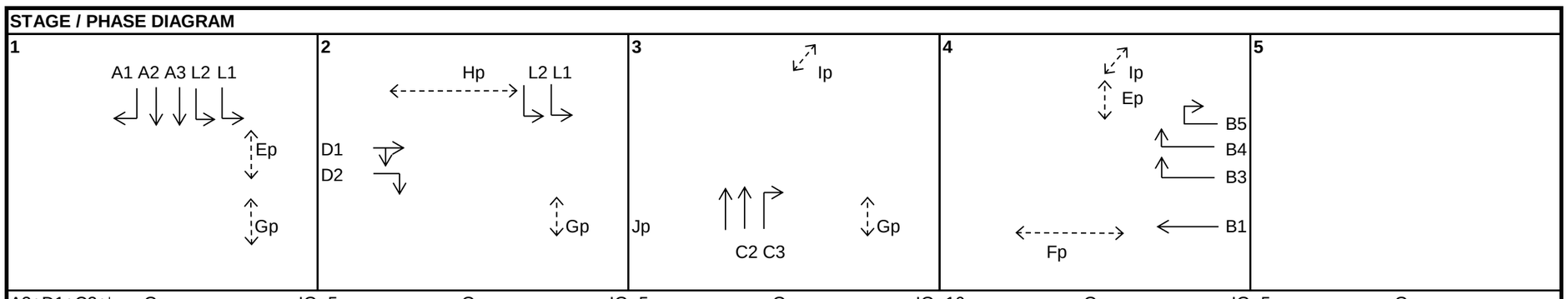
180(220)

210(130) 860(760)

510(450) 300(430)

290(270) 280(300)

STAGE / PHASE DIAGRAM



A3+D1+C3+I	G=	IG=5	G=	IG=5	G=	IG=16	G=	IG=5	G=
A3+D1+C3+B1	G=	IG=5	G=	IG=5	G=	IG=16	G=	IG=5	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak: Design Flow ***q*** (pcu/hr)	AM Peak: Proportion turning (%) ***f***	AM Peak: Saturation flow ***S*** (pcu/hr)	AM Peak: Flow factor ***y***	PM Peak: Design Flow ***q*** (pcu/hr)	PM Peak: Proportion turning (%) ***f***	PM Peak: Saturation flow ***S*** (pcu/hr)	PM Peak: Flow factor ***y***
Wai Yip Street SB														
L1	1,2	3.30	Y	N	30		155	100%			155	100%		
L2	1,2	3.30	N	N	35		425	100%	2000	0.213	505	100%	2000	0.253
A1	1	3.20	N	N			50				50			
A2	1	3.20	N	N			130				130			
A3	1	3.20	N	N	15		400	48%	1980	**0.202**	420	90%	1905	**0.220**
Wai Fat Street WB														
B1	4	3.60	N	N			300		2115	0.142	430		2115	**0.203**
B3	4	3.50	N	N	20		430	100%	1960	**0.219**	375	100%	1960	0.191
B4	4	3.50	N	N	15		75	100%			75	100%		
B5	4	3.50	N	N	5		355	100%	1620	0.219	310	100%	1620	0.191
Wai Yip Street NB														
C1	3	3.80	N	N			145		2135	0.068	135		2135	0.063
C2	3	3.80	N	N			145		2135	0.068	135		2135	0.063
C3	3	3.80	N	N	10		280	100%	1855	**0.151**	300	100%	1855	**0.162**
Wai Fat Street EB														
D1	2	3.30	N	N	20		353	41%	1820	**0.194**	283	54%	1805	**0.157**
D2	2	3.30	N	N	15		367	100%	1895	0.194	297	100%	1895	0.157
Ep	1,4		5GM +	7FG =	12	sec								
Fp	4		11GM +	10FG =	21	sec								
Gp	1,2,3		7GM +	14FG =	21	sec								
Hp	2		10GM +	9FG =	19	sec								
Ip	3,4		5GM +	9FG =	14	sec								

Notes: Cycle time: 140 sec (HCL) adopted
Flare Lane effect have been considered at WYS SB left-turn traffic
Flare Lane effect have been considered at WYS SB straight-ahead traffic
Flare Lane effect have been considered at WYS WB U-turn traffic
Junction Improvement from Ex-Cha Kwo Ling Kaolin Mine Site in MPC paper no. 19/14 considered (anti-clockwise MOC)

AM Peak	**A3+D1+C3+B3**	**PM Peak**	**A3+D1+C3+B1**
Sum of Critical *y* ***Y***	**0.766**	Sum of Critical *y* ***Y***	**0.742**
Lost Time ***L*** (sec)	27	Lost Time ***L*** (sec)	27
Cycle Time ***c*** (sec)	140	Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.726	Practical *Y* ***Ypr***	0.726
Reserve Capacity ***RC***	**-5%**	Reserve Capacity ***RC***	**-2%**

Junction : J5

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

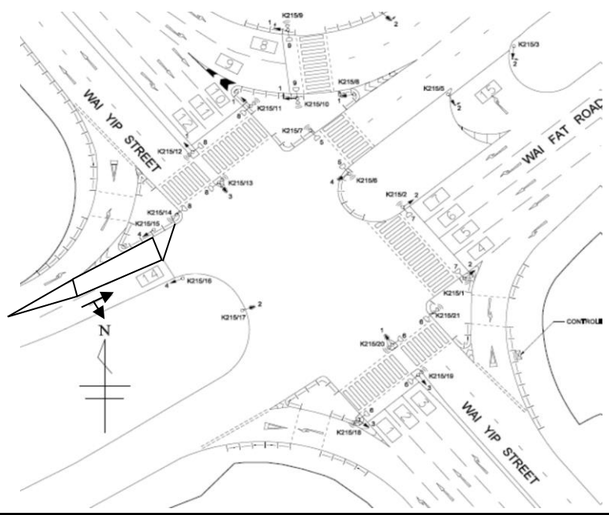
Junction : J5 WAI YIP ST / WAI FAT RD

Design Year: 2023

Scheme : Design with TTMS at Wai Fat Rd (Figure 5.9_lower Part)

Designed by: PK

Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)

N

210(40) 390(220) 580(660)

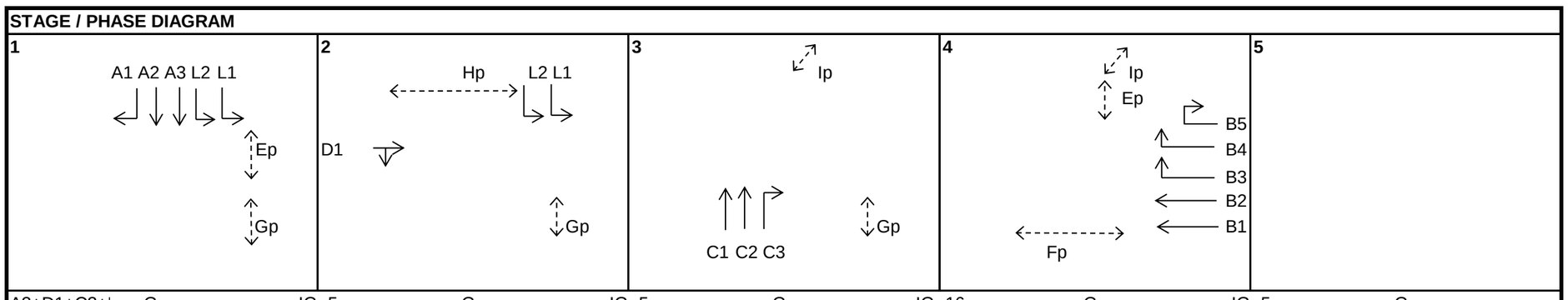
180(220)

210(130) 860(760)

510(450) 300(430)

290(270) 280(300)

STAGE / PHASE DIAGRAM



A3+D1+C3+I	G=	IG=5	G=	IG=5	G=	IG=16	G=	IG=5	G=
A3+D1+C3+B5	G=	IG=5	G=	IG=5	G=	IG=16	G=	IG=5	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak: Design Flow ***q*** (pcu/hr)	AM Peak: Proportion turning (%) ***f***	AM Peak: Saturation flow ***S*** (pcu/hr)	AM Peak: Flow factor ***y***	PM Peak: Design Flow ***q*** (pcu/hr)	PM Peak: Proportion turning (%) ***f***	PM Peak: Saturation flow ***S*** (pcu/hr)	PM Peak: Flow factor ***y***
Wai Yip Street SB														
L1	1,2	3.30	Y	N	30		155	100%			155	100%		
L2	1,2	3.30	N	N	35		425	100%	2000	0.213	505	100%	2000	0.253
A1	1	3.20	N	N			50				50			
A2	1	3.20	N	N			130				130			
A3	1	3.20	N	N	15		400	48%	1980	**0.202**	420	90%	1905	**0.220**
Wai Fat Street WB														
B1	4	3.60	N	N			150		2115	0.071	215		2115	0.102
B2	4	3.60	N	N			150		2115	0.071	215		2115	0.102
B3	4	3.50	N	N	20		430	100%	1960	**0.219**	375	100%	1960	0.191
B4	4	3.50	N	N	15		75	100%			75	100%		
B5	4	3.50	N	N	5		355	100%	1620	0.219	310	100%	1620	**0.191**
Wai Yip Street NB														
C1	3	3.80	N	N			145		2135	0.068	135		2135	0.063
C2	3	3.80	N	N			145		2135	0.068	135		2135	0.063
C3	3	3.80	N	N	10		280	100%	1855	**0.151**	300	100%	1855	**0.162**
Wai Fat Street EB														
D1	2	3.30	N	N	15		720	71%	1750	**0.411**	580	78%	1740	**0.333**
Ep	1,4		5GM +	7FG =	12	sec								
Fp	4		11GM +	10FG =	21	sec								
Gp	1,2,3		7GM +	14FG =	21	sec								
Hp	2		10GM +	9FG =	19	sec								
Ip	3,4		5GM +	9FG =	14	sec								

Notes: Cycle time: 140 sec (HCL) adopted
Flare Lane effect have been considered at WYS SB left-turn traffic
Flare Lane effect have been considered at WYS SB straight-ahead traffic
Flare Lane effect have been considered at WYS WB U-turn traffic
Junction Improvement from Ex-Cha Kwo Ling Kaolin Mine Site in MPC paper no. 19/14 considered (anti-clockwise MOC)

AM Peak	**A3+D1+C3+B3**	**PM Peak**	**A3+D1+C3+B5**
Sum of Critical *y* ***Y***	**0.984**	Sum of Critical *y* ***Y***	**0.907**
Lost Time ***L*** (sec)	27	Lost Time ***L*** (sec)	27
Cycle Time ***c*** (sec)	140	Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.726	Practical *Y* ***Ypr***	0.726
Reserve Capacity ***RC***	**-26%**	Reserve Capacity ***RC***	**-20%**

Junction : J5

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

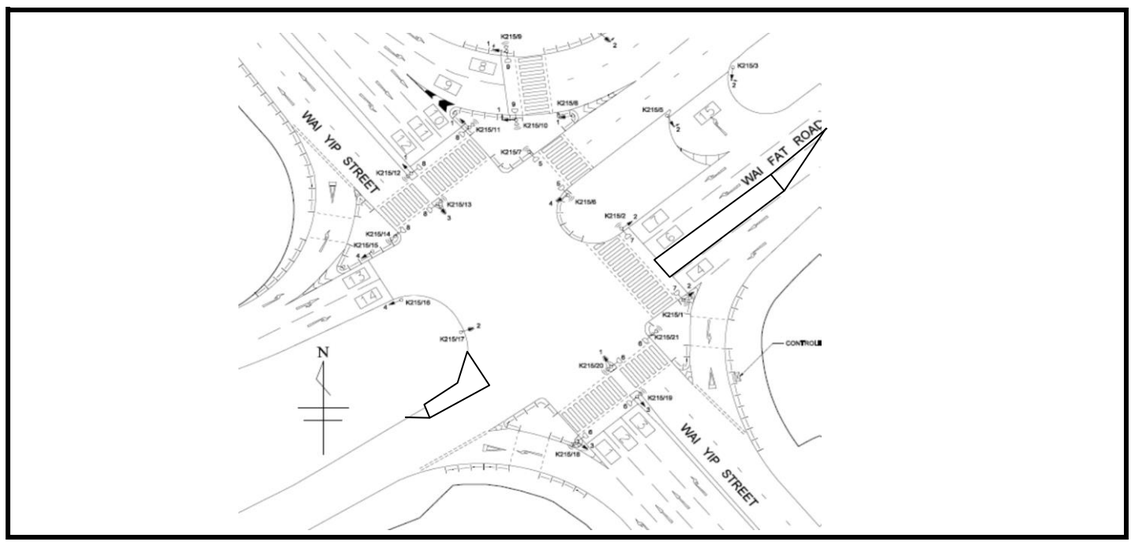
Junction : J5 WAI YIP ST / WAI FAT RD

Design Year: 2023

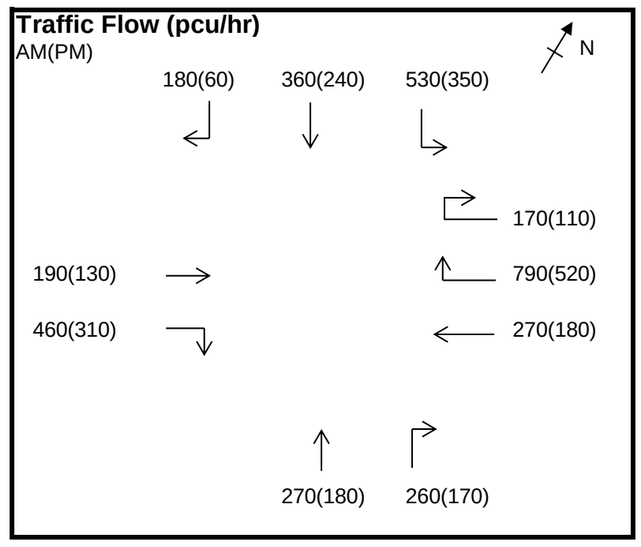
Scheme : Design with TTMS at Wai Fat Rd (Figure 5.9_upper Part)_offpeak

Designed by: PK

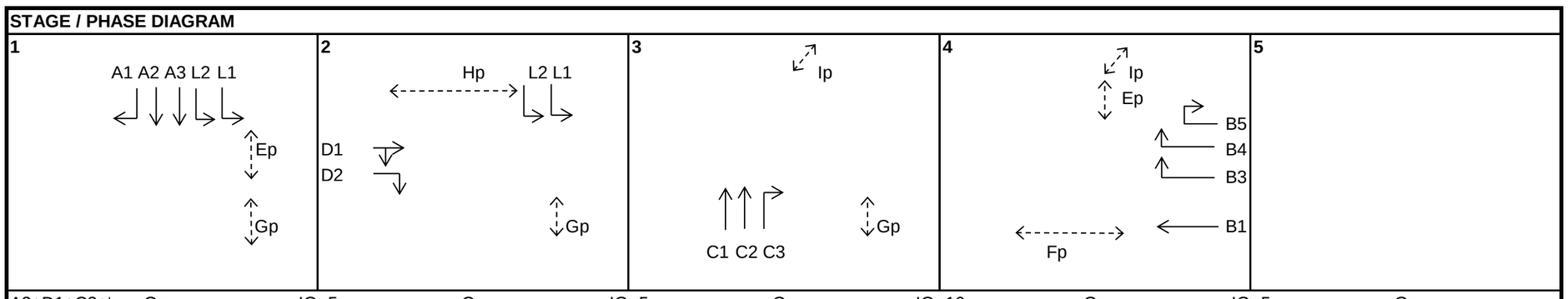
Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)



STAGE / PHASE DIAGRAM



A3+D1+C3+I	G=		IG=5		G=		IG=5		G=		IG=16		G=		IG=5	G=
A3+D1+C3+B3	G=		IG=5		G=		IG=5		G=		IG=16		G=		IG=5	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	Off-Peak (within 10:00 - 16:00 hours) Design Flow ***q*** (pcu/hr)	Proportion turning (%) ***f***	Saturation flow ***S*** (pcu/hr)	Flow factor ***y***	Off-Peak (within 20:00 - 06:00 hours) Design Flow ***q*** (pcu/hr)	Proportion turning (%) ***f***	Saturation flow ***S*** (pcu/hr)	Flow factor ***y***
Wai Yip Street SB														
L1	1,2	3.30	Y	N	30		155	100%			155	100%		
L2	1,2	3.30	N	N	35		375	100%	2000	0.188	195	100%	2000	0.098
A1	1	3.20	N	N			50				50			
A2	1	3.20	N	N			130				130			
A3	1	3.20	N	N	15		360	50%	1975	**0.182**	180	67%	1945	**0.093**
Wai Fat Street WB														
B1	4	3.60	N	N			270		2115	0.128	180		2115	0.085
B3	4	3.50	N	N	20		392	100%	1960	**0.200**	244	100%	1960	**0.124**
B4	4	3.50	N	N	15		75	100%			75	100%		
B5	4	3.50	N	N	5		323	100%	1620	0.199	201	100%	1620	0.124
Wai Yip Street NB														
C1	3	3.80	N	N			135		2135	0.063	90		2135	0.042
C2	3	3.80	N	N			135		2135	0.063	90		2135	0.042
C3	3	3.80	N	N	10		260	100%	1855	**0.140**	170	100%	1855	**0.092**
Wai Fat Street EB														
D1	2	3.30	N	N	20		319	40%	1820	**0.175**	216	40%	1820	**0.119**
D2	2	3.30	N	N	15		331	100%	1895	0.175	224	100%	1895	0.118
Ep	1,4		5GM +	7FG =	12	sec								
Fp	4		11GM +	10FG =	21	sec								
Gp	1,2,3		7GM +	14FG =	21	sec								
Hp	2		10GM +	9FG =	19	sec								
Ip	3,4		5GM +	9FG =	14	sec								

Notes: Cycle time: 140 sec (HCL) adopted
Flare Lane effect have been considered at WYS SB left-turn traffic
Flare Lane effect have been considered at WYS SB straight-ahead traffic
Flare Lane effect have been considered at WYS WB U-turn traffic
Junction Improvement from Ex-Cha Kwo Ling Kaolin Mine Site in MPC paper no. 19/14 considered (anti-clockwise MOC)

Off Peak (10:00 - 16:00 hours)	A3+D1+C3+B3	Off Peak (20:00 - 06:00 hours)	A3+D1+C3+B3
Sum of Critical *y* ***Y***	**0.698**	Sum of Critical *y* ***Y***	**0.427**
Lost Time ***L*** (sec)	27	Lost Time ***L*** (sec)	27
Cycle Time ***c*** (sec)	140	Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.726	Practical *Y* ***Ypr***	0.726
Reserve Capacity ***RC***	**4%**	Reserve Capacity ***RC***	**70%**

Junction : J5

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

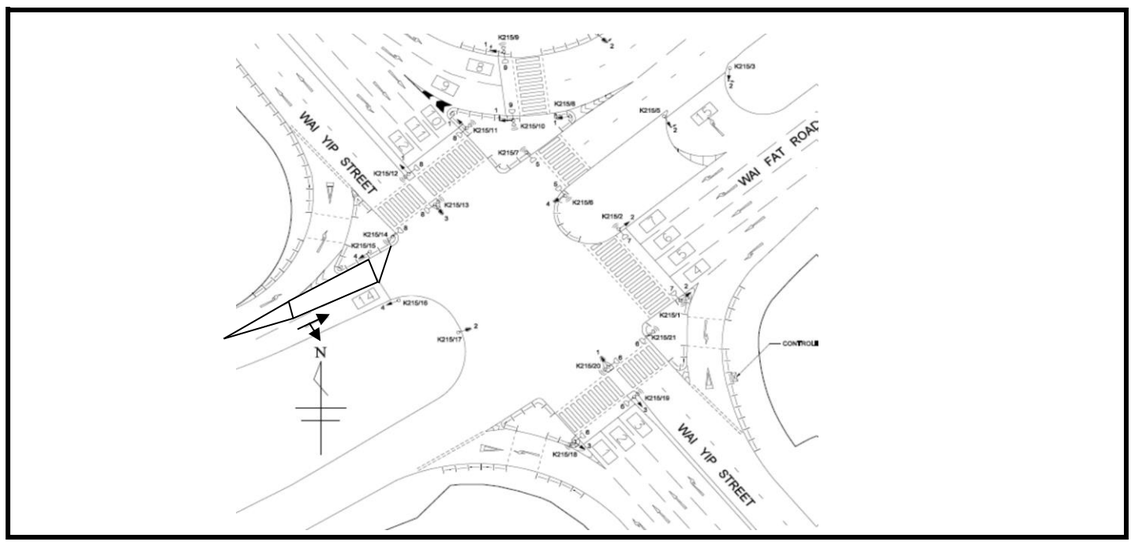
Junction : J5 WAI YIP ST / WAI FAT RD

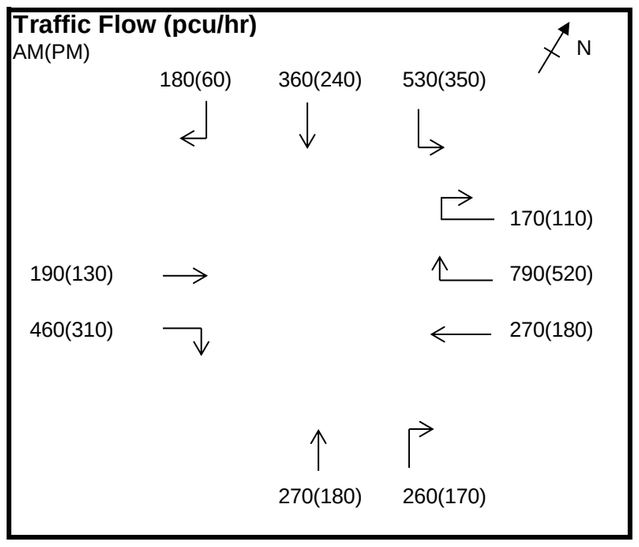
Design Year: 2023

Scheme : Design with TTMS at Wai Fat Rd (Figure 5.9_lower Part) (off-peak)

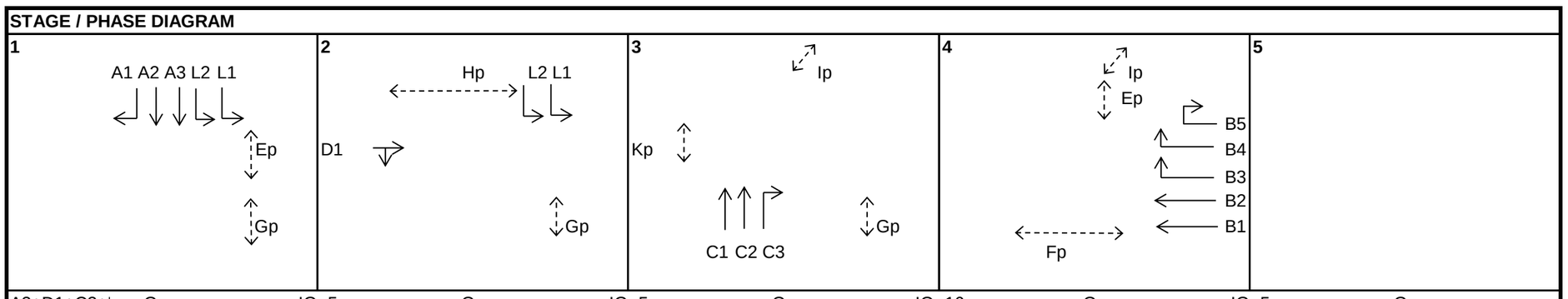
Designed by: PK

Checked by: JY





STAGE / PHASE DIAGRAM



A3+D1+C3+I	G=	IG=5	G=	IG=5	G=	IG=16	G=	IG=5	G=
A3+D1+C3+B3	G=	IG=5	G=	IG=5	G=	IG=16	G=	IG=5	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	Off-Peak (within 10:00 - 16:00 hours) Design Flow ***q*** (pcu/hr)	Proportion turning (%) ***f***	Saturation flow ***S*** (pcu/hr)	Flow factor ***y***	Off-Peak (within 20:00 - 06:00 hours) Design Flow ***q*** (pcu/hr)	Proportion turning (%) ***f***	Saturation flow ***S*** (pcu/hr)	Flow factor ***y***
Wai Yip Street SB														
L1	1,2	3.30	Y	N	30		155	100%			155	100%		
L2	1,2	3.30	N	N	35		375	100%	2000	0.188	195	100%	2000	0.098
A1	1	3.20	N	N			50				50			
A2	1	3.20	N	N			130				130			
A3	1	3.20	N	N	15		360	50%	1975	**0.182**	180	67%	1945	**0.093**
Wai Fat Street WB														
B1	4	3.60	N	N			135		2115	0.064	90		2115	0.043
B2	4	3.60	N	N			135		2115	0.064	90		2115	0.043
B3	4	3.50	N	N	20		392	100%	1960	**0.200**	244	100%	1960	**0.124**
B4	4	3.50	N	N	15		75	100%			75	100%		
B5	4	3.50	N	N	5		323	100%	1620	0.199	201	100%	1620	0.124
Wai Yip Street NB														
C1	3	3.80	N	N			135		2135	0.063	90		2135	0.042
C2	3	3.80	N	N			135		2135	0.063	90		2135	0.042
C3	3	3.80	N	N	10		260	100%	1855	**0.140**	170	100%	1855	**0.092**
Wai Fat Street EB														
D1	2	3.30	N	N	15		650	71%	1750	**0.371**	440	70%	1755	**0.251**
Ep	1,4		5GM +	7FG =	12	sec								
Fp	4		11GM +	10FG =	21	sec								
Gp	1,2,3		7GM +	14FG =	21	sec								
Hp	2		10GM +	9FG =	19	sec								
Ip	3,4		5GM +	9FG =	14	sec								

Notes: Cycle time: 140 sec (HCL) adopted

Flare Lane effect have been considered at WYS SB left-turn traffic

Flare Lane effect have been considered at WYS SB straight-ahead traffic

Flare Lane effect have been considered at WYS WB U-turn traffic

Junction Improvement from Ex-Cha Kwo Ling Kaolin Mine Site in MPC paper no. 19/14 considered (anti-clockwise MOC)

Off-Peak (within 10:00 - 16:00 hours)	A3+D1+C3+B3
Sum of Critical *y* ***Y***	**0.894**
Lost Time ***L*** (sec)	27
Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.726
Reserve Capacity ***RC***	**-19%**

Off-Peak (within 20:00 - 06:00 hours)	A3+D1+C3+B3
Sum of Critical *y* ***Y***	**0.559**
Lost Time ***L*** (sec)	27
Cycle Time ***c*** (sec)	140
Practical *Y* ***Ypr***	0.726
Reserve Capacity ***RC***	**30%**

Junction : J5

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

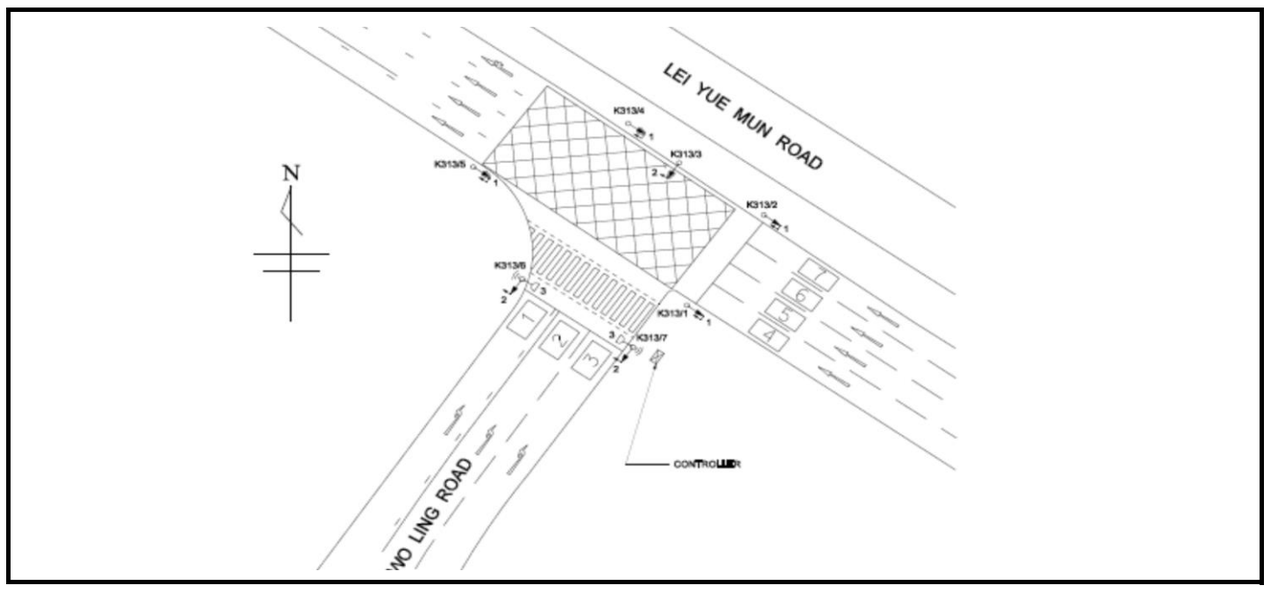
Junction : J6 LEI YUE MUN RD/CHA KWO LING RD

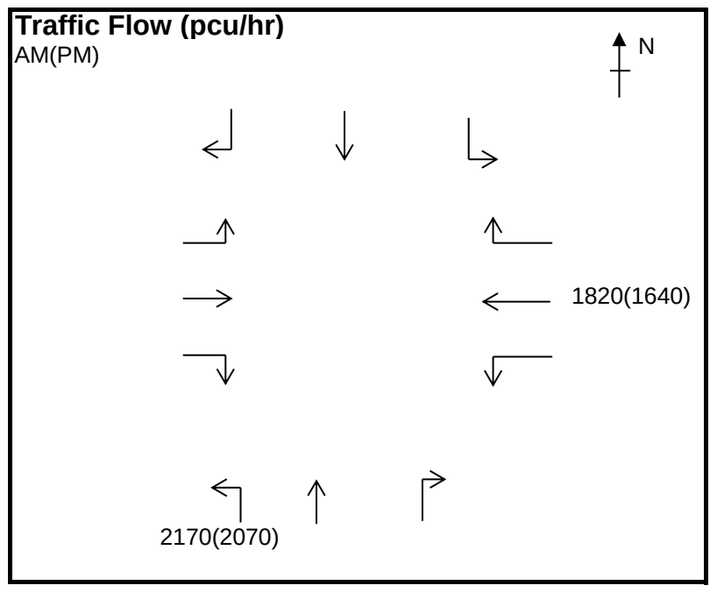
Design Year: 2018

Scheme : Existing

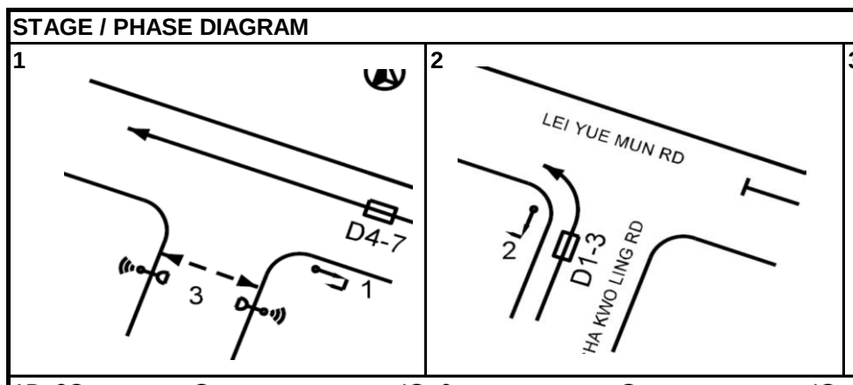
Designed by: PK

Checked by: JY





STAGE / PHASE DIAGRAM



1B+2C	G=	IG=6	G=	IG=10	G=	IG=	G=	IG=	G=
1B+2C	G=	IG=6	G=	IG=10	G=	IG=	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Lei Yue Mun Road NB														
1A	1	3.00	Y	N			431		1915	0.225	389		1915	0.203
1B	1	3.00	N	N			463		2055	**0.225**	417		2055	**0.203**
1C	1	3.00	N	N			463		2055	0.225	417		2055	0.203
1D	1	3.00	N	N			463		2055	0.225	417		2055	0.203
Cha Kwo Ling Road EB														
2A	2	4.00	Y	N	10		666	100%	1750	0.381	636	100%	1750	0.363
2B	2	4.00	N	N	15		746	100%	1960	0.381	711	100%	1960	0.363
2C	2	4.00	N	N	18		758	100%	1990	**0.381**	723	100%	1990	**0.363**
3p	1		7GM +	15FG =	22	sec								

Notes:	**AM Peak**	**1B+2C**	**PM Peak**	**1B+2C**
	Sum of Critical *y* ***Y***	**0.606**	Sum of Critical *y* ***Y***	**0.566**
High Cycle = 130 seconds adopted	Lost Time ***L*** (sec)	14	Lost Time ***L*** (sec)	14
	Cycle Time ***c*** (sec)	130	Cycle Time ***c*** (sec)	130
	Practical *Y* ***Ypr***	0.803	Practical *Y* ***Ypr***	0.803
	Reserve Capacity ***RC***	**32%**	Reserve Capacity ***RC***	**42%**

Junction : J6

ATKINS CHINA LIMITED

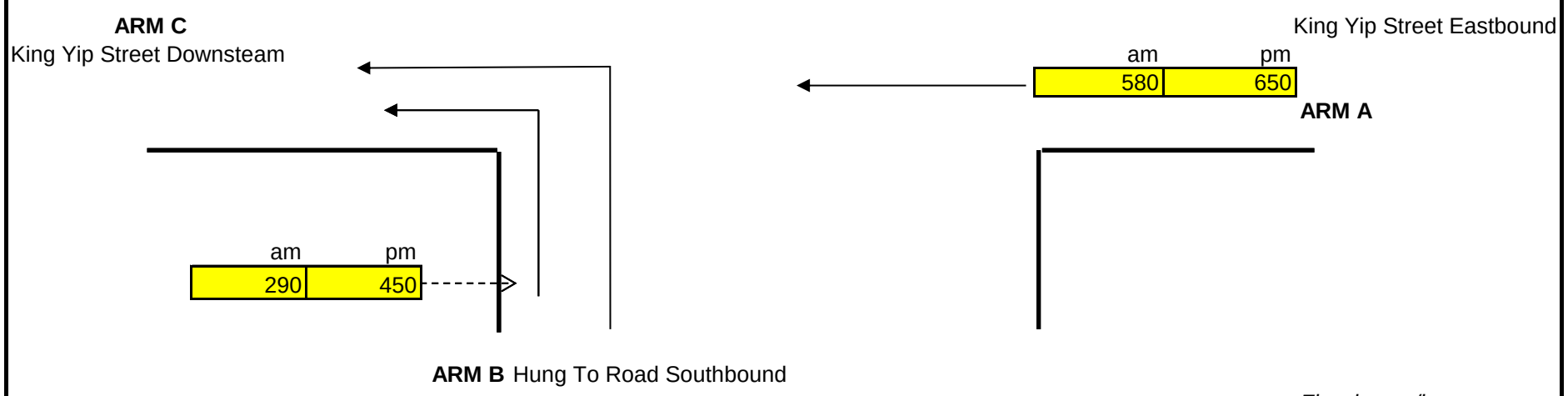
Simplified Priority Junction Capacity Calculation and Queue Length Calculation

SNC·LAVALIN

ATKINS
Member of the SNC-Lavalin Group

(Two Lanes Minor Arm B)

Job Title:	CE 58/1017(DS)				
Junction:	King Yip Street / Hung To Road (J7)			Designed by:	PK
Scheme:	Existing			Checked by:	JY
Design Year:	2018	Job No.:	5160911		
ARM A:	King Yip Street Eastbound				
ARM B:	Hung To Road Southbound				
ARM C:	King Yip Street Downsteam				



Flow in pcu/hr

GEOMETRY					
Major road width	W	8.10	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	4.49
Analysis Time Period (h)	T	0.25		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.62
	Vl(b-a)	75		E	1.04
	Vr(b-c)	75		F	0.67
	Vr(c-b)	145		Y	0.72

DFC CALCULATIONS

DFC CALCULATIONS			**AM PEAK**	**PM PEAK**
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		580	650
	q(b-a)		0	0
	q(b-c)		290	450
	f		1.00	1.00
CAPACITIES	Q(b-a)		293	281
	Q(b-c)		614	595
	Q(c-b)		398	386
DFC's	b-a		0.000	0.000
	b-c		0.472	0.756
	c-b		0.000	0.000
- DFC In accordance with TPDM V2.4			**0.47**	**0.76**
- DFC In accordance with TPDM V2.4				
PCU FACTOR			1	1.5
- DFC In accordance with TPDM V2.4	b-a		0.0	0.0
	b-c		2.5	6.2
	c-b		0.0	0.0
QUEUE LENGTH (m)	b-a		**0.0**	**0.0**
DFC's	b-c	DFC's	**15.2**	**37.0**
DFC's	c-b	DFC's	**0.0**	**0.0**

Where Vl and Vr are visibility distances to the left or right of the respective streams
D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))
E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))
F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c Critical DFC **T.P.D.M.V.2.4**
Y = 1-0.0345W **Appendix 1**
f = proportion of minor traffic turning left
Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

- In accordance with TPDM V2.4

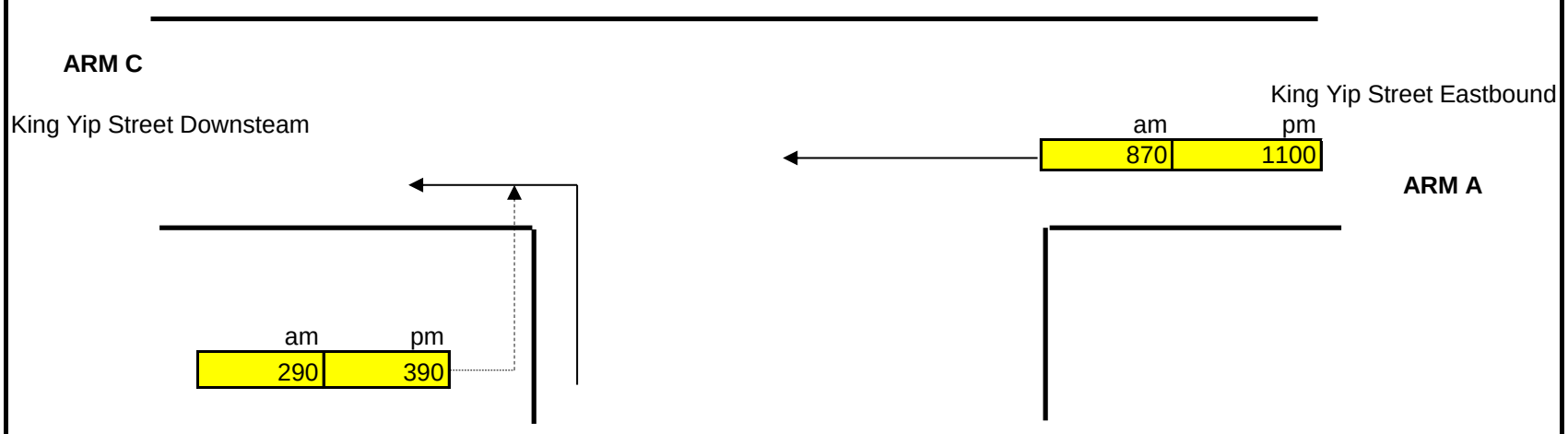
*Assume the average length per vehicle is 6 m
Queue 95th ≈ 900T[(qx/Qx)-1+√[(qx/Qx-1)^2+(3600/Qx)(qx/Qx)/(150T)]](Qx/3600) **HCM2000 Eq.17-37**

Simplified Priority Junction Capacity and Queue Length Calculation

SNC·LAVALIN ATKINS Member of the SNC-Lavalin Group

(Single Lane Minor Arm B)

Job Title:	CE 58/1017(DS)				
Junction:	King Yip Street / Hing Yip Road (J8)			Designed by:	PK
Scheme:	Existing			Checked by:	JY
Design Year:	2018	Job No.:	5160911		
ARM A:	King Yip Street Eastbound				
ARM B:	Hing Yip Street Southbound				
ARM C:	King Yip Street Downsteam				



GEOMETRY					
Major road width (m)	W	7.50	Lane widths (m)	w(b-a)	3.60
Central Reserve width (m)	Wcr	0.00		w(b-c)	3.60
Analysis Time Period (h)	T	0.25		w(c-b)	0.00
Visibilities (m)	Vr(b-a)	135	Calculated	D	1.01
	Vl(b-a)	100		E	0.98
	Vr(b-c)	100		F	0.73
	Vr(c-b)	250		Y	0.74

DFC CALCULATIONS

DFC CALCULATIONS		AM PEAK	PM PEAK
TRAFFIC FLOWS (pcu/hr)	q(c-a)	0	0
	q(c-b)	0	0
	q(a-b)	0	0
	q(a-c)	870	1100
	q(b-a)	0	0
	q(b-c)	290	390
	f	1.00	1.00
CAPACITIES (pcu/hr)	Q(b-a)	396	333
	Q(b-c)	499	438
	Q(c-b)	374	329
	Q(b-ac)	499	438
DFC's	c-b	0.000	0.000
	b-ac	0.581	0.890
- DFC In accordance with TPDM V2.4		**0.58**	**0.89**
- DFC In accordance with TPDM V2.4			
PCU FACTOR		1.4	1.5
- DFC In accordance with TPDM V2.4	c-b	0.0	0.0
	b-ac	3.5	8.1
QUEUE LENGTH (m)	c-b	**0.0**	**0.0**
	b-ac	**21.0**	**48.4**

DFC's DFC's

DFC's DFC's

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120)) **T.P.D.M.V.2.4**

Y = 1-0.0345W **Appendix 1**

f = proportion of minor traffic turning left Critical DFC

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a) Capacity of combined streams

- In accordance with TPDM V2.4

*Assume the average length per vehicle is 6 m

Queue 95th ≈ 900T[(qx/Qx)-1+√[(qx/Qx-1)^2+(3600/Qx)(qx/Qx)/(150T)]](Qx/3600) **HCM2000 Eq.17-37**

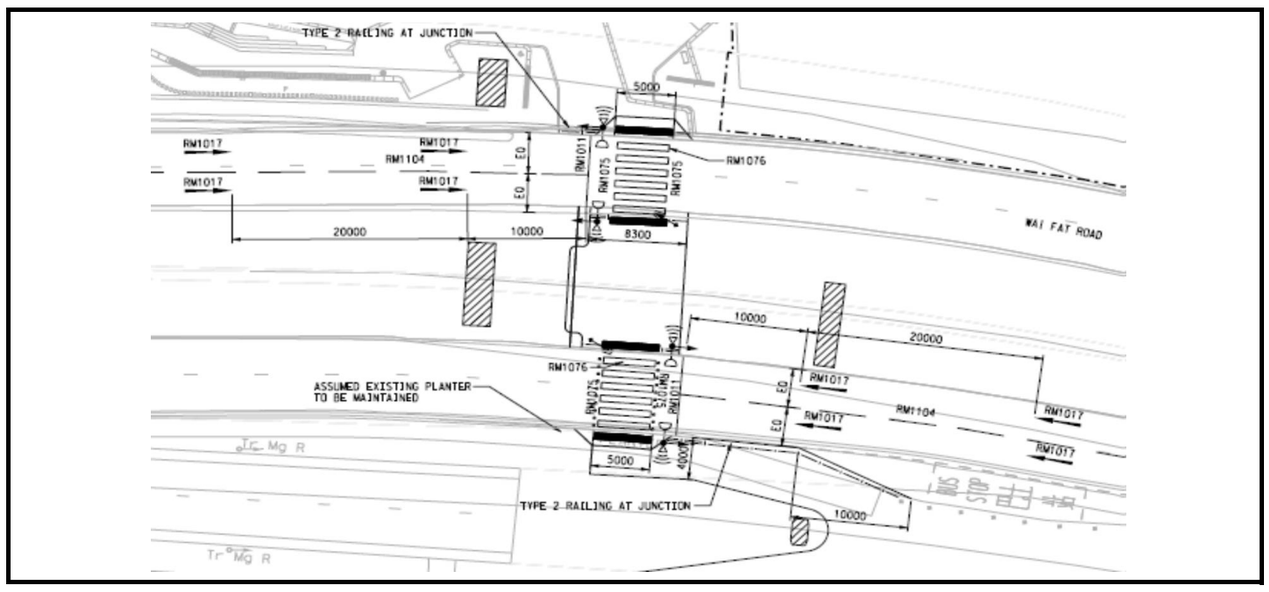
TRAFFIC SIGNAL CALCULATION SHEET

ATKINS

JOB NO. : 5160911

Junction : J9 - Wai Fat Road Crossing Design Year: 2023

Scheme : 2023 Design Designed by: PK Checked by: JY



Traffic Flow (pcu/hr)
AM(PM)

N

170(290) 910(1230)

STAGE / PHASE DIAGRAM

1	2	3	4	5
4p 2A 2B	1A 1B 3p	1A 1B 2A 2B		

3p+2A	G=5	IG=10	G=	IG=	G=	IG=4	G=	IG=	G=
3p+2A	G=5	IG=10	G=	IG=	G=	IG=4	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak Design Flow ***q*** (pcu/hr)	AM Peak Proportion turning (%) ***f***	AM Peak Saturation flow ***S*** (pcu/hr)	AM Peak Flow factor ***y***	PM Peak Design Flow ***q*** (pcu/hr)	PM Peak Proportion turning (%) ***f***	PM Peak Saturation flow ***S*** (pcu/hr)	PM Peak Flow factor ***y***
Wai Fat Road EB														
1A	2,3	3.65	Y	N			82		1980	0.041	140		1980	0.071
1B	2,3	3.65	N	N			88		2120	0.042	150		2120	0.071
Wai Fat Road WB														
2A	1,3	3.65	Y	N			439		1980	**0.222**	594		1980	**0.300**
2B	1,3	3.65	N	N			471		2120	0.222	636		2120	0.300
3p	2		5GM +	7FG =	12	sec								
4p	1		5GM +	7FG =	12	sec								

Notes:	**AM Peak**	**3p+2A**	**PM Peak**	**3p+2A**
	Sum of Critical *y* ***Y***	**0.222**	Sum of Critical *y* ***Y***	**0.300**
	Lost Time ***L*** (sec)	18	Lost Time ***L*** (sec)	18
	Cycle Time ***c*** (sec)	45	Cycle Time ***c*** (sec)	45
	Practical *Y* ***Ypr***	0.540	Practical *Y* ***Ypr***	0.540
	Reserve Capacity ***RC***	**144%**	Reserve Capacity ***RC***	**80%**

Junction : J9 - Wai Fat Road Crossing

ATKINS CHINA LIMITED

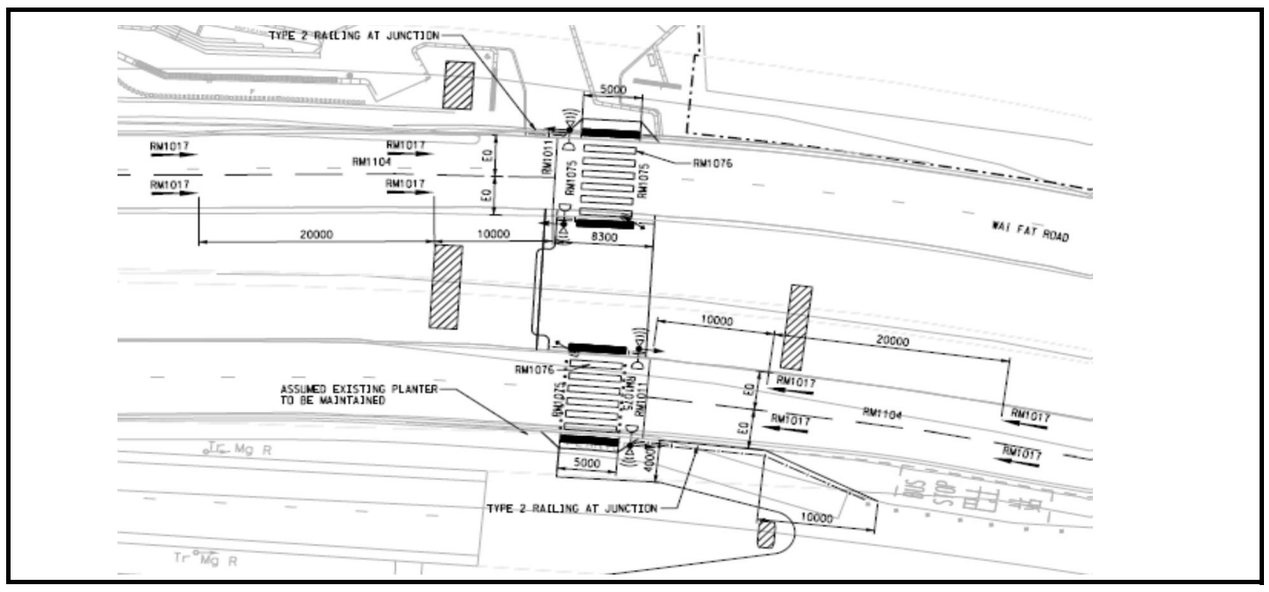
TRAFFIC SIGNAL CALCULATION SHEET

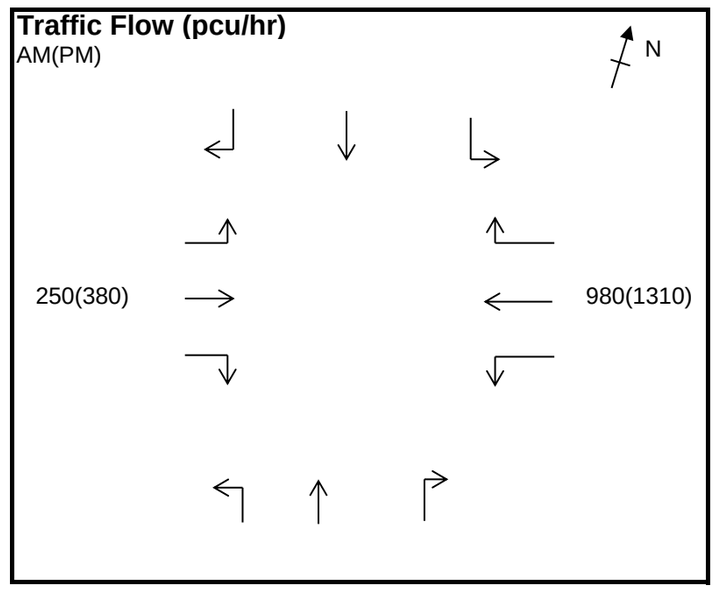
ATKINS

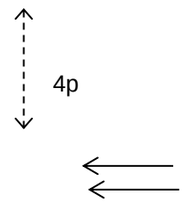
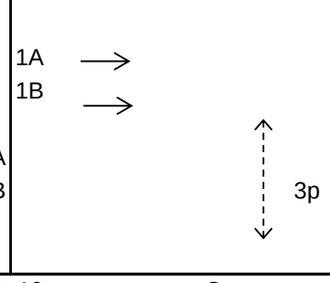
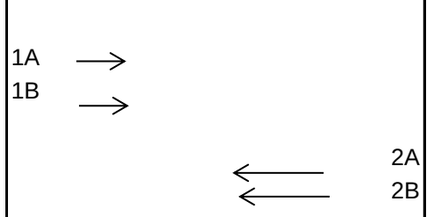
JOB NO. : 5160911

Junction : J9 - Wai Fat Road Crossing Design Year: 2028

Scheme : 2028 Design Designed by: PK Checked by: JY





STAGE / PHASE DIAGRAM									
1 		**2** 		**3** 		**4**		**5**	
3p+2A	G=5	IG=10	G=	IG=	G=	IG=4	G=	IG=	G=
3p+2A	G=5	IG=10	G=	IG=	G=	IG=4	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) ***w***	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) ***r***	Gradient in % ***g***	AM Peak Design Flow ***q*** (pcu/hr)	AM Peak Proportion turning (%) ***f***	AM Peak Saturation flow ***S*** (pcu/hr)	AM Peak Flow factor ***y***	PM Peak Design Flow ***q*** (pcu/hr)	PM Peak Proportion turning (%) ***f***	PM Peak Saturation flow ***S*** (pcu/hr)	PM Peak Flow factor ***y***
Wai Fat Road EB														
1A	1,3	3.65	Y	N			121		1980	0.061	184		1980	0.093
1B	1,3	3.65	N	N			129		2120	0.061	196		2120	0.092
Wai Fat Road WB														
2A	2,3	3.65	Y	N			473		1980	**0.239**	633		1980	**0.320**
2B	2,3	3.65	N	N			507		2120	0.239	677		2120	0.319
3p	1		5GM +	7FG =	12	sec								
4p	2		5GM +	7FG =	12	sec								

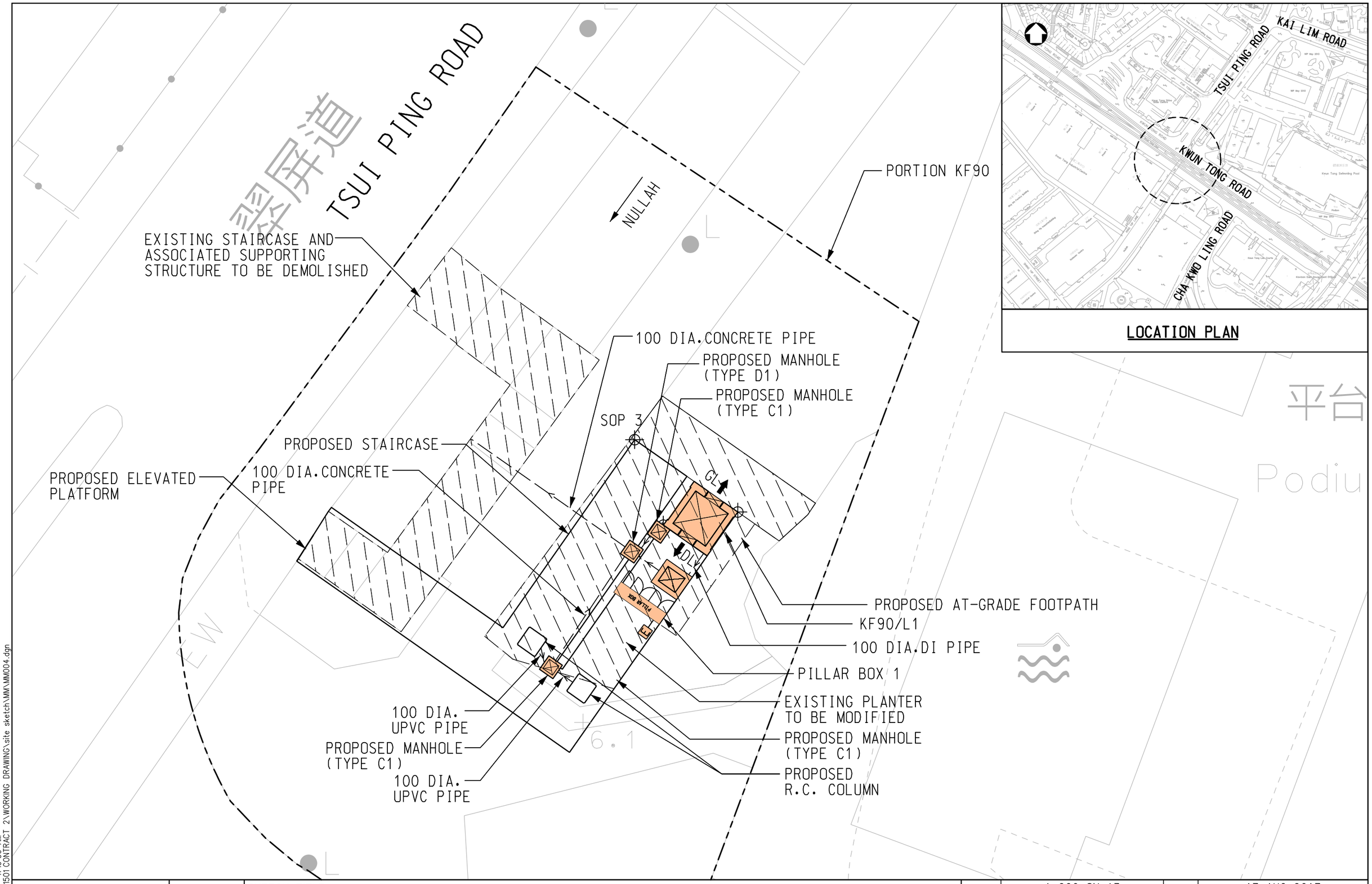
Notes:	**AM Peak**	**3p+2A**	**PM Peak**	**3p+2A**
	Sum of Critical *y* ***Y***	**0.239**	Sum of Critical *y* ***Y***	**0.320**
	Lost Time ***L*** (sec)	18	Lost Time ***L*** (sec)	18
	Cycle Time ***c*** (sec)	45	Cycle Time ***c*** (sec)	45
	Practical *Y* ***Ypr***	0.540	Practical *Y* ***Ypr***	0.540
	Reserve Capacity ***RC***	**126%**	Reserve Capacity ***RC***	**69%**

Junction : J9 - Wai Fat Road Crossing

ATKINS CHINA LIMITED

Appendix B

CEDD Contract No. CV/2015/01 Provision of Universal Access Facilities for Highway Structure – Package 1 Contract 2 Drawing No. UAP1-2/CV/KF90/0101



LOCATION PLAN

Printed by : 10/3/2017 11:10:00 AM
Filename : Z:\TO\CV\2015\01 CONTRACT 2\WORKING DRAWING\site sketch\MM\MM004.dgn

PARSONS BRINCKERHOFF

CEDD

SKETCH TITLE:

KF90/L1-GENERAL LAYOUT PLAN (AT GROUND LEVEL)

SCALE	1:200 ON A3	DATE	17 AUG 2017		
APPROVED	WY	CHECKED	PQ	DRAWN	DL
CONTRACT NO.	CV/2015/01	SKETCH NO.	UAP1-2/MM/004	REV	-
PART PRINT OF WORKING DRAWING NO.		UAP1-2/CV/KF90/0101			
DOCUMENT/LETTER NO.					

CONTRACT TITLE

PROVISION OF UNIVERSAL ACCESS FACILITIES FOR HIGHWAY STRUCTURES - PACKAGE 1 CONTRACT 2

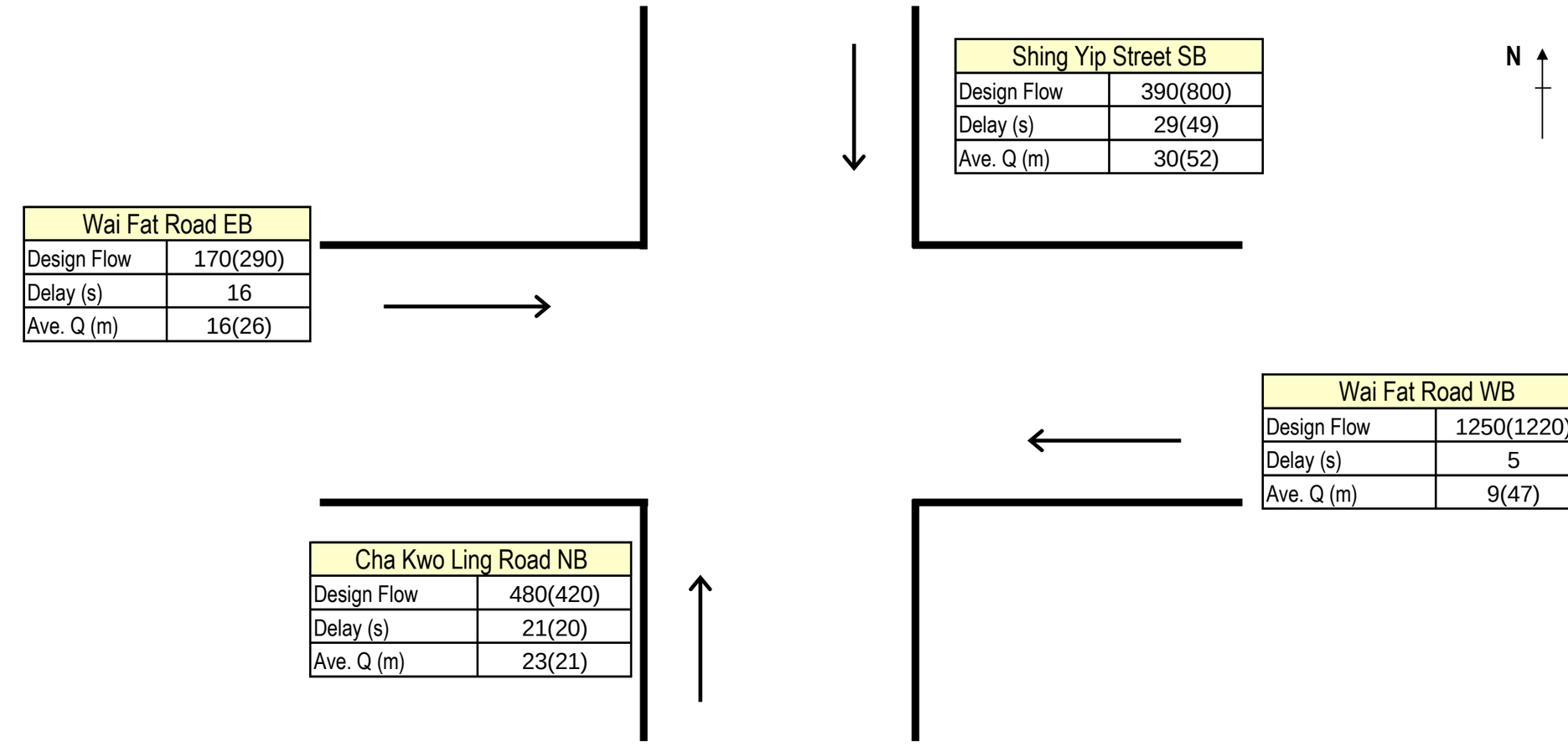
Appendix C

Queue Length Calculations Sheets

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	Wai Fat Road / Shing Yip Street / Cha Kwo Ling Road	Ref. No.:	J4		
Scheme:	Year 2023 Design	Design year:	2023		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Fat Road WB				
Arm B:	Cha Kwo Ling Road NB				
Arm C:	Wai Fat Road EB				
Arm D:	Shing Yip Street SB				



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Fat Road WB	4	119	140	1250	7040	1.2	30	140	1220	7050	1.2
Cha Kwo Ling Road NB	3	36	140	480	5670	1.2	30	140	420	5675	1.2
Wai Fat Road EB	2	9	140	170	4070	1.2	14	140	290	4070	1.2
Shing Yip Street SB	2	29	140	390	3610	1.2	46	140	800	3610	1.2

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road WB	21	0.85	0.21	40.5			2	5	9	9	9
Cha Kwo Ling Road NB	104	0.26	0.33	15.6			43	21	23	23	23
Wai Fat Road EB	131	0.06	0.65	5.5			69	16	15	15	16
Shing Yip Street SB	111	0.21	0.52	12.6			50	29	30	30	30

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road WB	110	0.21	0.81	39.5			53		47	47	47
Cha Kwo Ling Road NB	110	0.21	0.35	13.6			47	20	21	21	21
Wai Fat Road EB	126	0.10	0.71	9.4			62		25	26	26
Shing Yip Street SB	94	0.33	0.67	25.9			42	49	52	52	52

RESULT SUMMARY

			AM Average Queue Length (m)		PM Average Queue Length (m)
Arm A:	Wai Fat Road WB		**9**		**47**
Arm B:	Cha Kwo Ling Road NB		**23**		**21**
Arm C:	Wai Fat Road EB		**16**		**26**
Arm D:	Shing Yip Street SB		**30**		**52**

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = c(1-L)²/2(1-LX) + 3600pX²/2q(1-X) - 0.65(c/(q/3600p)²)^(1/3)*X^(2+5L) OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

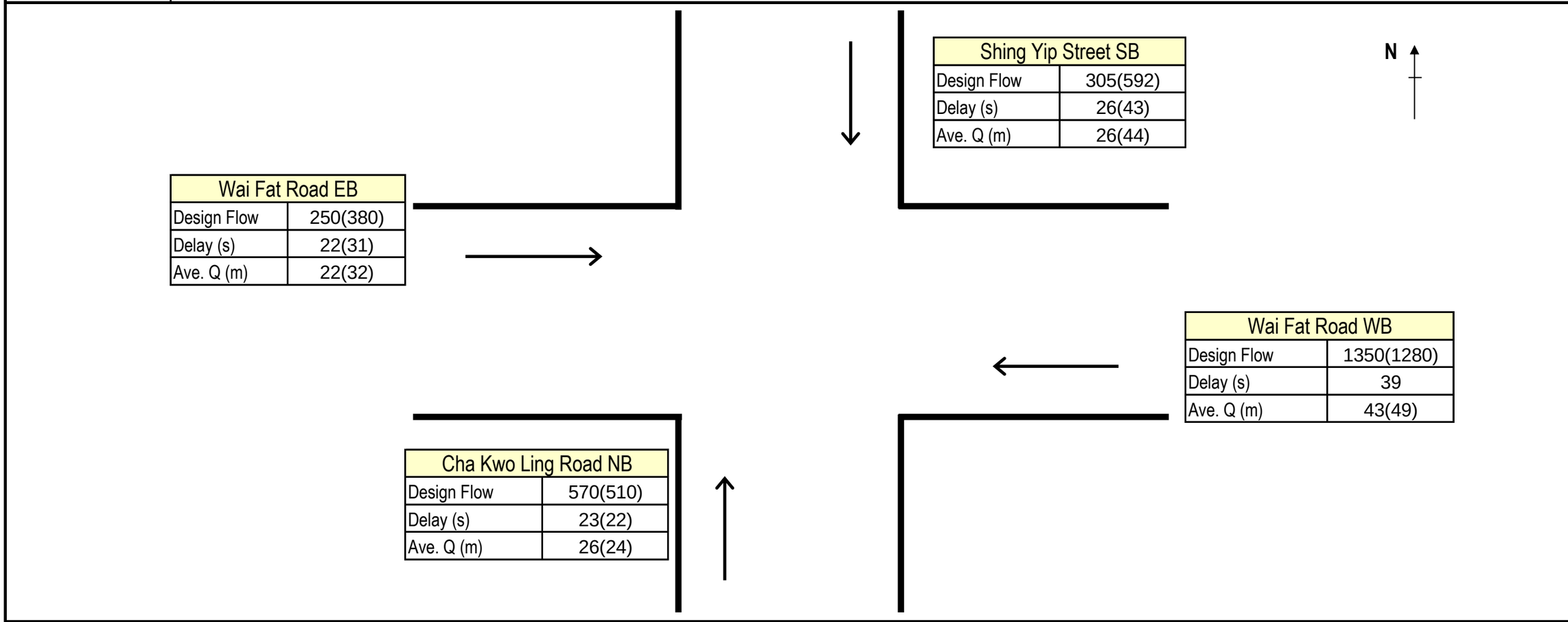
Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula			
AM	ARM A			AM	ARM B			AM	ARM C			AM	ARM D		
q '=		1042	veh/hr	q '=		400	veh/hr	q '=		142	veh/hr	q '=		325	veh/hr
c=		140	sec	c=		140	sec	c=		140	sec	c=		140	sec
S '=		5867	veh/hr	S '=		4725	veh/hr	S '=		3392	veh/hr	S '=		3008	veh/hr
t=		1	hr	t=		1	hr	t=		1	hr	t=		1	hr
X=		0.21		X=		0.33		X=		0.65		X=		0.52	
Q =		4987	veh/hr	Q =		1215	veh/hr	Q =		218	veh/hr	Q =		623	veh/hr
y=		0.18		y=		0.08		y=		0.04		y=		0.11	
L =		0.85		L=		0.26		L=		0.06		L=		0.21	
n =		4	lane	n =		3	lane	n =		2	lane	n =		2	lane
X ' =		0.99		X ' =		0.75		X ' =		0.68		X ' =		0.71	
X > X '		FALSE		X > X '		FALSE		X > X '		FALSE		X > X '		FALSE	
Z =		-0.79		Z =		-0.67		Z =		-0.35		Z =		-0.48	
No=		0.0	vehs	No=		0.0	vehs	No=		0.0	vehs	No=		0.0	vehs
Avg stop-line queue at start of green (in vehs)				Avg stop-line queue at start of green (in vehs)				Avg stop-line queue at start of green (in vehs)				Avg stop-line queue at start of green (in vehs)			
N= qr + No				N= qr + No				N= qr + No				N= qr + No			
N =		6	vehs	N =		12	vehs	N =		5	vehs	N =		10	vehs
Avg queue length =		9	metres	Avg queue length =		23	metres	Avg queue length =		15	metres	Avg queue length =		30	metres
Average delay =		1.9	seconds	Average delay =		42.2	seconds	Average delay =		64.0	seconds	Average delay =		49.3	seconds

Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula			
PM	ARM A			PM	ARM B			PM	ARM C			PM	ARM D		
q=		1017	veh/hr	q=		350	veh/hr	q=		242	veh/hr	q=		667	veh/hr
c=		140	sec	c=		140	sec	c=		140	sec	c=		140	sec
S=		5875	veh/hr	S=		4729	veh/hr	S=		3392	veh/hr	S=		3008	veh/hr
t=		0.5	hr	t=		0.5	hr	t=		0.5	hr	t=		0.5	hr
X=		0.81		X=		0.35		X=		0.71		X=		0.67	
Q =		1259	veh/hr	Q =		1013	veh/hr	Q =		339	veh/hr	Q =		988	veh/hr
y=		0.17		y=		0.07		y=		0.07		y=		0.22	
L =		0.21		L=		0.21		L=		0.10		L=		0.33	
n =		4	lane	n =		3	lane	n =		2	lane	n =		2	lane
X ' =		0.75		X ' =		0.74		X ' =		0.69		X ' =		0.73	
X > X '		TRUE		X > X '		FALSE		X > X '		TRUE		X > X '		FALSE	
Z =		-0.19		Z =		-0.65		Z =		-0.29		Z =		-0.33	
No=		0.4	vehs	No=		0.0	vehs	No=		0.1	vehs	No=		0.0	vehs
Average Queue				Average Queue				Average Queue				Average Queue			
N= qr + No				N= qr + No				N= qr + No				N= qr + No			
N =		31	vehs	N =		11	vehs	N =		9	vehs	N =		17	vehs
Avg queue length =		47	metres	Avg queue length =		21	metres	Avg queue length =		26	metres	Avg queue length =		52	metres
Average delay =		53.5	seconds	Average delay =		46.7	seconds	Average delay =		62.2	seconds	Average delay =		40.5	seconds

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	Wai Fat Road / Shing Yip Street / Cha Kwo Ling Road	Ref. No.:	J4		
Scheme:	Year 2028 Design	Design year:	2028		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Fat Road WB				
Arm B:	Cha Kwo Ling Road NB				
Arm C:	Wai Fat Road EB				
Arm D:	Shing Yip Street SB				



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Fat Road WB	4	49	140	1350	7040	1.2	31	140	1280	7050	1.2
Cha Kwo Ling Road NB	3	42	140	570	5655	1.2	37	140	510	5655	1.2
Wai Fat Road EB	2	13	140	250	4070	1.2	20	140	380	4070	1.2
Shing Yip Street SB	2	17	140	305	3710	1.2	33	140	592	3735	1.2

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road WB	91	0.35	0.55	43.8			37	39	43	43	43
Cha Kwo Ling Road NB	98	0.30	0.34	18.5			39	23	26	26	26
Wai Fat Road EB	127	0.09	0.66	8.1			64	22	22	22	22
Shing Yip Street SB	123	0.12	0.68	9.9			62	26	26	26	26

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road WB	109	0.22	0.82	41.5			53		48	49	49
Cha Kwo Ling Road NB	103	0.26	0.34	16.5			42	22	24	24	24
Wai Fat Road EB	120	0.14	0.65	12.3			58	31	32	32	32
Shing Yip Street SB	107	0.24	0.67	19.2			50	43	44	44	44

RESULT SUMMARY

			AM Average Queue Length (m)		PM Average Queue Length (m)
Arm A:	Wai Fat Road WB		**43**		**49**
Arm B:	Cha Kwo Ling Road NB		**26**		**24**
Arm C:	Wai Fat Road EB		**22**		**32**
Arm D:	Shing Yip Street SB		**26**		**44**

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = c(1-L)²/2(1-LX) + 3600pX²/2q(1-X) - 0.65(c/(q/3600p)²)^(1/3)*X^(2+5L) OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

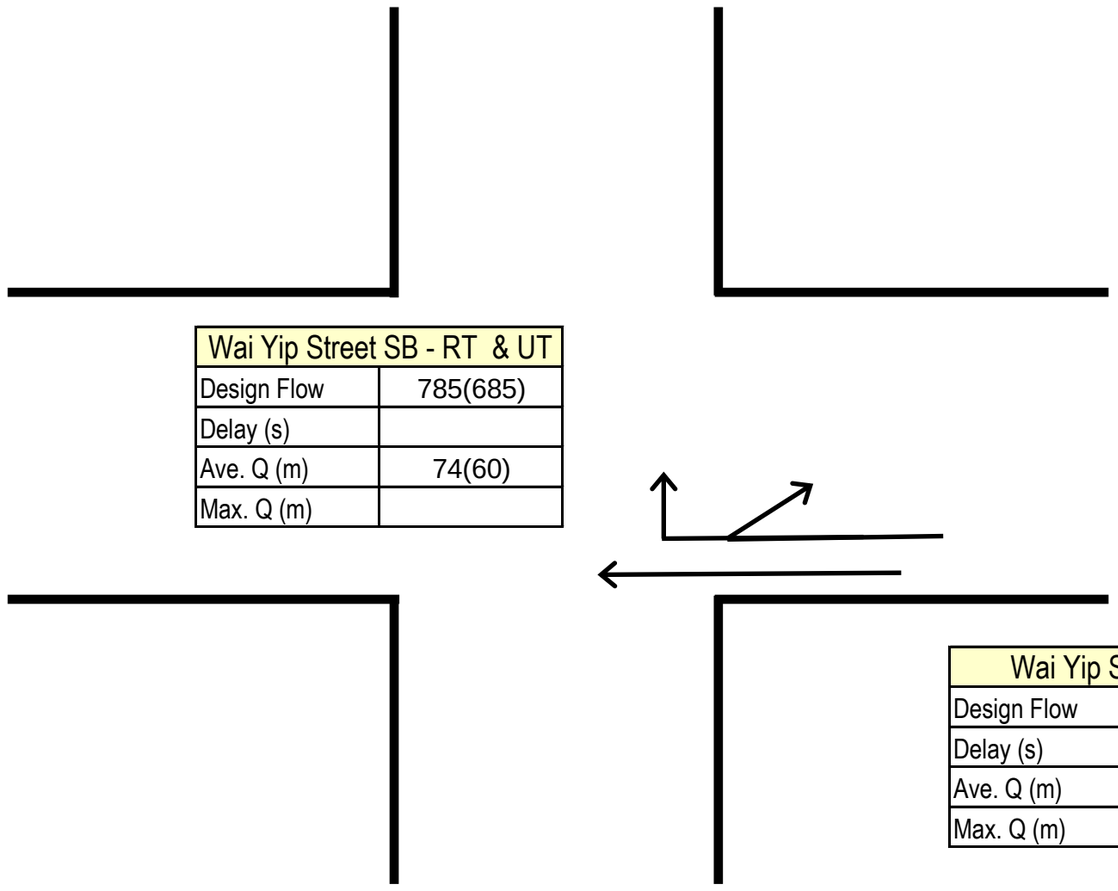
Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula			
AM	ARM A			AM	ARM B			AM	ARM C			AM	ARM D		
q '=		1125	veh/hr	q '=		475	veh/hr	q '=		208	veh/hr	q '=		254	veh/hr
c=		140	sec	c=		140	sec	c=		140	sec	c=		140	sec
S '=		5867	veh/hr	S '=		4713	veh/hr	S '=		3392	veh/hr	S '=		3092	veh/hr
t=		1	hr	t=		1	hr	t=		1	hr	t=		1	hr
X=		0.55		X=		0.34		X=		0.66		X=		0.68	
Q =		2053	veh/hr	Q =		1414	veh/hr	Q =		315	veh/hr	Q =		375	veh/hr
y=		0.19		y=		0.10		y=		0.06		y=		0.08	
L =		0.35		L=		0.30		L=		0.09		L=		0.12	
n =		4	lane	n =		3	lane	n =		2	lane	n =		2	lane
X ' =		0.80		X ' =		0.76		X ' =		0.69		X ' =		0.69	
X > X '		FALSE		X > X '		FALSE		X > X '		FALSE		X > X '		FALSE	
Z =		-0.45		Z =		-0.66		Z =		-0.34		Z =		-0.32	
No=		0.0	vehs	No=		0.0	vehs	No=		0.0	vehs	No=		0.0	vehs
Avg stop-line queue at start of green (in vehs)				Avg stop-line queue at start of green (in vehs)				Avg stop-line queue at start of green (in vehs)				Avg stop-line queue at start of green (in vehs)			
N= qr + No				N= qr + No				N= qr + No				N= qr + No			
N =		28	vehs	N =		13	vehs	N =		7	vehs	N =		9	vehs
Avg queue length =		43	metres	Avg queue length		26	metres	Avg queue length		22	metres	Avg queue length		26	metres
Average delay =		36.6	seconds	Average delay =		38.1	seconds	Average delay =		61.4	seconds	Average delay =		58.9	seconds

Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula				Akcelik's time -dependent formula			
PM	ARM A			PM	ARM B			PM	ARM C			PM	ARM D		
q=		1067	veh/hr	q=		425	veh/hr	q=		317	veh/hr	q=		493	veh/hr
c=		140	sec	c=		140	sec	c=		140	sec	c=		140	sec
S=		5875	veh/hr	S=		4713	veh/hr	S=		3392	veh/hr	S=		3113	veh/hr
t=		0.5	hr	t=		0.5	hr	t=		0.5	hr	t=		0.5	hr
X=		0.82		X=		0.34		X=		0.65		X=		0.67	
Q =		1301	veh/hr	Q =		1245	veh/hr	Q =		485	veh/hr	Q =		734	veh/hr
y=		0.18		y=		0.09		y=		0.09		y=		0.16	
L =		0.22		L=		0.26		L=		0.14		L=		0.24	
n =		4	lane	n =		3	lane	n =		2	lane	n =		2	lane
X ' =		0.75		X ' =		0.75		X ' =		0.70		X ' =		0.72	
X > X '		TRUE		X > X '		FALSE		X > X '		FALSE		X > X '		FALSE	
Z =		-0.18		Z =		-0.66		Z =		-0.35		Z =		-0.33	
No=		0.5	vehs	No=		0.0	vehs	No=		0.0	vehs	No=		0.0	vehs
Average Queue				Average Queue				Average Queue				Average Queue			
N= qr + No				N= qr + No				N= qr + No				N= qr + No			
N =		33	vehs	N =		12	vehs	N =		11	vehs	N =		15	vehs
Avg queue length =		49	metres	Avg queue length		24	metres	Avg queue length		32	metres	Avg queue length		44	metres
Average delay =		53.3	seconds	Average delay =		41.6	seconds	Average delay =		56.7	seconds	Average delay =		48.6	seconds

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	Wai Yip Street / Wai Fat Road (Wai Fat Road WB only)	Ref. No.:	J5		
Scheme:	Year 2023_Design without Additional Crossings	Design year:	2023		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Yip Street SB - SA				
Arm B:	Wai Yip Street SB - RT & UT				
Arm C:					
Arm D:					



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Yip Street SB - SA	2	32	140	280	4230	1.2	30	140	410	4230	1.2
Wai Yip Street SB - RT & UT	2	32	140	785	3580	1.2	30	140	685	3580	1.2
0											

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	108	0.23	0.29	9.1			45	19	21	21	21
Wai Yip Street SB - RT	108	0.23	**0.95**	25.4			79		59	74	74
0											

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	110	0.21	0.46	13.3			49	30	31	31	31
Wai Yip Street SB - RT	110	0.21	**0.90**	22.2			68		52	60	60
0											

RESULT SUMMARY

			AM Average Queue Length (m)		PM Average Queue Length (m)
Arm A:	Wai Yip Street SB - SA		**21**		**31**
Arm B:	Wai Yip Street SB - RT & UT		**74**		**60**
Arm C:					
Arm D:					

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = $c(1-L)^2/2(1-LX) + 3600pX^2/2q(1-X) - 0.65(c/(q/3600p)^2)^{(1/3)}*X^{(2+5L)}$ OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

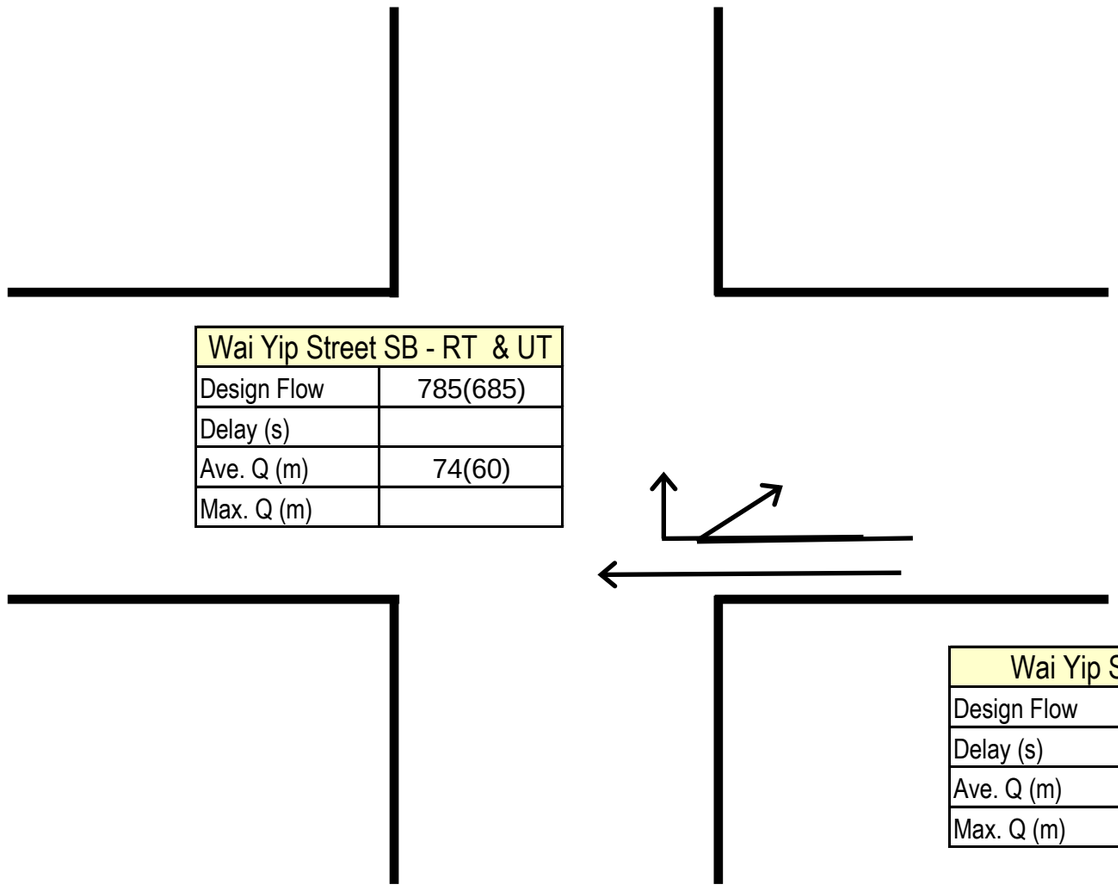
Akcelik's time -dependent formula			Akcelik's time -dependent formula				
AM	ARM A		AM	ARM B			
q '=	233	veh/hr	q '=	654	veh/hr		
c=	140	sec	c=	140	sec		
S '=	3525	veh/hr	S '=	2983	veh/hr		
t=	1	hr	t=	1	hr		
X=	0.29		X=	0.95			
Q =	817	veh/hr	Q =	692	veh/hr		
y=	0.07		y=	0.22			
L =	0.23		L=	0.23			
n =	2	lane	n =	2	lane		
X ' =	0.72		X ' =	0.71			
X > X '	FALSE		X > X '	TRUE			
Z =	-0.71		Z =	-0.05			
No=	0.0	vehs	No=	5.0	vehs		
Avg stop-line queue at start of green (in vehs)			Avg stop-line queue at start of green (in vehs)				
N= qr + No			N= qr + No				
N =	7	vehs	N =	25	vehs		
Avg queue length =	21	metres	Avg queue lengtl	74	metres		
Average delay =	44.2	seconds	Average delay =	79.0	seconds		

Akcelik's time -dependent formula			Akcelik's time -dependent formula				
PM	ARM A		PM	ARM B			
q=	342	veh/hr	q=	571	veh/hr		
c=	140	sec	c=	140	sec		
S=	3525	veh/hr	S=	2983	veh/hr		
t=	0.5	hr	t=	0.5	hr		
X=	0.46		X=	0.90			
Q =	748	veh/hr	Q =	633	veh/hr		
y=	0.10		y=	0.19			
L =	0.21		L=	0.21			
n =	2	lane	n =	2	lane		
X ' =	0.72		X ' =	0.71			
X > X '	FALSE		X > X '	TRUE			
Z =	-0.54		Z =	-0.10			
No=	0.0	vehs	No=	2.5	vehs		
Average Queue			Average Queue				
N= qr + No			N= qr + No				
N =	10	vehs	N =	20	vehs		
Avg queue length =	31	metres	Avg queue lengtl	60	metres		
Average delay =	48.1	seconds	Average delay =	68.0	seconds		

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	Wai Yip Street / Wai Fat Road (Wai Fat Road WB only)	Ref. No.:	J5		
Scheme:	Year 2023_Design with Additional Crossings	Design year:	2023		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Yip Street SB - SA				
Arm B:	Wai Yip Street SB - RT & UT				
Arm C:					
Arm D:					



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Yip Street SB - SA	2	32	140	280	4230	1.2	30	140	410	4230	1.2
Wai Yip Street SB - RT & UT	2	32	140	785	3580	1.2	30	140	685	3580	1.2
0											

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	108	0.23	0.29	9.1			45	19	21	21	21
Wai Yip Street SB - RT	108	0.23	**0.95**	25.4			79		59	74	74
0											

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	110	0.21	0.46	13.3			49	30	31	31	31
Wai Yip Street SB - RT	110	0.21	**0.90**	22.2			68		52	60	60
0											

RESULT SUMMARY

			AM Average Queue Length (m)		PM Average Queue Length (m)
Arm A:	Wai Yip Street SB - SA		**21**		**31**
Arm B:	Wai Yip Street SB - RT & UT		**74**		**60**
Arm C:					
Arm D:					

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = c(1-L)²/2(1-LX) + 3600pX²/2q(1-X) - 0.65(c/(q/3600p)²)^(1/3)*X^(2+5L) OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

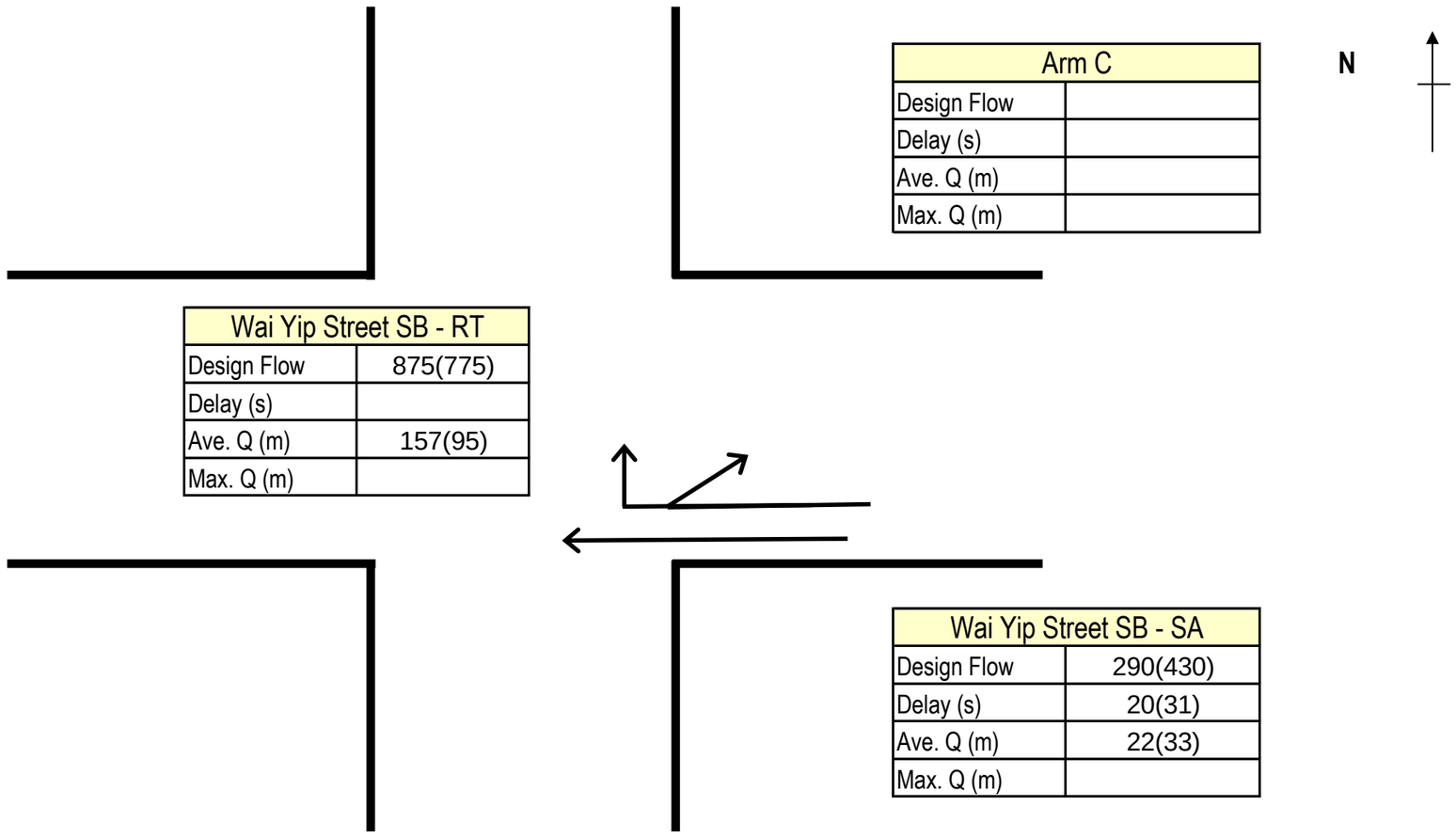
Akcelik's time -dependent formula			Akcelik's time -dependent formula		
AM	ARM A		AM	ARM B	
q '=	233	veh/hr	q '=	654	veh/hr
c=	140	sec	c=	140	sec
S '=	3525	veh/hr	S '=	2983	veh/hr
t=	1	hr	t=	1	hr
X=	0.29		X=	0.95	
Q =	817	veh/hr	Q =	692	veh/hr
y=	0.07		y=	0.22	
L =	0.23		L=	0.23	
n =	2	lane	n =	2	lane
X ' =	0.72		X ' =	0.71	
X > X '	FALSE		X > X '	TRUE	
Z =	-0.71		Z =	-0.05	
No=	0.0	vehs	No=	5.0	vehs
Avg stop-line queue at start of green (in vehs)			Avg stop-line queue at start of green (in vehs)		
N= qr + No			N= qr + No		
N =	7	vehs	N =	25	vehs
Avg queue length =	21	metres	Avg queue lengtl	74	metres
Average delay =	44.2	seconds	Average delay =	79.0	seconds

Akcelik's time -dependent formula			Akcelik's time -dependent formula		
PM	ARM A		PM	ARM B	
q=	342	veh/hr	q=	571	veh/hr
c=	140	sec	c=	140	sec
S=	3525	veh/hr	S=	2983	veh/hr
t=	0.5	hr	t=	0.5	hr
X=	0.46		X=	0.90	
Q =	748	veh/hr	Q =	633	veh/hr
y=	0.10		y=	0.19	
L =	0.21		L=	0.21	
n =	2	lane	n =	2	lane
X ' =	0.72		X ' =	0.71	
X > X '	FALSE		X > X '	TRUE	
Z =	-0.54		Z =	-0.10	
No=	0.0	vehs	No=	2.5	vehs
Average Queue			Average Queue		
N= qr + No			N= qr + No		
N =	10	vehs	N =	20	vehs
Avg queue length =	31	metres	Avg queue lengtl	60	metres
Average delay =	48.1	seconds	Average delay =	68.0	seconds

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	Wai Yip Street / Wai Fat Road (Wai Fat Road WB only)	Ref. No.:	J5		
Scheme:	Year 2028_Design without Additional Crossings	Design year:	2028		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Yip Street SB - SA				
Arm B:	Wai Yip Street SB - RT				
Arm C:					
Arm D:					



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Yip Street SB - SA	2	32	140	290	4230	1.2	29	140	430	4230	1.2
Wai Yip Street SB - RT	2	32	140	875	3580	1.2	29	140	775	3580	1.2
0											

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	108	0.23	0.30	9.4			45	20	22	22	22
Wai Yip Street SB - RT	108	0.23	**1.07**	28.4			215		66	157	157
0											

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	111	0.21	0.49	13.9			49	31	33	33	33
Wai Yip Street SB - RT	111	0.21	**1.03**	25.1			124		60	95	95
0											

RESULT SUMMARY

			AM Average Queue Length (m)		PM Average Queue Length (m)
Arm A:	Wai Yip Street SB - SA		**22**		**33**
Arm B:	Wai Yip Street SB - RT		**157**		**95**
Arm C:					
Arm D:					

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = c(1-L)²/2(1-LX) + 3600pX²/2q(1-X) - 0.65(c/(q/3600p)²)^(1/3)*X^(2+5L) OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

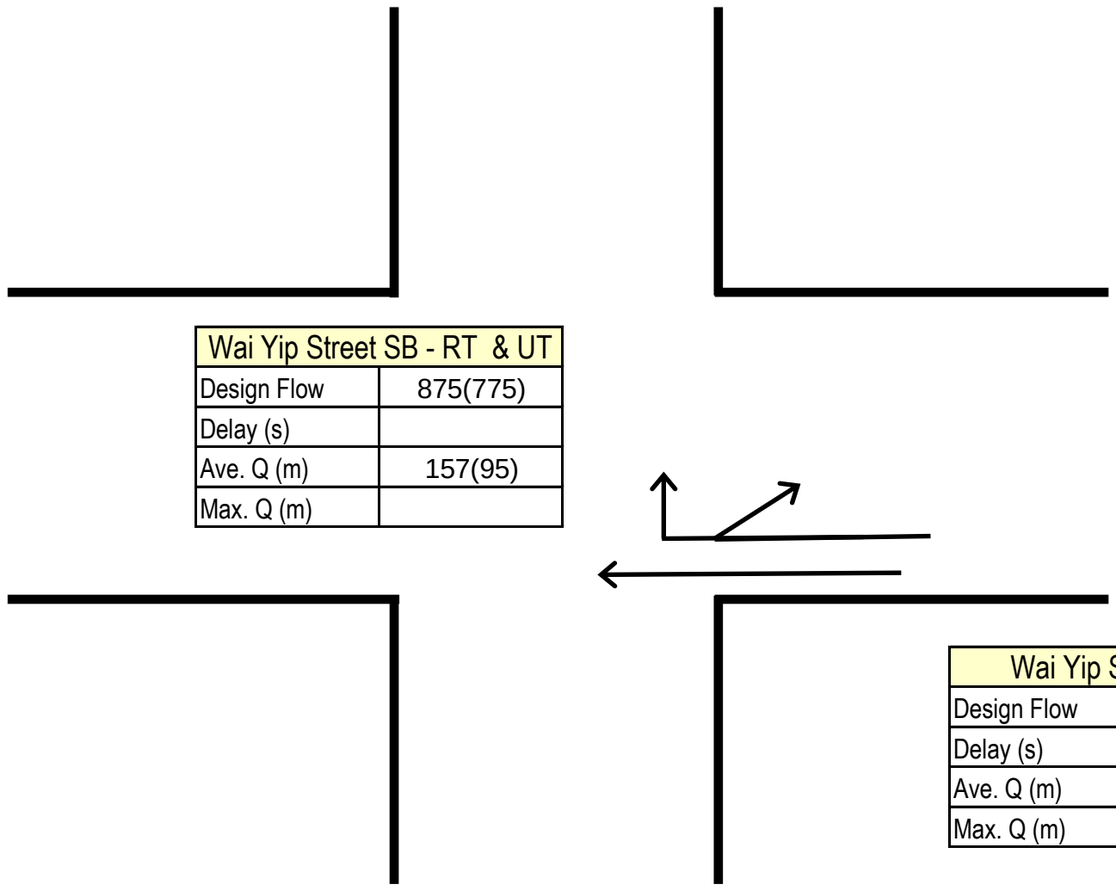
Akcelik's time -dependent formula			Akcelik's time -dependent formula		
AM	ARM A		AM	ARM B	
q '=	242	veh/hr	q '=	729	veh/hr
c=	140	sec	c=	140	sec
S '=	3525	veh/hr	S '=	2983	veh/hr
t=	1	hr	t=	1	hr
X=	0.30		X=	1.07	
Q =	804	veh/hr	Q =	681	veh/hr
y=	0.07		y=	0.24	
L =	0.23		L=	0.23	
n =	2	lane	n =	2	lane
X ' =	0.72		X ' =	0.71	
X > X '	FALSE		X > X '	TRUE	
Z =	-0.70		Z =	0.07	
No=	0.0	vehs	No=	30.3	vehs
Avg stop-line queue at start of green (in vehs)			Avg stop-line queue at start of green (in vehs)		
N= qr + No			N= qr + No		
N =	7	vehs	N =	52	vehs
Avg queue length =	22	metres	Avg queue lengtl	157	metres
Average delay =	44.8	seconds	Average delay =	215.4	seconds

Akcelik's time -dependent formula			Akcelik's time -dependent formula		
PM	ARM A		PM	ARM B	
q=	358	veh/hr	q=	646	veh/hr
c=	140	sec	c=	140	sec
S=	3525	veh/hr	S=	2983	veh/hr
t=	0.5	hr	t=	0.5	hr
X=	0.49		X=	1.03	
Q =	738	veh/hr	Q =	625	veh/hr
y=	0.10		y=	0.22	
L =	0.21		L=	0.21	
n =	2	lane	n =	2	lane
X ' =	0.72		X ' =	0.71	
X > X '	FALSE		X > X '	TRUE	
Z =	-0.51		Z =	0.03	
No=	0.0	vehs	No=	11.7	vehs
Average Queue			Average Queue		
N= qr + No			N= qr + No		
N =	11	vehs	N =	32	vehs
Avg queue length =	33	metres	Avg queue lengtl	95	metres
Average delay =	48.7	seconds	Average delay =	123.6	seconds

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	Wai Yip Street / Wai Fat Road (Wai Fat Road WB only)	Ref. No.:	J5		
Scheme:	Year 2028_Design with Additional Crossings	Design year:	2028		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Yip Street SB - SA				
Arm B:	Wai Yip Street SB - RT & UT				
Arm C:					
Arm D:					



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Yip Street SB - SA	2	32	140	290	4230	1.2	29	140	430	4230	1.2
Wai Yip Street SB - RT & UT	2	32	140	875	3580	1.2	29	140	775	3580	1.2
0											

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	108	0.23	0.30	9.4			45	20	22	22	22
Wai Yip Street SB - RT	108	0.23	**1.07**	28.4			215		66	157	157
0											

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Yip Street SB - SA	111	0.21	0.49	13.9			49	31	33	33	33
Wai Yip Street SB - RT	111	0.21	**1.03**	25.1			124		60	95	95
0											

RESULT SUMMARY

			AM Average Queue Length (m)		PM Average Queue Length (m)
Arm A:	Wai Yip Street SB - SA		**22**		**33**
Arm B:	Wai Yip Street SB - RT & UT		**157**		**95**
Arm C:					
Arm D:					

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = c(1-L)²/2(1-LX) + 3600pX²/2q(1-X) - 0.65(c/(q/3600p)²)^(1/3)*X^(2+5L) OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

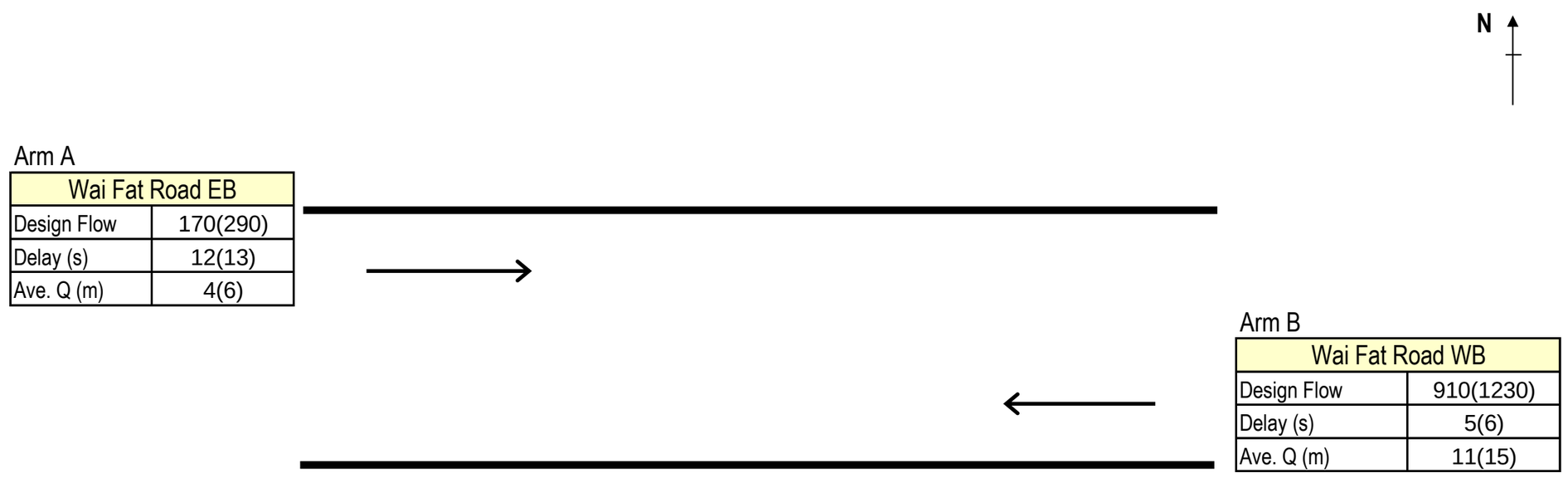
Akcelik's time -dependent formula			Akcelik's time -dependent formula		
AM	ARM A		AM	ARM B	
q '=	242	veh/hr	q '=	729	veh/hr
c=	140	sec	c=	140	sec
S '=	3525	veh/hr	S '=	2983	veh/hr
t=	1	hr	t=	1	hr
X=	0.30		X=	1.07	
Q =	804	veh/hr	Q =	681	veh/hr
y=	0.07		y=	0.24	
L =	0.23		L=	0.23	
n =	2	lane	n =	2	lane
X ' =	0.72		X ' =	0.71	
X > X '	FALSE		X > X '	TRUE	
Z =	-0.70		Z =	0.07	
No=	0.0	vehs	No=	30.3	vehs
Avg stop-line queue at start of green (in vehs)			Avg stop-line queue at start of green (in vehs)		
N= qr + No			N= qr + No		
N =	7	vehs	N =	52	vehs
Avg queue length =	22	metres	Avg queue lengtl	157	metres
Average delay =	44.8	seconds	Average delay =	215.4	seconds

Akcelik's time -dependent formula			Akcelik's time -dependent formula		
PM	ARM A		PM	ARM B	
q=	358	veh/hr	q=	646	veh/hr
c=	140	sec	c=	140	sec
S=	3525	veh/hr	S=	2983	veh/hr
t=	0.5	hr	t=	0.5	hr
X=	0.49		X=	1.03	
Q =	738	veh/hr	Q =	625	veh/hr
y=	0.10		y=	0.22	
L =	0.21		L=	0.21	
n =	2	lane	n =	2	lane
X ' =	0.72		X ' =	0.71	
X > X '	FALSE		X > X '	TRUE	
Z =	-0.51		Z =	0.03	
No=	0.0	vehs	No=	11.7	vehs
Average Queue			Average Queue		
N= qr + No			N= qr + No		
N =	11	vehs	N =	32	vehs
Avg queue length =	33	metres	Avg queue lengtl	95	metres
Average delay =	48.7	seconds	Average delay =	123.6	seconds

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	J9 - Wai Fat Road Crossing	Ref. No.:	J9		
Scheme:	2023 Design	Design year:	2023		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Fat Road EB				
Arm B:	Wai Fat Road WB				
Arm C:					
Arm D:					



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Fat Road EB	2	13	45	170	4100	1.2	13	45	290	4100	1.2
Wai Fat Road WB	2	27	45	910	4100	1.2	27	45	1230	4100	1.2
0											
0											

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road EB	32	0.29	0.14	1.8			12	3	4	4	4
Wai Fat Road WB	18	0.60	0.37	9.5			5	9	11	11	11
0											
0											

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road EB	32	0.29	0.24	3.0			13	6	6	6	6
Wai Fat Road WB	18	0.60	0.50	12.8			6	13	15	15	15
0											
0											

RESULT SUMMARY

		AM Average Queue Length (m)	PM Average Queue Length (m)
Arm A:	Wai Fat Road EB	**4**	**6**
Arm B:	Wai Fat Road WB	**11**	**15**
Arm C:			
Arm D:			

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = c(1-L)²/2(1-LX) + 3600pX²/2q(1-X) - 0.65(c/(q/3600p)²)^(1/3)*X^(2+5L) OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

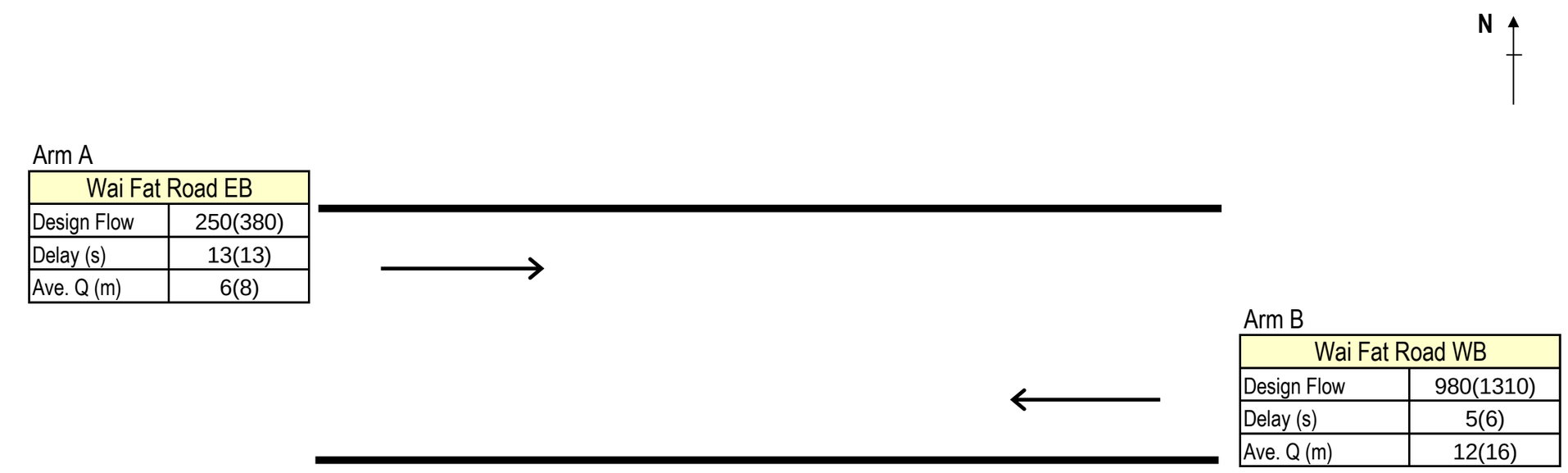
Akcelik's time -dependent formula			Akcelik's time -dependent formula		
AM	ARM A		AM	ARM B	
q '=	142	veh/hr	q '=	758	veh/hr
c=	45	sec	c=	45	sec
S '=	3417	veh/hr	S '=	3417	veh/hr
t=	1	hr	t=	1	hr
X=	0.14		X=	0.37	
Q =	987	veh/hr	Q =	2050	veh/hr
y=	0.04		y=	0.22	
L =	0.29		L=	0.60	
n =	2	lane	n =	2	lane
X ' =	0.69		X ' =	0.71	
X > X '	FALSE		X > X '	FALSE	
Z =	-0.86		Z =	-0.63	
No=	0.0	vehs	No=	0.0	vehs
Avg stop-line queue at start of green (in vehs)			Avg stop-line queue at start of green (in vehs)		
N= qr + No			N= qr + No		
N =	1	vehs	N =	4	vehs
Avg queue length =	4	metres	Avg queue lengtl	11	metres
Average delay =	11.9	seconds	Average delay =	4.6	seconds

Akcelik's time -dependent formula			Akcelik's time -dependent formula		
PM	ARM A		PM	ARM B	
q=	242	veh/hr	q=	1025	veh/hr
c=	45	sec	c=	45	sec
S=	3417	veh/hr	S=	3417	veh/hr
t=	0.5	hr	t=	0.5	hr
X=	0.24		X=	0.50	
Q =	987	veh/hr	Q =	2050	veh/hr
y=	0.07		y=	0.30	
L =	0.29		L=	0.60	
n =	2	lane	n =	2	lane
X ' =	0.69		X ' =	0.71	
X > X '	FALSE		X > X '	FALSE	
Z =	-0.76		Z =	-0.50	
No=	0.0	vehs	No=	0.0	vehs
Average Queue			Average Queue		
N= qr + No			N= qr + No		
N =	2	vehs	N =	5	vehs
Avg queue length =	6	metres	Avg queue lengtl	15	metres
Average delay =	12.2	seconds	Average delay =	5.1	seconds

QUEUE LENGTH CALCULATION [SIGNALIZED JUNCTION]

ATKINS

Job Title:	CE 58/2017(DS)	Job No.:	5160911		
Junction:	J9 - Wai Fat Road Crossing	Ref. No.:	J9		
Scheme:	2028 Design	Design year:	2028		
		Designed by:	PK	Checked by:	JY
Arm A:	Wai Fat Road EB				
Arm B:	Wai Fat Road WB				
Arm C:					
Arm D:					



GREEN TIME, CYCLE TIME AND FLOWS DATA

		AM					PM				
	Number of Lanes, n	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p	Effective Green, g (sec)	Cycle Time, c (sec)	Design Flow, q (pcu/hr)	Saturation Flow, S (pcu/hr)	PCU Factor, p
Wai Fat Road EB	2	13	45	250	4100	1.2	13	45	380	4100	1.2
Wai Fat Road WB	2	27	45	980	4100	1.2	27	45	1310	4100	1.2
0											
0											

AM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road EB	32	0.29	0.21	2.6			13	5	6	6	6
Wai Fat Road WB	18	0.60	0.40	10.2			5	10	12	12	12
0											
0											

PM PEAK QUEUE LENGTH CALCULATION

	Effective Red, r (sec)	Effective Green Ratio, L	Degree of Saturation, X	Average Arrival Rate, M (veh/cycle)			Estimated Delay, d(sec)	Average Queue Length, L1 (m)	Average Queue Length, L2 (m)	Average Queue Length, L3 (m)	Average Queue Length (m)
Wai Fat Road EB	32	0.29	0.32	4.0			13	8	8	8	8
Wai Fat Road WB	18	0.60	0.53	13.6			6	14	16	16	16
0											
0											

RESULT SUMMARY

		AM Average Queue Length (m)	PM Average Queue Length (m)
Arm A:	Wai Fat Road EB	**6**	**8**
Arm B:	Wai Fat Road WB	**12**	**16**
Arm C:			
Arm D:			

Effective Red, r = c-g
Effective Green Ratio, L = g/c
Degree of Saturation, X = q/(SL)
Average Arrival Rate, M = qc/3600p
Maximum Queue Length = 6 * Maximum Queue/n
Estimated Delay, d = c(1-L)²/2(1-LX) + 3600pX²/2q(1-X) - 0.65(c/(q/3600p)²)^(1/3)*X^(2+5L) OR by Akcelik's time-dependent expression if X>X'
Average Queue Length, L1 = 6q(r/2+d)/3600pn OR L2 = 6qr/3600pn whichever the greater, OR L3 (Akcelik's time-dependent expression, if X>X')

In accordance with TPDM - Volume 4.2.5.2

** Note: The probability of maximum queue exceeding the critical value is 5% (TPDM V.4.2. Table 2.5.2.4)*

For conditions where the flow is near or even exceeds the capacity (X > X'):

Akcelik's time -dependent formula			Akcelik's time -dependent formula				
AM	ARM A		AM	ARM B			
q '=	208	veh/hr	q '=	817	veh/hr		
c=	45	sec	c=	45	sec		
S '=	3417	veh/hr	S '=	3417	veh/hr		
t=	1	hr	t=	1	hr		
X=	0.21		X=	0.40			
Q =	987	veh/hr	Q =	2050	veh/hr		
y=	0.06		y=	0.24			
L =	0.29		L=	0.60			
n =	2	lane	n =	2	lane		
X ' =	0.69		X ' =	0.71			
X > X '	FALSE		X > X '	FALSE			
Z =	-0.79		Z =	-0.60			
No=	0.0	vehs	No=	0.0	vehs		
Avg stop-line queue at start of green (in vehs)			Avg stop-line queue at start of green (in vehs)				
N= qr + No			N= qr + No				
N =	2	vehs	N =	4	vehs		
Avg queue length =	6	metres	Avg queue lengtl	12	metres		
Average delay =	12.1	seconds	Average delay =	4.7	seconds		

Akcelik's time -dependent formula			Akcelik's time -dependent formula				
PM	ARM A		PM	ARM B			
q=	317	veh/hr	q=	1092	veh/hr		
c=	45	sec	c=	45	sec		
S=	3417	veh/hr	S=	3417	veh/hr		
t=	0.5	hr	t=	0.5	hr		
X=	0.32		X=	0.53			
Q =	987	veh/hr	Q =	2050	veh/hr		
y=	0.09		y=	0.32			
L =	0.29		L=	0.60			
n =	2	lane	n =	2	lane		
X ' =	0.69		X ' =	0.71			
X > X '	FALSE		X > X '	FALSE			
Z =	-0.68		Z =	-0.47			
No=	0.0	vehs	No=	0.0	vehs		
Average Queue			Average Queue				
N= qr + No			N= qr + No				
N =	3	vehs	N =	5	vehs		
Avg queue length =	8	metres	Avg queue lengtl	16	metres		
Average delay =	12.5	seconds	Average delay =	5.3	seconds		

Asia Pacific Presence

Hong Kong
13th Floor Wharf T&T Centre
Harbour City
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: (852) 2972 1000
Fax: (852) 2890 6343
General E-mail: info.hk@atkinsglobal.com

Beijing
10/F, Tower A, Gemdale Plaza
No. 91 Jianguo Road, Chaoyang District
Beijing 100022
China
Tel: (86) 10 5965 1000
Fax: (86) 10 5965 1001
General E-mail: info.cn@atkinsglobal.com

Shanghai
Unit 2204-2210, Ciro's Plaza
No. 388 West Nanjing Road
Shanghai 200003
China
Tel: (86) 21 6080 2100
Fax: (86) 21 6080 2101
General E-mail: info.cn@atkinsglobal.com

Shenzhen
Unit 01-02 & 11-16, 35/F Shun Hing Square
Jie Fang Road, Luo Hu District
Shenzhen 518008
China
Tel: (86) 755 3332 0668
Fax: (86) 755 3332 0669
General E-mail: info.cn@atkinsglobal.com

Chengdu
Unit 05, 28/F, T2, Raffles Square
No. 3, Section 4, South Renmin Road
Wuhou District
Chengdu 610041
China
Tel: (86) 28 8620 2130
Fax: (86) 28 8620 2132
General E-mail: info.awc@atkinsglobal.com

Singapore
8 Cross Street
#24-01, PWC Building
Singapore 048424
Tel: (65) 6227 6433
Fax: (65) 6227 9344
General E-mail: info.sg@atkinsglobal.com

www.atkinsglobal.com

Sydney
Level 12, Suite 12.02
50 Berry Street
North Sydney
NSW 2060
Australia
Tel: (61) 2 8002 0300
Fax: (61) 2 8920 8322
General E-mail: info.au@atkinsglobal.com

Perth
Level 13, AMP Building
140 St. Georges Terrace
Perth
WA 6000
Australia
Tel: (61) 8 9322 8080
Fax: (61) 8 9322 8070
General E-mail: info.perth@atkinsglobal.com

Ho Chi Minh City
Unit 1316, 13/F, Kumho Asiana Plaza
39 Le Duan Street
District 1, Ho Chi Minh City
Vietnam
Tel: (848) 6288 8700
DDI: (848) 6288 8972
Fax: (848) 6288 8701
General E-mail: info.vn@atkinsglobal.com

Kuala Lumpur
Suite 8.01, Level 8, Menara Binjai
No 2 Jalan Binjai, 50450 Kuala Lumpur
Malaysia
Tel: (603) 2386 7858
Fax: (603) 2386 7711
General E-mail: info.my@atkinsglobal.com

Bangalore
10th Floor, Safina Towers
3 Ali Asker Road
Bangalore, Karnataka - 560052
India
Tel: (91) 80 4019 9199
Fax: (91) 80 4147 5822
General E-mail: india.office@atkinsglobal.com

Delhi
19 Floor - Tower C, DLF Cyber Greens
DLF Cyber City, DLF Phase - III
Gurgaon, Haryana - 122 002
India
Tel: (91) 124 384 7199
Fax: (91) 124 401 4550
General E-mail: india.office@atkinsglobal.com

ATKINS
Member of the SNC-Lavalin Group

圖例：
LEGEND：

- 擬議活化的現有明渠
  EXISTING NULLAH PROPOSED TO BE REVITALIZED
- 擬建智能水閘
  PROPOSED SMART WATER GATE
- 擬建河旁／跨河行人道、園境平台及人工浮島
  PROPOSED RIVERSIDE / CROSS-RIVER WALKWAYS, LANDSCAPED DECKS AND FLOATING PONTOON
- 擬議改建現有行人天橋
  EXISTING FOOTBRIDGE PROPOSED TO BE MODIFIED
- 擬建人工濕地
  PROPOSED ENGINEERED WETLAND
- 擬建休憩用地
  PROPOSED OPEN SPACE
- 擬議街景美化工程
  PROPOSED STREETSCAPE ENHANCEMENT WORKS
- 擬議改建地下蓄洪池
  UNDERGROUND STORMWATER STORAGE TANKS PROPOSED TO BE MODIFIED
- 擬建旱季截流器
  PROPOSED DRY WEATHER FLOW INTERCEPTOR

觀塘 KWUN TONG

觀塘道 KWUN TONG ROAD
觀塘遊樂場 KWUN TONG RECREATION GROUND
佳廉道 KAI LIM ROAD
港鐵觀塘站 MTR KWUN TONG STATION
觀塘游泳池 KWUN TONG SWIMMING POOL
勵業街 LAI YIP STREET
巧明街 HOW MING STREET
駿業街 TSUN YIP STREET
開源道 HOI YUEN ROAD
成業街 SHING YIP STREET
敬業里 KING YIP LANE
鯉魚門道 LEI YUE MUN ROAD
興業街 HING YIP STREET
鴻圖道 HUNG TO ROAD
觀塘基本污水處理廠 KWUN TONG PRELIMINARY TREATMENT WORKS
偉業街 WAI YIP STREET
敬業街 KING YIP STREET
觀塘繞道 KWUN TONG BYPASS
偉發道 WAI FAT ROAD
翠屏河花園 TSUI PING RIVER GARDEN
麗港公園 LAGUNA PARK
觀塘污水泵房 KWUN TONG SEWAGE PUMPING STATION
維多利亞港 VICTORIA HARBOUR
翠屏道 TSUI PING ROAD

插圖(甲) INSET (A)
瑞和街 SHUI WO STREET
協和街 HIP WO STREET
物華街 MUT WAH STREET

插圖(乙) INSET (B)
安達臣道 ANDERSON ROAD
安秀道 ON SAU ROAD
秀茂坪道 SAU MAU PING ROAD
安達邨 ON TAT ESTATE

參閱插圖(乙) SEE INSET (B)
參閱插圖(甲) SEE INSET (A)
秀茂坪 SAU MAU PING
KWUN TONG
藍田 LAM TIN

位置圖 LOCATION PLAN

圖則名稱 drawing title

工務計劃項目171CD號 - 活化翠屏河 平面圖

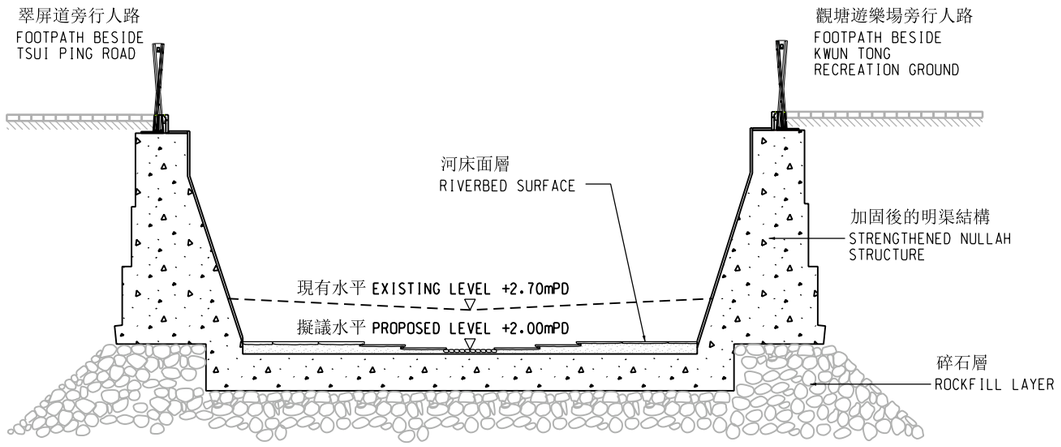
PWP ITEM NO. 171CD - REVITALIZATION OF TSUI PING RIVER LAYOUT PLAN

繪畫 drawn	C. Y. LEE	日期 date	11 NOV 2019
核對 checked	Ir W. S. CHOI	日期 date	11 NOV 2019
批核 approved	Ir H. K. CHAN	日期 date	11 NOV 2019
部門 office	排水工程部 DRAINAGE PROJECTS DIVISION		

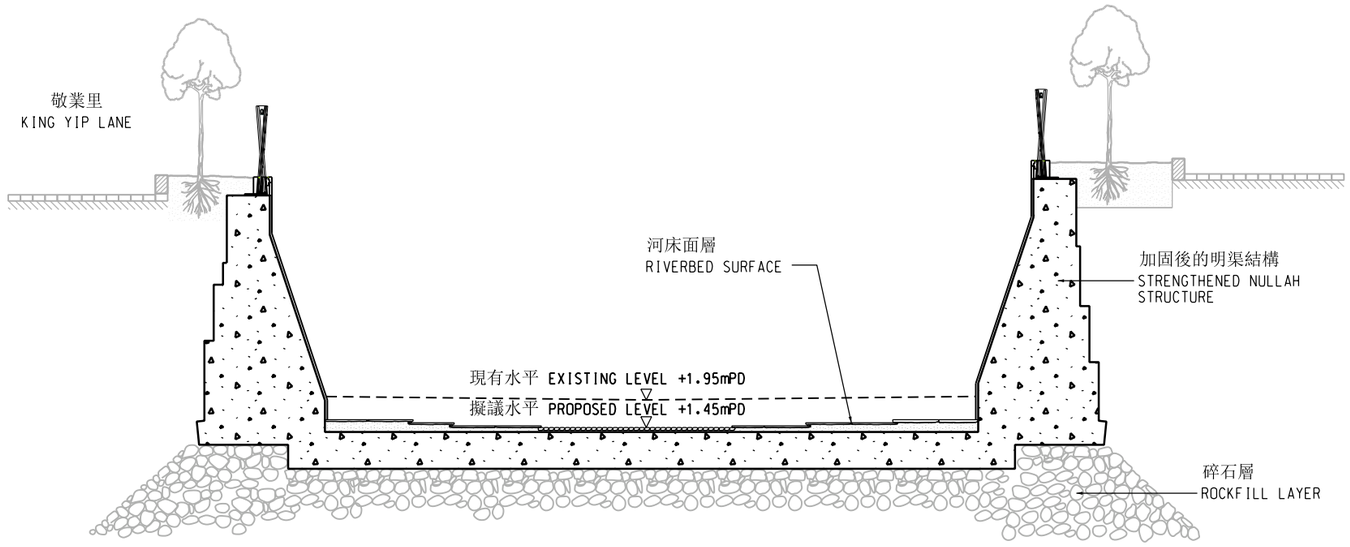
圖則編號 drawing no. DDP/171CD/0010
比例 scale N.T.S.

保留版權 COPYRIGHT RESERVED

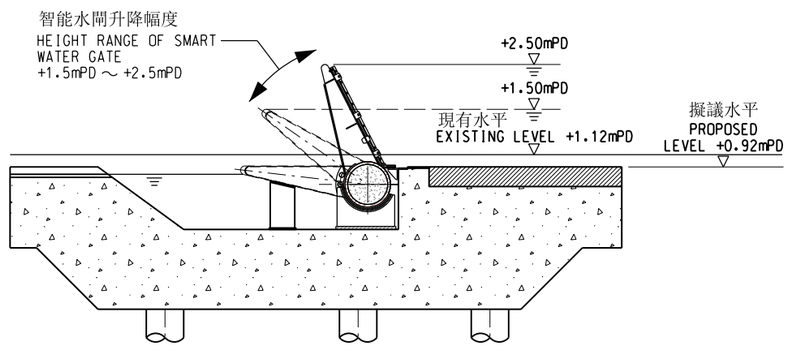
香港特別行政區政府渠務署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION



切面圖 SECTION A
比例 SCALE 1 : 100 -



切面圖 SECTION B
比例 SCALE 1 : 100 -



切面圖 SECTION C
比例 SCALE 1 : 100 -

圖則名稱 drawing title

工務計劃項目171CD - 活化翠屏河
切面圖

PWP ITEM NO. 171CD - REVITALIZATION OF TSUI PING RIVER
SECTIONS

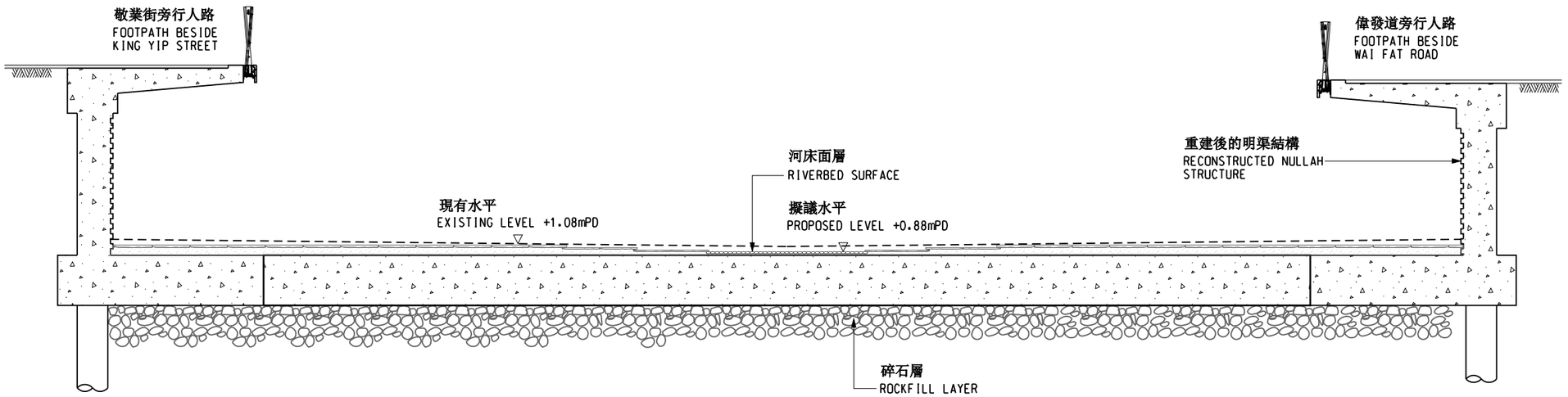
繪畫 drawn	C. Y. LEE	日期 date 11 NOV 2019
核對 checked	Ir W. S. CHOI	日期 date 11 NOV 2019
批核 approved	Ir H. K. CHAN	日期 date 11 NOV 2019
部門 office	排水工程部 DRAINAGE PROJECTS DIVISION	

圖則編號 drawing no. DDP/171CD/0011

比例 scale 1 : 100 @A3

保留版權 COPYRIGHT RESERVED

香港特別行政區政府渠務署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION



切面圖 SECTION D
比例 SCALE 1:100 -

圖則名稱 drawing title

工務計劃項目171CD - 活化翠屏河
切面圖

PWP ITEM NO. 171CD - REVITALIZATION OF TSUI PING RIVER
SECTIONS

繪畫 drawn	C. Y. LEE	日期 date	11 NOV 2019
核對 checked	Ir W. S. CHOI	日期 date	11 NOV 2019
批核 approved	Ir H. K. CHAN	日期 date	11 NOV 2019
部門 office	排水工程部 DRAINAGE PROJECTS DIVISION		

圖則編號 drawing no.	比例 scale
DDP/171CD/0012	1 : 100 @A3

保留版權 COPYRIGHT RESERVED

香港特別行政區政府渠務署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION