METRO PLANNING COMMITTEE
OF THE TOWN PLANNING BOARD

MPC Paper No. 9/16
For Consideration by the
Metro Planning Committee on 15.7.2016

PROPOSE AMENDMENTS TO
THE APPROVED NORTH POINT OUTLINE ZONING PLAN NO. S/H8/24

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1. Introduction

This paper is to seek Members' agreement that:

(a) the proposed amendments to the approved North Point Outline Zoning Plan (OZP) No. S/H8/24 as shown on the draft OZP No. S/H8/24A (**Attachment II**) (to be renumbered as S/H8/25 upon exhibition) and its Notes (**Attachment III**) are suitable for exhibition for public inspection under section 5 of the Town Planning Ordinance (the Ordinance); and

(b) the revised Explanatory Statement (ES) of the OZP (**Attachment IV**) is an expression of the planning intentions and objectives of the Town Planning Board (the Board) for the various land use zonings of the draft OZP No. S/H8/24A (to be renumbered as S/H8/25 upon exhibition) and is suitable for exhibition together with the draft OZP.

2. Status of the Current OZP

2.1 On 30.11.2010, the Chief Executive in Council (CE in C) under section 9(1)(a) of the Ordinance approved the draft North Point OZP. On 10.12.2010, the approved North Point OZP No. S/H8/24 (**Attachment I**) was exhibited for public inspection under section 9(5) of the Ordinance.

2.2 On 30.10.2012, the CE in C agreed to refer the approved North Point OZP to the Board for amendment under section 12(1)(b)(ii) of the Ordinance. The reference back of the OZP was notified in the Gazette on 9.11.2012 under section 12(2) of the Ordinance.

3. Proposed Amendments to the OZP

The proposed amendments mainly relate to the rezoning of Tin Chiu Street Playground which is located at the junction of Java Road, Tin Chiu Street and Marble Road from "Government, Institution or Community" ("G/IC") to "Residential (Group A)" ("R(A)") and some technical amendments to the Notes of the OZP.

4. Rezoning of Tin Chiu Street Playground from "G/IC" to "R(A)" (Amendment Item A)

Background

4.1 It was stated in the 2013 Policy Address that the Government would adopt a multi-pronged approach to build up land reserve with a view to meeting housing and other development needs. The Government has been carrying out land use reviews on an on-going basis, including examination of Government sites which are vacant, held under short-term tenancies and for other short-term or Government uses; "G/IC" sites; and two stages of "Green Belt" review with a view to increasing land supply.

4.2 In the 2015 Policy Address, it was announced that the housing target in the next decade is 480,000 units. The 2016 Policy Address further forecasted that the Hong Kong Housing Authority and the Hong Kong Housing Society will, over the next 5 years, produce about 97,100 public housing units, of which about 76,700 will be public rental housing units and about 20,400 will be subsidised sale flats (SSF).

4.3 Given the above policy framework, a "G/IC" site at the junction of Java Road, Tin Chiu Street and Marble Road has been identified as one of the potential public housing sites for SSF.

The Site and Its Surroundings (**Plans 1 to 5**)

4.4 The site, with an area of about 0.12 ha, is located at the junction of Java Road, Tin Chiu Street and Marble Road and accessible by these roads. It is a piece of Government land zoned "G/IC" with a maximum building height (BH) of one storey on the current North Point OZP No. S/H8/24 without designated Government, institution or community (GIC) use[1]. The site is currently occupied by the Tin Chiu Street Playground (TCSP) which contains a 5-a-side soccer pitch and a basketball court managed by the Leisure and Cultural Services Department (LCSD).

4.5 The site is located within the built-up area of North Point and in a neighbourhood mixed with residential and commercial developments, GIC facilities, and open spaces. To the northwest of the site across Java Road is the ex-North Point Estate zoned "Comprehensive Development Area (3)" ("CDA(3)"). Planning permission for a proposed comprehensive residential, commercial, public open space, GIC uses, public coach park and public transport terminus development was granted by the Board on 8.11.2013 under Application No. A/H8/419. The "CDA(3)" zone is currently under construction. North Point (East) and (West) Ferry Piers are located to the further northwest of the site.

[1] The site was previously reserved for the provision of a community hall and Home Affairs Bureau has confirmed that the site could be released for other uses. For Members' information, a proposed community hall will be provided within the "Comprehensive Development Area (3)" zone to the north of the subject site according to the respective Planning Brief and approved Application No. A/H8/419.

4.6 To the immediately west of the site is the North Point Welfare Association which is zoned "G/IC". Areas to the southwest of the site are mainly zoned "Commercial/Residential" ("C/R") which comprises residential, commercial or composite developments.

4.7 To the east of the site across Tin Chiu Street and to the south of the site across Marble Road are GIC facilities which include Customs Headquarters Building, Chan's Creative School (Hong Kong Island) and Marble Road Telephone Exchange.

4.8 Open spaces are located to the northeast, southeast and further northeast of the site across Tin Chiu Street, namely Tin Chiu Street Children's Playground, King's Road Playground and North Point Ferry Concourse Promenade. The land between Tin Chiu Street Children's Playground and North Point Vehicular Ferry Pier is currently occupied by Drainage Services Department (DSD) as temporary works area of the Harbour Area Treatment Scheme Stage 2A project.

Proposed Public Housing Development

4.9 According to the Housing Department (HD), the proposed development has the following development parameters:

Development Parameters (for reference only, subject to detailed design)	
Site Area	0.12 ha (about)
Plot Ratio (PR)	10 (about)
No. of Blocks	1
No. of Storeys	34 including a 1-storey podium (about)
Building Height (BH)	Maximum 110mPD
No. of Flats	240 (about)
Design Population	630 (about)
Parking and Loading/unloading Facilities	Private car parking space: 11 Visitor car parking space: 2 Motorcycle parking space: 3 Loading/unloading bay: 1
Other Facilities	Recreational Facilities; Management Facilities

The indicative layout and photomontages of the proposed development provided by HD are in **Drawings 1 to 6**. The podium corners of the building along Tin Chiu Street are truncated due to the project site boundary. A setback of 2m at the corner splays at the northeastern and southeastern parts of the site and a one-storey podium level empty bay (3.5m wide x 3m high) on G/F of the building along Tin Chiu Street are proposed (subject to detailed design) to enhance air ventilation. The SSF development is targeted to complete in 2022.

4.10 TCSP will be reprovisioned at DSD's temporary works area adjacent to the Tin Chiu Street Children's Playground upon DSD's vacation of the site in the latter half of 2016 (**Plan 2**). To enhance the recreational facilities in this

locality, opportunity is taken to upgrade the facilities by providing one standard size 5-a-side soccer pitch and one standard size basketball court at the new playground. The existing TCSP will not be closed before the new playground is open for public use.

Rezoning Proposal (**Plan 1**)

4.11 Relevant Government departments have confirmed the proposed housing development would not cause insurmountable technical problems. It is proposed to rezone the subject site from "G/IC" to "R(A)" to facilitate the proposed housing development and to stipulate a BH restriction of 110mPD for the site, taking account of the following considerations:

Land Use and Visual Compatibility

4.12 The site is situated in an urban neighbourhood mixed with residential and commercial developments, GIC facilities and open spaces. As such, the proposed residential development is generally compatible with the surrounding land uses.

4.13 The site is located in a built-up area in North Point abutting the Victoria Harbour. The proposed BH restriction of 110mPD generally follows the BH band for the street blocks between Java Road and King's Road west of Tin Chiu Street (**Plan 1**) such that a stepped BH profile from the waterfront towards the inland as stipulated in the OZP could be preserved.

4.14 Based on the photomontages provided by HD (**Drawings 3 to 6**), the proposed development will be comparable in scale and height to the surrounding developments with high-rise residential buildings (e.g. Island Lodge) mingled with GIC uses (e.g. Customs Headquarters Building, Chan's Creative School (Hong Kong Island)). The proposed development will not affect views to the ridgelines or Victoria Harbour. Visual effect of the proposed development on medium range and long range is considered negligible. Views from close range will inevitably result in some loss of visual permeability. In overall terms, while the resultant visual impact is slightly adverse, the proposed development will not be incompatible with its surroundings. The Chief Town Planner/Urban Design and Landscape, Planning Department (CTP/UD&L, PlanD) has no comment on the visual appraisal conducted by HD (**Attachment Va**).

Provision of Open Space and GIC Facilities

4.15 There is neither designated GIC use, nor request from relevant departments for taking up the site for standalone GIC facilities.

4.16 Based on a planned population of about 181,300 (including the proposed residential development under Amendment Item A), a table on the provision of open space and major community facilities in North Point area is compiled at **Attachment VI**. In respect of open space, the existing TCSP will be reprovisioned at a site nearby with upgraded playground facilities. With

reference to the Hong Kong Planning Standards and Guidelines (HKPSG), there will be a shortfall of local open space (-4.49 ha), but this can be off-set by the surplus in district open space of 10.15 ha, resulting in a net overall surplus of about 5.66 ha of open space in the area.

4.17 As advised by LCSD, the provision of leisure facilities for meeting district needs, such as sports centre, would be considered by LCSD taking into account various factors including the demand for such facilities in the district, usage of existing facilities, HKPSG, resource availability as well as views of the relevant District Council. It should be noted that the site under amendment is too small (0.12 ha) to accommodate a standard sports centre (0.6 ha) and there is already a sports centre located nearby (i.e. Java Road Sports Centre). LCSD has no comment on the proposed OZP amendment as long as public enjoyment of TCSP would not be discontinued or affected.

4.18 Regarding other major community facilities, relevant departments consulted including the Education Bureau, Social Welfare Department, Food and Environmental Hygiene Department, Department of Health and Hongkong Post have no objection/comment on the rezoning proposal.

Air Ventilation Consideration

4.19 HD has conducted a qualitative air ventilation assessment Expert Evaluation (AVA EE) (**Attachment Vb**) to assess the potential ventilation impact of the proposed rezoning of the subject site. Based on the site wind availability data, the annual prevailing winds come from N, ENE, E and ESE directions and the summer prevailing winds come from ENE, E, S, SW and WSW directions. The proposed development will not disturb the general wind flow along Java Road, Marble Road and Tin Chiu Street under major prevailing winds as it is governed by the surrounding built environment. It is anticipated that the proposed development would induce some localised ventilation impacts in the vicinity. The AVA EE concludes that the corner splay design with 2m setback from the site boundary would facilitate wind flow between the streets and recommends a ground floor empty bay of 3.5m (width) x 3m (height) at the eastern side along Tin Chiu Street to further alleviate the potential ventilation impact to the surrounding area. CTP/UD&L, PlanD advises that with these measures, significant adverse air ventilation impact induced by the proposal is not anticipated. The above measures will be incorporated in the planning brief of the proposed public housing development for implementation.

Traffic Consideration

4.20 The Commissioner for Transport (C for T) has no objection to the rezoning of the site from "G/IC" to "R(A)" from traffic engineering point of view. C for T advises that the proposed public housing at the junction of Java Road, Tin Chiu Street and Marble Road is well served by public transport services including Mass Transit Railway, franchised buses, minibuses and ferry. There is also a new Public Transport Interchange located just to the north of the concerned public housing. The additional traffic generated by the proposed development and the construction traffic would be limited and the traffic impact due to the proposed development would not be significant according to

the traffic impact assessment (TIA) conducted by HD (**Attachment Vc**). He also advises that since the scale of the housing development is small, the additional pedestrian flow generated would not be great. The existing pedestrian crossing facilities and footpath in the vicinity would be able to cater for the additional pedestrian flow.

Environmental and Infrastructure Considerations

4.21 The Director of Environmental Protection (DEP) has no comment on the proposed rezoning from the environmental protection point of view. He advises that no insurmountable noise, air and sewerage problem is anticipated and he has no in-principle objection to the proposed public housing development. HD will conduct an Environmental Assessment Study and a Sewerage Impact Assessment (SIA) for the proposed development and circulate the reports to relevant departments for comment/agreement in detailed design stage. In order to reduce environmental nuisances during construction, HD advises that there would be stringent control for construction vehicles and environmental nuisance under contract conditions. The contractors are required to comply with relevant regulations and carry out precautionary and mitigation measures as necessary. The contractors are also required to provide washing facilities to clean the dust and mud from the wheels of lorries prior to leaving the site.

4.22 As for other infrastructures, the Chief Engineer/Hong Kong & Islands (CE/HK&I), DSD advises that the project proponent shall verify the existing public sewerage system has adequate capacity to accommodate the flow from the proposed development. Agreement/approval should be sought regarding the need for SIA from Environmental Protection Department. If required, the project proponent shall bear all costs and undertake improvement and upgrading works to the existing public sewerage system for handling additional discharge due to the proposed development to the satisfaction of DSD. The Chief Engineer/Construction, Water Supplies Department (CE/C, WSD) has no comment on the proposed OZP amendment from water supply planning point of view.

Landscape Consideration

4.23 There are 12 trees located on the pavements of Java Road, Tin Chiu Street and Marble Road immediately outside the site (**Plan 5 and Attachment Vd**). These trees are all common species, and no Champion tree or registered old and valuable tree is found. HD advises that these trees will be retained as far as practicable.

5. Proposed Amendment to Matters Shown on the Plan

5.1 The proposed amendment as shown on the draft North Point OZP No. S/H8/24A (**Attachment II**) is as follows:

Item A (about 0.12 ha)
Rezoning of TCSP from "G/IC" to "R(A)" with stipulation of a maximum BH of 110mPD as set out in paragraph 4.11 above.

5.2 Opportunity is also taken to update the proposed railway reserve for the Shatin to Central Link currently shown on the OZP for information (**Attachment I**) as per the Railway Scheme authorized by the CE in C under the Railways Ordinance on 27.3.2012 (**Attachment II**).

6. Proposed Amendments to the Notes of the OZP

6.1 Amendments to the Notes of the OZP are proposed as follows:

(a) with a view to supporting art development, the feasibility of allowing 'Art Studio' in the industrial and Industrial-Office (I-O) buildings has been investigated by relevant bureaux and departments. As the key concern is on fire safety, 'Art Studio' is considered acceptable in the industrial and I-O buildings if it does not involve direct provision of services or goods (e.g. hobby classes, seminars and sale of goods, art gallery and venue for rehearsal for art performance). The proposal was generally supported by the stakeholders and no objection from concerned Government departments. To take forward the above proposal, it is proposed to incorporate 'Art Studio (excluding those involving direct provision of services or goods)' as a Column 1 use in Schedule II of the "Residential (Group E)" zone. As 'Art Studio' is subsumed under the 'Place of Recreation, Sports or Culture' use, corresponding amendment will also be made to replace 'Place of Recreation, Sports or Culture' under Column 2 by 'Place of Recreation, Sports or Culture (not elsewhere specified)'. The Secretary for Home Affairs (SHA) welcomes these proposed amendments to support the development of local art scene;

(b) amendments to the exemption clause on maximum gross floor area/PR in the remarks for the "CDA", "CDA(2)", "CDA(3)", "C/R(1)" to "C/R (3)", "R(A)1" to "R(A)3", "Residential (Group B)" and "Residential (Group C)" zones to clarify that exemption of caretaker's quarters and recreational facilities are only applicable to those facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building. For consistency, the same exemption is added to the remarks for the "CDA(1)" zone; and

(c) other minor textual amendments, which would not have any implications on the interpretation of the OZP provision.

6.2 The proposed amendments to the Notes of the OZP (with additions in ***bold and italics*** and deletions in '~~crossed out~~') are at **Attachment III** for Members' consideration.

7. Revision to the Explanatory Statement of the OZP

The ES of the OZP is proposed to be revised to take into account the proposed amendments as mentioned in the above paragraphs. Opportunity has also been taken to update the general information for the various land use zones to reflect the latest status and planning circumstances of the OZP. The proposed amendments to the ES of the OZP (with additions in ***bold and italics*** and deletions in '~~crossed out~~') are at **Attachment IV** for Members' consideration.

8. Plan Number

Upon exhibition for public inspection, the Plan will be renumbered as S/H8/25.

9. Consultation

Departmental Consultation

9.1 The proposed amendments have been circulated to relevant bureaux and departments for comments. The comments of Secretary for Education, SHA, Director of Social Welfare, Director of Food and Environmental Hygiene, Postmaster General, Director of Health, Director of Leisure and Cultural Services, C for T, DEP, CE/HK&I of DSD, CE/C of WSD and CTP/UD&L of PlanD have been incorporated in the above paragraphs where appropriate.

9.2 The District Land Officer/Hong Kong East has no comment from land administrative point of view for the proposed amendments to OZP, subject to LCSD's agreement to return the site under Amendment Item A to Lands Department for disposal for the public housing proposal and the reprovisioning proposal of TCSP.

9.3 The following bureaux and departments have no objection to or no comment on the proposed amendments:

- Development Bureau;
- Antiquities and Monuments Office, LCSD;
- Chief Architect/Central Management Division 2, Architectural Services Department;
- Chief Building Surveyor/Hong Kong East and Heritage, Buildings Department;
- Chief Engineer/Land Works, Civil Engineering and Development Department (CEDD);
- Chief Engineer/Railway Development 2-2, Railway Development Office, Highways Department (HyD);
- Chief Engineer 4/Major Works, Major Works Project Management Office, HyD;
- Chief Highway Engineer/Hong Kong, HyD;
- Commissioner of Police;
- Director of Agriculture, Fisheries and Conservation;
- Director of Electrical and Mechanical Services;

- Director of Fire Services;
- Director-General of Trade and Industry;
- District Officer (Eastern), Home Affairs Department;
- Government Property Administrator;
- Head of Geotechnical Engineering Office, CEDD; and
- Project Manager (Hong Kong Island & Islands), CEDD.

Consultation with Eastern District Council

9.4 On 19.4.2016, HD, LCSD and PlanD consulted the Planning, Works and Housing Committee (PWHC) of the Eastern District Council (EDC) on the proposed public housing development, reprovisioning of TCSP and the proposed OZP amendments. Members of PWHC generally supported increasing the housing supply to meet the community demand for housing, but there were concerns on the selling price of the SSF, traffic issues (including traffic impact on the road network in the area and pedestrian safety), proposed BH restriction and environmental impact of the proposed SSF development. In addition, Members raised concern on the provision of recreational open space facilities in the area and requested for compensation of another soccer pitch, which had already been converted to the Independent Commission Against Corruption Headquarters. The minutes of the PWHC meeting is at **Attachment VII**.

9.5 The general support of PWHC members to increasing housing supply is noted. Regarding PWHC's concern, it should be noted that the selling price of SSF is not a land use consideration of the Board. For the concerns on traffic matters, BH restriction and environmental impact, the considerations set out in paragraphs 4.13, 4.14, 4.19 to 4.21 above are relevant. As for the provision of recreational open space, the existing TSCP will not be closed before the reprovisioned playground with upgraded facilities is open for public use. There is an overall surplus of open space provision in North Point and the specific types of open space facilities provided/to be provided in the "Open Space" zones are to be determined by LCSD taking account of the site characteristics and local context of individual sites.

Public Consultation

9.6 If the proposed amendments are agreed by the Committee, the draft OZP and its Notes will be made available for public inspection under section 5 of the Ordinance. Members of the public can submit representations on the OZP to the Board during the two-month statutory public inspection period.

10. Decision Sought

Members are invited to:

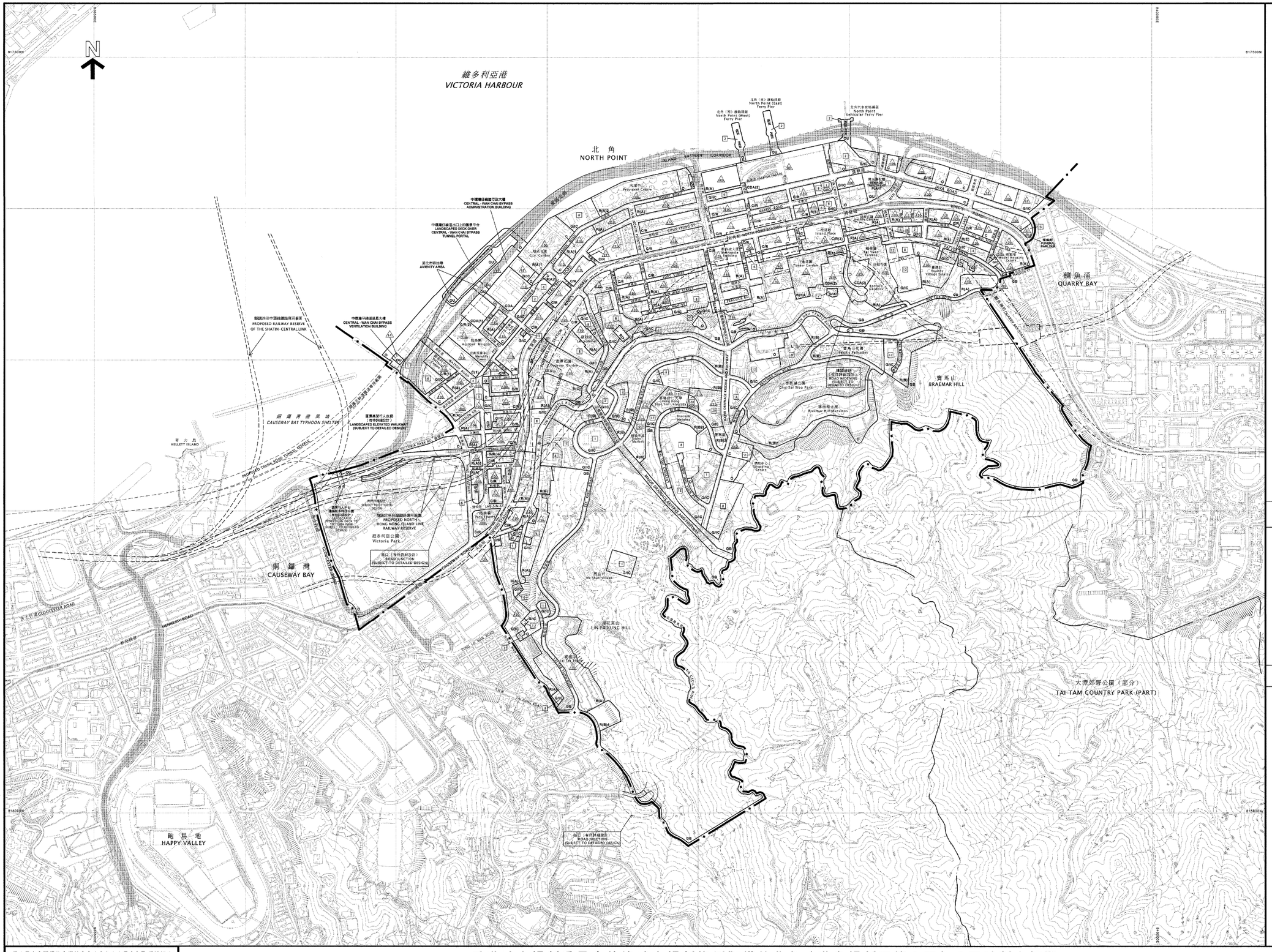
(a) agree to the proposed amendments to the approved North Point OZP and that the draft North Point OZP No. S/H8/24A at **Attachment II** (to be renumbered to S/H8/25 upon exhibition) and its Notes at **Attachment III** are suitable for exhibition under section 5 of the Ordinance; and

(b) adopt the revised ES at **Attachment IV** for the draft North Point OZP No. S/H8/24A as an expression of the planning intentions and objectives of the Board for the various land use zonings of the OZP and the revised ES will be published together with the OZP.

11. Attachments

Attachment I	Approved North Point Outline Zoning Plan No. S/H8/24 (reduced to A3 size)
Attachment II	Draft North Point Outline Zoning Plan No. S/H8/24A
Attachment III	Revised Notes of the draft North Point Outline Zoning Plan No. S/H8/24A
Attachment IV	Revised Explanatory Statement of the draft North Point Outline Zoning Plan No. S/H8/24A
Attachment Va	Visual Appraisal conducted by HD
Attachment Vb	Air Ventilation Assessment (Expert Evaluation Report) conducted by HD
Attachment Vc	Traffic Impact Assessment Study conducted by HD
Attachment Vd	Preliminary Tree Survey Report conducted by HD
Attachment VI	Provision of Open Space and Major Community Facilities in North Point Area
Attachment VII	Minutes of EDC's PWHC Meeting on 19.4.2016
Drawing 1	Conceptual Layout of the Proposed Development
Drawing 2	Section Plan of the Proposed Development
Drawings 3 to 6	Photomontages of the Proposed Development
Plan 1	Comparison of Existing and Proposed Zonings on the OZP for Amendment Item A
Plan 2	Site Plan of Tin Chiu Street Playground
Plan 3	Aerial Photo of Tin Chiu Street Playground
Plans 4 to 5	Site Photos of Tin Chiu Street Playground

PLANNING DEPARTMENT
JULY 2016



圖例
NOTATION

ZONES		地帶
COMMERCIAL	C	商業
COMPREHENSIVE DEVELOPMENT AREA	CDA	綜合發展區
COMMERCIAL / RESIDENTIAL	C/R	商業 / 住宅
RESIDENTIAL (GROUP A)	R(A)	住宅（甲類）
RESIDENTIAL (GROUP B)	R(B)	住宅（乙類）
RESIDENTIAL (GROUP C)	R(C)	住宅（丙類）
RESIDENTIAL (GROUP E)	R(E)	住宅（戊類）
GOVERNMENT, INSTITUTION OR COMMUNITY	G/IC	政府、機構或社區
OPEN SPACE	O	休憩用地
OTHER SPECIFIED USES	OU	其他指定用途
GREEN BELT	GB	綠化地帶

COMMUNICATIONS		交通
RAILWAY AND STATION (UNDERGROUND)	WEST KOWLOON STATION	鐵路及車站（地下）
MAJOR ROAD AND JUNCTION		主要道路及路口
ELEVATED ROAD		高架道路
RAILWAY RESERVE	RAILWAY RESERVE	鐵路專用範圍

MISCELLANEOUS		其他
BOUNDARY OF PLANNING SCHEME		規劃範圍界線
BOUNDARY OF COUNTRY PARK		郊野公園界線
BUILDING HEIGHT CONTROL ZONE BOUNDARY		建築物高度管制區界線
MAXIMUM BUILDING HEIGHT (IN METRES ABOVE PRINCIPAL DATUM)	100	最高建築物高度（在主水平基準上若干米）
MAXIMUM BUILDING HEIGHT (IN NUMBER OF STOREYS)	8	最高建築物高度（樓層數目）
NON-BUILDING AREA	NBA	非建築用地

土地用途及面積一覽表
SCHEDULE OF USES AND AREAS

USES	APPROXIMATE AREA & % 大約面積及百分率		用途
	公頃 HECTARES	% 百分率	
COMMERCIAL	4.56	1.65	商業
COMPREHENSIVE DEVELOPMENT AREA	6.33	2.29	綜合發展區
COMMERCIAL / RESIDENTIAL	19.25	6.95	商業 / 住宅
RESIDENTIAL (GROUP A)	31.85	11.50	住宅（甲類）
RESIDENTIAL (GROUP B)	15.11	5.46	住宅（乙類）
RESIDENTIAL (GROUP C)	0.80	0.29	住宅（丙類）
RESIDENTIAL (GROUP E)	0.43	0.16	住宅（戊類）
GOVERNMENT, INSTITUTION OR COMMUNITY	27.61	9.97	政府、機構或社區
OPEN SPACE	34.36	12.41	休憩用地
OTHER SPECIFIED USES	3.56	1.28	其他指定用途
GREEN BELT	87.88	31.74	綠化地帶
MAJOR ROAD ETC.	45.14	16.30	主要道路等
TOTAL PLANNING SCHEME AREA	276.87	100.00	規劃範圍總面積

夾附的《註釋》屬這份圖則的一部分
THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN

行政長官會同行政會議於２０１０年１１月３０日根據城市規劃條例第９（１）（ａ）條核准的圖則
APPROVED BY THE CHIEF EXECUTIVE IN COUNCIL UNDER SECTION 9(1)(a) OF THE TOWN PLANNING ORDINANCE ON 30 NOVEMBER 2010

Ms Manda CHAN 陳詠雯女士
CLERK TO THE EXECUTIVE COUNCIL 行政會議秘書

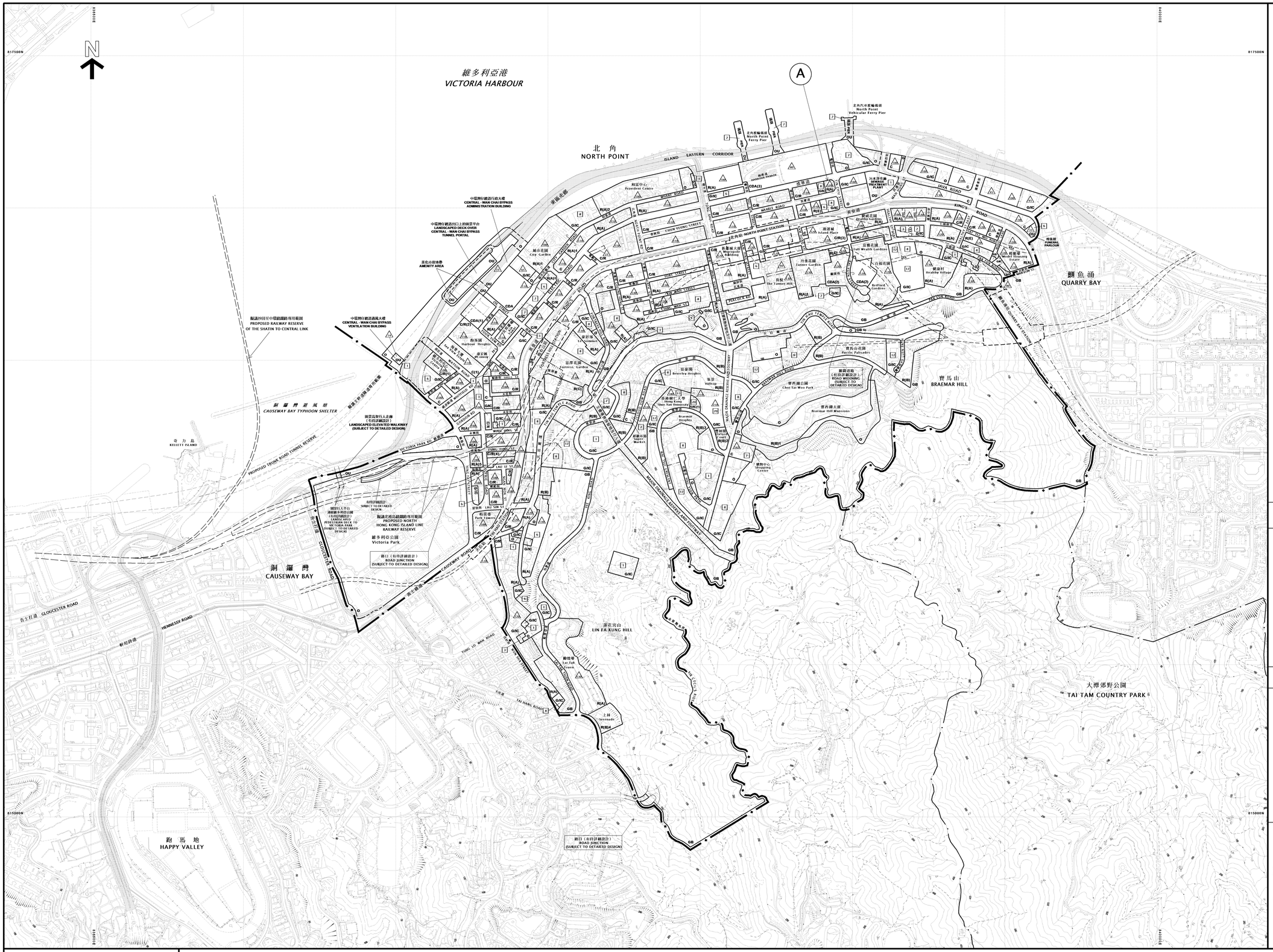
香港城市規劃委員會依據城市規劃條例擬備的北角（港島規劃區第８區）分區計劃大綱圖
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD
HONG KONG PLANNING AREA No. 8 - NORTH POINT - OUTLINE ZONING PLAN

SCALE 1:5000 比例尺

米 METRES 100 0 200 400 600 800 METRES 米

規劃署遵照城市規劃委員會指示擬備
PREPARED BY THE PLANNING DEPARTMENT UNDER THE DIRECTION OF THE TOWN PLANNING BOARD

圖則編號 PLAN No. S/H8/24



圖例
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OTHER SPECIFIED USES	OU	其他指定用途
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ELEVATED ROAD		高架道路
RAILWAY RESERVE	RAILWAY RESERVE	鐵路專用範圍

MISCELLANEOUS — 其他

BOUNDARY OF PLANNING SCHEME		規劃範圍界線
BOUNDARY OF COUNTRY PARK		郊野公園界線
BUILDING HEIGHT CONTROL ZONE BOUNDARY		建築物高度管制區界線
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土地用途及面積一覽表
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COMMERCIAL	4.56	1.65	商業
COMPREHENSIVE DEVELOPMENT AREA	6.33	2.29	綜合發展區
COMMERCIAL / RESIDENTIAL	19.25	6.95	商業 / 住宅
RESIDENTIAL (GROUP A)	31.97	11.55	住宅（甲類）
RESIDENTIAL (GROUP B)	15.11	5.46	住宅（乙類）
RESIDENTIAL (GROUP C)	0.80	0.29	住宅（丙類）
RESIDENTIAL (GROUP E)	0.43	0.16	住宅（戊類）
GOVERNMENT, INSTITUTION OR COMMUNITY	27.49	9.93	政府、機構或社區
OPEN SPACE	34.36	12.41	休憩用地
OTHER SPECIFIED USES	3.55	1.28	其他指定用途
GREEN BELT	87.88	31.74	綠化地帶
MAJOR ROAD ETC.	45.14	16.29	主要道路等
TOTAL PLANNING SCHEME AREA	276.87	100.00	規劃範圍總面積

夾附的《註釋》屬這份圖則的一部分，
現經修訂並按照城市規劃條例第5條展示。
THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN AND HAVE BEEN AMENDED FOR EXHIBITION UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE

核准圖編號 S/H8/24 的修訂
AMENDMENT TO APPROVED PLAN No. S/H8/24

AMENDMENT EXHIBITED UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE — 按照城市規劃條例第5條展示的修訂

AMENDMENT ITEM A — 修訂項目A項

（參看附表）
(SEE ATTACHED SCHEDULE)

香港城市規劃委員會依據城市規劃條例擬備的北角（港島規劃區第8區）分區計劃大綱圖
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD
HONG KONG PLANNING AREA No. 8 - NORTH POINT - OUTLINE ZONING PLAN

SCALE 1:5000 比例尺

米 METRES 100 0 200 400 600 800 METRES 米

規劃署遵照城市規劃委員會指示擬備
PREPARED BY THE PLANNING DEPARTMENT UNDER THE DIRECTION OF THE TOWN PLANNING BOARD

圖則編號 PLAN No. S/H8/24A

HONG KONG PLANNING AREA NO. 8

~~APPROVED~~ *DRAFT* NORTH POINT OUTLINE ZONING PLAN NO. S/H8/24*A*

(Being ~~an Approved~~***a Draft*** Plan for the Purposes of the Town Planning Ordinance)

NOTES

(N.B. These form part of the Plan)

(1) These Notes show the uses or developments on land falling within the boundaries of the Plan which are always permitted and which may be permitted by the Town Planning Board, with or without conditions on application. Where permission from the Town Planning Board for a use or development is required, the application for such permission should be made in a prescribed form. The application shall be addressed to the Secretary of the Town Planning Board, from whom the prescribed application form may be obtained.

(2) Any use or development which is always permitted or may be permitted in accordance with these Notes must also conform to any other relevant legislation, the conditions of the Government lease concerned, and any other Government requirements, as may be applicable.

(3) (a) No action is required to make the existing use of any land or building conform to this Plan until there is a material change of use or the building is redeveloped.

(b) Any material change of use or any other development (except minor alteration and/or modification to the development of the land or building in respect of the existing use which is always permitted) or redevelopment must be always permitted in terms of the Plan or, if permission is required, in accordance with the permission granted by the Town Planning Board.

(c) For the purposes of sub-paragraph (a) above, "existing use of any land or building" means-

(i) before the publication in the Gazette of the notice of the first statutory plan covering the land or building (hereafter referred as 'the first plan'),

- a use in existence before the publication of the first plan which has continued since it came into existence; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building; and

(ii) after the publication of the first plan,

- a use permitted under a plan which was effected during the effective period of that plan and has continued since it was effected; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building and permitted under a plan prevailing at the time when the use or change of use was approved.

(4) Except as otherwise specified by the Town Planning Board, when a use or material change of use is effected or a development or redevelopment is undertaken, as always permitted in terms of the Plan or in accordance with a permission granted by the Town Planning Board, all permissions granted by the Town Planning Board in respect of the site of the use or material change of use or development or redevelopment shall lapse.

(5) Road junctions, alignments of roads and railway/tram tracks, and boundaries between zones may be subject to minor adjustments as detailed planning proceeds.

(6) Temporary uses (expected to be 5 years or less) of any land or buildings are always permitted as long as they comply with any other relevant legislation, the conditions of the Government lease concerned, and any other Government requirements, and there is no need for these to conform to the zoned use or these Notes. For temporary uses expected to be over 5 years, the uses must conform to the zoned use or these Notes.

(7) The following uses or developments are always permitted on land falling within the boundaries of the Plan except where the uses or developments are specified in Column 2 of the Notes of individual zones:

(a) provision, maintenance or repair of plant nursery, amenity planting, open space, rain shelter, refreshment kiosk, road, bus/tram/public light bus stop or lay-by, cycle track, Mass Transit Railway station entrance, Mass Transit Railway structure below ground level, taxi rank, nullah, public utility pipeline, electricity mast, lamp pole, telephone booth, telecommunications radio base station, automatic teller machine and shrine;

(b) geotechnical works, local public works, road works, sewerage works, drainage works, environmental improvement works, marine related facilities, waterworks (excluding works on service reservoir) and such other public works co-ordinated or implemented by Government; and

(c) maintenance or repair of watercourse and grave.

(8) In any area shown as 'Road', all uses or developments except those specified in paragraph (7) above and those specified below require permission from the Town Planning Board:

on-street vehicle park, railway track and tram track.

(9) Unless otherwise specified, all building, engineering and other operations incidental to and all uses directly related and ancillary to the permitted uses and developments within the same zone are always permitted and no separate permission is required.

(10) In these Notes, "existing building" means a building, including a structure, which is physically existing and is in compliance with any relevant legislation and the conditions of the Government lease concerned.

HONG KONG PLANNING AREA NO. 8

~~APPROVED~~***DRAFT*** NORTH POINT OUTLINE ZONING PLAN NO. S/H8/24***A***

Schedule of Uses

COMMERCIAL

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Government Use (not elsewhere specified) Hotel Information Technology and Telecommunications Industries Institutional Use (not elsewhere specified) Library Market Off-course Betting Centre Office Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution School Shop and Services Social Welfare Facility Training Centre Utility Installation for Private Project	Broadcasting, Television and/or Film Studio Flat Government Refuse Collection Point Hospital Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Petrol Filling Station Residential Institution

Planning Intention

This zone is intended primarily for commercial developments, which may include uses such as office, shop, services, place of entertainment, eating place and hotel, functioning as regional or district commercial/shopping centre(s). These areas are usually major employment nodes.

(Please see next page)

COMMERCIAL (Cont'd)

Remarks

(1) On land designated "Commercial" and "Commercial (1)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building heights, in terms of number of storeys and/or metres above Principal Datum, as stipulated on the Plan, or height of the existing building, whichever is ***the*** greater.

(2) On land designated "Commercial (1)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum gross floor area (GFA) of 109,120m^2.

(3) In determining the maximum GFA for the purposes of paragraph (2) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(4) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restrictions stated in paragraph (1) above and GFA restriction stated in paragraph (2) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

COMPREHENSIVE DEVELOPMENT AREA

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
	Ambulance Depot Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Flat Government Refuse Collection Point Government Use (not elsewhere specified) Hospital Hotel House Information Technology and Telecommunications Industries Institutional Use (not elsewhere specified) Library Market Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Off-course Betting Centre Office Petrol Filling Station Pier Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution Research, Design and Development Centre Residential Institution School Shop and Services Social Welfare Facility Training Centre Utility Installation for Private Project

Planning Intention

This zone is intended for comprehensive development/redevelopment of the area for residential and/or commercial uses with the provision of open space and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of various environmental, traffic, infrastructure and other constraints.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (Cont'd)

Remarks

(1) Pursuant to section 4A(2) of the Town Planning Ordinance, and except as otherwise expressly provided that it is not required by the Town Planning Board, an applicant for permission for development on land designated "Comprehensive Development Area" shall prepare a Master Layout Plan for the approval of the Town Planning Board and include therein the following information:

(i) the area of the proposed land uses, the nature, position, dimensions, and heights of all buildings to be erected in the area;

(ii) the proposed total site area and gross floor areas ***(GFA)*** for various uses, total number of flats and flat sizes, where applicable;

(iii) the details and extent of Government, institution or community (GIC) and recreational facilities, public transport and parking facilities, and open space to be provided within the area;

(iv) the alignment, widths and levels of any roads proposed to be constructed within the area;

(v) the landscape and urban design proposals within the area;

(vi) programme of development in detail;

(vii) an environmental assessment report to examine any possible environmental problems that may be caused to or by the proposed development during and after construction and the proposed mitigation measures to tackle them;

(viii) a drainage and sewerage impact assessment report to examine any possible drainage and sewerage problems that may be caused by the proposed development and the proposed mitigation measures to tackle them;

(ix) a traffic impact assessment report to examine any possible traffic problems that may be caused by the proposed development and the proposed mitigation measures to tackle them; and

(x) such other information as may be required by the Town Planning Board.

(2) The Master Layout Plan should be supported by an explanatory statement which contains an adequate explanation of the development proposal, including such information as land tenure, relevant lease conditions, existing conditions of the site, the character of the site in relation to the surrounding areas, principles of layout design, major development parameters, design population, types of GIC facilities, and recreational and open space facilities.

(3) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum GFA of 123,470m^2 of which a maximum GFA of 18,180m^2 shall be for office use.

(4) In determining the maximum GFA for the purposes of paragraph (3) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room~~,~~ ***and*** caretaker's office***,*** ~~and~~***or*** caretaker's quarters~~, or~~ ***and*** recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

COMPREHENSIVE DEVELOPMENT AREA (1)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
	Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Flat Government Refuse Collection Point Government Use (not elsewhere specified) Hotel Information Technology and Telecommunications Industries Institutional Use (not elsewhere specified) Library Market Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Off-course Betting Centre Office Petrol Filling Station Pier Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution Research, Design and Development Centre School Shop and Services Social Welfare Facility Training Centre Utility Installation for Private Project

Planning Intention

This zone is intended for comprehensive development/redevelopment of the area for residential, commercial, leisure and tourism related uses with the provision of open space and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of various environmental, traffic, infrastructure and other constraints.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (1) (Cont'd)

Remarks

(1) Pursuant to section 4A(2) of the Town Planning Ordinance, and except as otherwise expressly provided that it is not required by the Town Planning Board, an applicant for permission for development on land designated "Comprehensive Development Area (1)" shall prepare a Master Layout Plan for the approval of the Town Planning Board and include therein the following information:

(i) the area of the proposed land uses, the nature, position, dimensions, and heights of all buildings to be erected in the area;

(ii) the proposed total site area and gross floor areas for various uses, where applicable;

(iii) the details and extent of ***Government, institution or community (***GIC***)*** and recreational facilities, public transport and parking facilities, and open space to be provided within the area;

(iv) the alignment, widths and levels of any roads proposed to be constructed within the area;

(v) the landscape and urban design proposals within the area;

(vi) programme of development in detail;

(vii) an environmental assessment report to examine any possible environmental problems that may be caused to or by the proposed development during and after construction and the proposed mitigation measures to tackle them;

(viii) a drainage and sewerage impact assessment report to examine any possible drainage and sewerage problems that may be caused by the proposed development and the proposed mitigation measures to tackle them;

(ix) a traffic impact assessment report to examine any possible traffic problems that may be caused by the proposed development and the proposed mitigation measures to tackle them; and

(x) such other information as may be required by the Town Planning Board.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (1) (Cont'd)

Remarks (Cont'd)

(2) The Master Layout Plan should be supported by an explanatory statement which contains an adequate explanation of the development proposal, including such information as land tenure, relevant lease conditions, existing conditions of the site, the character of the site in relation to the surrounding areas, principles of layout design, major development parameters, design population, types of GIC facilities, and recreational and open space facilities.

(3) On land designated "Comprehensive Development Area (1)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum building height and/or plot ratio for different parts of the land, as demarcated by the thin pecked line on the Plan, set out below:

(a) a maximum building height of 165 metres above Principal Datum and a maximum plot ratio of 15 for the southern part; and

(b) a maximum building height of not exceeding the soffit level of Island Eastern Corridor for the northern part.

(4) In determining the maximum plot ratio for the purposes of paragraph (3) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office***, or caretakers' quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building***, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(5) Where the permitted plot ratio as defined in Building (Planning) Regulations is permitted to be exceeded in circumstances as set out in Regulation 22(1) or (2) of the said Regulations, the plot ratio for the building on land to which paragraph (3)(a) above applies may be increased by the additional plot ratio by which the permitted plot ratio is permitted to be exceeded under and in accordance with the said Regulation 22(1) or (2), notwithstanding that the relevant maximum plot ratio specified in paragraph (3)(a) above may thereby be exceeded.

(6) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restriction stated in paragraph (3)(a) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

COMPREHENSIVE DEVELOPMENT AREA (2)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
	Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Flat Government Refuse Collection Point Government Use (not elsewhere specified) Information Technology and Telecommunications Industries Institutional Use (not elsewhere specified) Library Market Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Office Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Utility Installation Recyclable Collection Centre Religious Institution Research, Design and Development Centre School Shop and Services Social Welfare Facility Training Centre Utility Installation for Private Project

Planning Intention

This zone is intended for comprehensive development/redevelopment of the area primarily for residential uses. As the area within this zone is subject to traffic constraints due to the substandard conditions of the local road, suitable traffic and road improvement measures should be proposed and implemented upon development and/or redevelopment of the area. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of the environmental, traffic, infrastructure and other constraints.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (2) (Cont'd)

Remarks

(1) Pursuant to section 4A(2) of the Town Planning Ordinance, and except as otherwise expressly provided that it is not required by the Town Planning Board, an applicant for permission for development on land designated "Comprehensive Development Area (2)" shall prepare a Master Layout Plan for the approval of the Town Planning Board and include therein the following information:

(i) the area of the proposed land uses, the nature, position, dimensions, and heights of all buildings to be erected in the area;

(ii) the proposed total site area and gross floor areas for various uses, total number of flats and flat sizes, where applicable;

(iii) the details and extent of ***Government, institution or community (***GIC***)*** and recreational facilities, public transport and parking facilities, and open space to be provided within the area;

(iv) the alignment, widths and levels of any roads proposed to be constructed/upgraded within the area;

(v) the landscape and urban design proposals within the area;

(vi) programme of development in detail;

(vii) an environmental assessment report to examine any possible environmental problems that may be caused to or by the proposed development during and after construction and the proposed mitigation measures to tackle them;

(viii) a drainage and sewerage impact assessment report to examine any possible drainage and sewerage problems that may be caused by the proposed development and the proposed mitigation measures to tackle them;

(ix) a traffic impact assessment report to examine any possible traffic problems that may be caused by the proposed development and the proposed mitigation measures to tackle them; and

(x) such other information as may be required by the Town Planning Board.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (2) (Cont'd)

Remarks (Cont'd)

(2) The Master Layout Plan should be supported by an explanatory statement which contains an adequate explanation of the development proposal, including such information as land tenure, relevant lease conditions, existing conditions of the site, the character of the site in relation to the surrounding areas, principles of layout design, major development parameters, design population, types of GIC facilities, and recreational and open space facilities.

(3) Subject to implementation of the required traffic and road improvement measures to address the traffic impacts arising from development/redevelopment, no new development, or addition, alteration and/or modification to or redevelopment of an existing building on land designated "Comprehensive Development Area (2)" shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 8 and a maximum building height for different parts of the land as stipulated on the Plan and set out below:

(a) a maximum building height of 120 metres above Principal Datum for the area on the eastern side of Kai Yuen Street; and

(b) a maximum building height of 130 metres above Principal Datum for the area on the western side of Kai Yuen Street.

(4) In determining the maximum plot ratio for the purposes of paragraph (3) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office***, or*** ~~and~~ caretaker's quarters~~, or~~ ***and*** recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(5) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height and plot ratio restrictions as stated in paragraph (3) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

COMPREHENSIVE DEVELOPMENT AREA (3)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
	Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Flat Government Refuse Collection Point Government Use (not elsewhere specified) Hotel Information Technology and Telecommunications Industries Institutional Use (not elsewhere specified) Library Market Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Off-course Betting Centre Office Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution Research, Design and Development Centre Residential Institution School Shop and Services Social Welfare Facility Training Centre Utility Installation for Private Project

Planning Intention

This zone is intended for comprehensive development/redevelopment of the area for residential and/or commercial uses with the provision of open space, ***Government, institution or community (***GIC***)*** uses and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of various environmental, traffic, infrastructure and other constraints.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (3) (Cont'd)

Remarks

(1) Pursuant to section 4A(2) of the Town Planning Ordinance, and except as otherwise expressly provided that it is not required by the Town Planning Board, an applicant for permission for development on land designated "Comprehensive Development Area (3)" shall prepare a Master Layout Plan for the approval of the Town Planning Board and include therein the following information:

(i) the area of the proposed land uses, the nature, position, dimensions, and heights of all buildings to be erected in the area;

(ii) the proposed total site area and gross floor areas ***(GFA)*** for various uses, total number of flats and flat sizes, where applicable;

(iii) the details and extent of GIC and recreational facilities, public transport and parking facilities, and open space to be provided within the area;

(iv) the alignment, widths and levels of any roads proposed to be constructed/upgraded within the area;

(v) the landscape and urban design proposals within the area;

(vi) programme of development in detail;

(vii) an environmental assessment report to examine any possible environmental problems that may be caused to or by the proposed development during and after construction and the proposed mitigation measures to tackle them;

(viii) a drainage and sewerage impact assessment report to examine any possible drainage and sewerage problems that may be caused by the proposed development and the proposed mitigation measures to tackle them;

(ix) a traffic impact assessment report to examine any possible traffic problems that may be caused by the proposed development and the proposed mitigation measures to tackle them; and

(x) such other information as may be required by the Town Planning Board.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (3) (Cont'd)

Remarks (Cont'd)

(2) The Master Layout Plan should be supported by an explanatory statement which contains an adequate explanation of the development proposal, including such information as land tenure, relevant lease conditions, existing conditions of the site, the character of the site in relation to the surrounding areas, principles of layout design, major development parameters, design population, types of GIC facilities, and recreational and open space facilities.

(3) On land designated "Comprehensive Development Area (3)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum domestic GFA of 53,680m^2 and a maximum non-domestic GFA of 29,995m^2 of which a GFA of not less than 5,155m^2 shall be provided for GIC facilities, a maximum site coverage of 60% (excluding basement(s)), and the maximum building height, in terms of metres above Principal Datum, as stipulated on the Plan. A public open space of not less than 12,680m^2 including a 20***m*** ~~metre~~ wide waterfront promenade shall be provided. Ancillary car parking and public coach park shall be provided in the basement.

(4) In determining the maximum GFA for the purposes of paragraph (3) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office***,*** ~~and~~***or*** caretaker's quarters~~, or~~ ***and*** recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(5) In determining the maximum non-domestic GFA for the purposes of paragraph (3) above, any floor space that is constructed or intended for use solely as public transport terminus and public coach park as required by the Government shall be included for calculation.

(6) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the site coverage and/or building height restrictions stated in paragraph (3) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

COMMERCIAL/RESIDENTIAL

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot Eating Place (not elsewhere specified) Exhibition or Convention Hall Flat Government Use (not elsewhere specified) Hotel House Library Market (not elsewhere specified) Off-course Betting Centre Office Place of Entertainment Private Club Public Clinic Public Utility Installation Public Vehicle Park (excluding container vehicle) Residential Institution School (in free-standing purpose-designed school building, in a commercial building or in the purpose-designed non-residential portion[@] of an existing building only) Shop and Services (not elsewhere specified) Social Welfare Facility Utility Installation for Private Project	Broadcasting, Television and/or Film Studio Commercial Bathhouse/Massage Establishment Eating Place (Cooked Food Centre only) Educational Institution Government Refuse Collection Point Hospital Information Technology and Telecommunications Industries Institutional Use (not elsewhere specified) Market (Hawker Centre only) Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Petrol Filling Station Place of Recreation, Sports or Culture Public Convenience Public Transport Terminus or Station Recyclable Collection Centre Religious Institution School (not elsewhere specified) Shop and Services (Motor-vehicle Showroom and Printing, Publishing and Allied Industries only) Training Centre

[@] Excluding floors containing wholly or mainly car parking, loading/unloading bay and/or plant room

Planning Intention

This zone is intended primarily for commercial and/or residential development. Commercial, residential and mixed commercial/residential uses are always permitted.

(Please see next page)

COMMERCIAL/RESIDENTIAL (Cont'd)

Remarks

(1) On land designated "Commercial/Residential" and sub-areas of the "Commercial/Residential" zone, no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building heights, in terms of metres above Principal Datum, as stipulated on the Plan, or height of the existing building, whichever is ***the*** greater.

(2) On land designated "Commercial/Residential (1)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum domestic gross floor area (GFA) of 32,531m^2 and a maximum non-domestic GFA of 13,503m^2 of which a GFA of not less than 577m^2 shall be provided for Government, institution or community ***(GIC)*** facilities (including a public toilet of not less than 47m^2). A public open space of not less than 1,080m^2 at Watson Road level shall be provided, of which an area of 275m^2 could be covered.

(3) On land designated "Commercial/Residential (2)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum domestic GFA of 72,600m^2 and a maximum non-domestic GFA of 45,375m^2 of which a GFA of not less than 3,150m^2 shall be provided for ~~Government, institution or community~~***GIC*** facilities. A public open space of not less than 2,600m^2 at Fook Yum Road level shall be provided.

(4) On land designated "Commercial/Residential (3)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum domestic GFA of 59,310m^2 and a maximum non-domestic GFA of 58,030m^2. In addition, a GFA of not less than 2,011m^2 shall be provided for ~~Government, institution or community~~***GIC*** facilities of which a GFA of not less than 484m^2 shall be provided for a refuse collection point. A public open space of not less than 625m^2 at King's Road level shall be provided.

(5) On land designated "Commercial/Residential (4)", a 1.5m wide non-building area fronting the southern side of Tsing Fung Street shall be provided.

(6) In determining the maximum GFA for the purposes of paragraphs (2) to (4) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room~~,~~ ***and*** caretaker's office***,*** ~~and~~***or*** caretaker's quarters~~, or~~ ***and*** recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(7) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restrictions stated in paragraph (1) above and GFA restrictions as stated in paragraphs (2) to (4) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(8) Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restriction stated in paragraph (5) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

RESIDENTIAL (GROUP A)

For "Residential (Group A)" zone and sub-areas of "Residential (Group A)" zone except "Residential (Group A) 4"

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot Flat Government Use (not elsewhere specified) House Library Market ~~Public~~ ***Place of*** Recreation, Sports or Culture Public Clinic Public Transport Terminus or Station (excluding open-air terminus or station) Residential Institution School (in free-standing purpose-designed building only) Social Welfare Facility Utility Installation for Private Project	Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Government Refuse Collection Point Hospital Hotel Institutional Use (not elsewhere specified) Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Office Petrol Filling Station Place of Entertainment Private Club Public Convenience Public Transport Terminus or Station (not elsewhere specified) Public Utility Installation Public Vehicle Park (excluding container vehicle) Religious Institution School (not elsewhere specified) Shop and Services Training Centre
In addition, the following uses are always permitted (a) on the lowest three floors of a building, taken to include basements; or (b) in the purpose-designed non-residential portion of an existing building, both excluding floors containing wholly or mainly car parking, loading/unloading bays and/or plant room :	
Eating Place Educational Institution Institutional Use (not elsewhere specified) Off-course Betting Centre Office Place of Entertainment Private Club Public Convenience Recyclable Collection Centre School Shop and Services Training Centre	

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

For "Residential (Group A)" zone and sub-areas of "Residential (Group A)" zone except "Residential (Group A) 4" (Cont'd)

Planning Intention

This zone is intended primarily for high-density residential developments. Commercial uses are always permitted on the lowest three floors of a building or in the purpose-designed non-residential portion of an existing building except in "Residential (Group A) 4" ***zone***.

(Please see next page)

RESIDENTIAL (GROUP A) ~~4~~***(Cont'd)***

For "Residential (Group A) 4" Only

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat Government Use (not elsewhere specified) House Library Public Clinic Residential Institution School (in free-standing purpose-designed building only) Social Welfare Facility Utility Installation for Private Project	Educational Institution Hotel Institutional Use (not elsewhere specified) Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Private Club Public Utility Installation Religious Institution School (not elsewhere specified) Training Centre

Planning Intention

This sub-area is intended primarily for high-density residential developments. As the sub-area is subject to traffic constraints, uses that may cause traffic circulation problem are not permitted.

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

Remarks

(1) On land designated "Residential (Group A)" and sub-areas of the "Residential (Group A)" zone, no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building heights, in terms of metres above Principal Datum, as stipulated on the Plan, or height of the existing building, whichever is ***the*** greater.

(2) On land designated "Residential (Group A) 1", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum domestic gross floor area (GFA) of 219,160m^2 and a maximum non-domestic GFA of 35,574m^2. A public open space of not less than 5,420m^2 at City Garden Road level shall be provided.

(3) On land designated "Residential (Group A) 2", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum domestic GFA of 156,000m^2 and a maximum non-domestic GFA of 19,500m^2 of which a GFA of not less than 1,330m^2 shall be provided for Government, institution or community facilities. A public open space, including a 5m wide waterfront promenade, of not less than 5,200m^2 at Wharf Road level shall be provided.

(4) On land designated "Residential (Group A) 3", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum domestic GFA of 62,820m^2 and a maximum non-domestic GFA of 2,740m^2. A public open space of not less than 4,248m^2 shall be provided, of which 920m^2 shall be at Tanner Road level.

(5) On land designated "Residential (Group A) 5", a 1.5m wide non-building area fronting the southern side of Tsing Fung Street shall be provided.

(6) In determining the maximum GFA for the purposes of paragraphs (2) to (4) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room~~,~~ ***and*** caretaker's office***,*** ~~and~~***or*** caretaker's quarters~~, or~~ ***and*** recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(7) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restrictions stated in paragraph (1) above and GFA restrictions as stated in paragraphs (2) to (4) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(8) Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restrictions as stipulated on the Plan and/or stated in paragraph (5) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

RESIDENTIAL (GROUP B)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat Government Use (Police Reporting Centre, Post Office only) House Library Residential Institution School (in free-standing purpose-designed building only) Utility Installation for Private Project	Ambulance Depot Eating Place Educational Institution Government Refuse Collection Point Government Use (not elsewhere specified) Hospital Hotel Institutional Use (not elsewhere specified) Market Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Off-course Betting Centre Office Petrol Filling Station Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution School (not elsewhere specified) Shop and Services Social Welfare Facility Training Centre

Planning Intention

This zone is intended primarily for medium-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Town Planning Board.

(Please see next page)

RESIDENTIAL (GROUP B) (Cont'd)

Remarks

(1) On land designated "Residential (Group B)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 5 and a maximum building height of 30 storeys including carports, or the plot ratio and the height of the existing building, whichever is the greater.

(2) On land designated sub-areas of the "Residential (Group B)" zone, no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum gross floor area (GFA) and a maximum building height specified for each sub-area as set out below:

Sub-area	Restriction
R(B)1	Maximum GFA of 120,774m^2 and a maximum building height of 30 storeys including carports
R(B)2	Maximum GFA of 9,775m^2 and a maximum building height of 20 storeys including carports
R(B)3	Maximum GFA of 13,150.75m^2 and a maximum building height of 20 storeys including carports
R(B)4	Maximum plot ratio of 5 and a maximum building height of 213m above Principal Datum

(3) In determining the maximum plot ratio/GFA for the purposes of paragraphs (1) and (2) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room~~,~~ ***and*** caretaker's office***, or***~~and~~ caretaker's quarters~~, or~~ ***and*** recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(4) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, GFA and building height restrictions stated in paragraphs (1) and (2) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

RESIDENTIAL (GROUP C)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat Government Use (Police Reporting Centre, Post Office only) House Utility Installation for Private Project	Ambulance Depot Eating Place Educational Institution Government Refuse Collection Point Government Use (not elsewhere specified) Hospital Hotel Institutional Use (not elsewhere specified) Library Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Petrol Filling Station Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution Residential Institution School Shop and Services Social Welfare Facility Training Centre

Planning Intention

This zone is intended primarily for low-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Town Planning Board.

(Please see next page)

RESIDENTIAL (GROUP C) (Cont'd)

Remarks

(1) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio as specified for each class of site as set out below or the plot ratio of the existing building, whichever is the greater, and a maximum building height of 20 storeys including carports.

Class of Site	Restriction
Class A site	Maximum plot ratio of 3.3
Class B site	Maximum plot ratio of 3.75

(The definition of Class A and Class B sites shall be in accordance with the Buildings Ordinance.)

(2) In determining the maximum plot ratio for the purposes of paragraph (1) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room~~,~~ ***and*** caretaker's office***, or*** ~~and~~ caretaker's quarters~~, or~~ ***and*** recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(3) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and building height restrictions stated in paragraph (1) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

RESIDENTIAL (GROUP E)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Schedule I: for open-air development or for building other than industrial or industrial-office building[@]	
Ambulance Depot Government Use (not elsewhere specified) Public Transport Terminus or Station (excluding open-air terminus or station) Utility Installation for Private Project	Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Flat Government Refuse Collection Point Hospital Hotel House Institutional Use (not elsewhere specified) Library Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Market Office Petrol Filling Station Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station (not elsewhere specified) Public Utility Installation Public Vehicle Park (excluding container vehicle) Religious Institution Residential Institution School Shop and Services Social Welfare Facility Training Centre

(Please see next page)

RESIDENTIAL (GROUP E) (Cont'd)

Schedule I: for open-air development or for building other than industrial or industrial-office building[@] (Cont'd)

In addition, the following uses are always permitted (a) on the lowest three floors of a building, taken to include basements; or (b) in the purpose-designed non-residential portion of an existing building, both excluding floors containing wholly or mainly car parking, loading/unloading bays and/or plant room:	
Eating Place Educational Institution Institutional Use (not elsewhere specified) Library Off-course Betting Centre Office Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Recyclable Collection Centre School Shop and Services Social Welfare Facility Training Centre	

(Please see next page)

RESIDENTIAL (GROUP E) (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

Schedule II: for existing industrial or industrial-office building[@]

Ambulance Depot
Art Studio (excluding those involving direct provision of services or goods)
Cargo Handling and Forwarding Facility (not elsewhere specified)
Eating Place (Canteen only)
Government Refuse Collection Point
Government Use (not elsewhere specified)
Information Technology and Telecommunications Industries
Non-polluting Industrial Use (excluding industrial undertakings involving the use/storage of Dangerous Goods[△])
Office (Audio-visual Recording Studio, Design and Media Production, Office Related to Industrial Use only)
Public Convenience
Public Transport Terminus or Station
Public Utility Installation
Public Vehicle Park (excluding container vehicle)
Radar, Telecommunications Electronic Microwave Repeater, Television and/or Radio Transmitter Installation
Recyclable Collection Centre
Research, Design and Development Centre
Shop and Services (Motor-vehicle Showroom on ground floor, Service Trades only)
Utility Installation for Private Project
Warehouse (excluding Dangerous Goods[△] Godown)
Cargo Handling and Forwarding Facility (Container Freight Station, free-standing purpose-designed Logistics Centre only)
Industrial Use (not elsewhere specified)
Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level Other than Entrances
Off-course Betting Centre
Office (not elsewhere specified)
Petrol Filling Station
Place of Recreation, Sports or Culture ***(not elsewhere specified)***
Private Club
Shop and Services (not elsewhere specified) (ground floor only except Ancillary Showroom[#] which may be permitted on any floor)
Vehicle Repair Workshop
Wholesale Trade

(Please see next page)

RESIDENTIAL (GROUP E) (Cont'd)

Schedule II: for existing industrial or industrial-office building[@] (Cont'd)

In addition, the following uses are always permitted in the purpose-designed non-industrial portion on the lower floors (except basements and floors containing wholly or mainly car parking, loading/unloading bays and/or plant room) of an existing building, provided that the uses are separated from the industrial uses located above by a buffer floor or floors and no industrial uses are located within the non-industrial portion:	In addition, the following use may be permitted with or without conditions on application to the Town Planning Board in the purpose-designed non-industrial portion on the lower floors (except basements and floors containing wholly or mainly car parking, loading/unloading bays and/or plant room) of an existing building, provided that the use is separated from the industrial uses located above by a buffer floor or floors and no industrial uses are located within the non-industrial portion:
Commercial Bathhouse/Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Institutional Use (not elsewhere specified) Library Off-course Betting Centre Office Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Religious Institution School (excluding kindergarten) Shop and Services Training Centre	Social Welfare Facility (excluding those involving residential care)

[@] An industrial or industrial-office building means a building which is constructed for or intended to be used by industrial or industrial-office purpose respectively as approved by the Building Authority.

[△] Dangerous Goods refer to substances classified as Dangerous Goods and requiring a licence for their use/storage under the Dangerous Goods Ordinance (Cap. 295).

[#] Ancillary Showroom requiring planning permission refers to showroom use of greater than 20% of the total usable floor area of an industrial firm in the same premises or building.

Planning Intention

This zone is intended primarily for phasing out of existing industrial uses through redevelopment (or conversion) for residential use on application to the Town Planning Board. Whilst existing industrial uses will be tolerated, new industrial developments are not permitted in order to avoid perpetuation of industrial/residential interface problem.

(Please see next page)

RESIDENTIAL (GROUP E) (Cont'd)

Remarks

(1) On land designated "Residential (Group E)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building heights, in terms of metres above Principal Datum, as stipulated on the Plan, or height of the existing building, whichever is ***the*** greater.

(2) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restrictions in paragraph (1) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

GOVERNMENT, INSTITUTION OR COMMUNITY

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot	Animal Boarding Establishment
Animal Quarantine Centre (in Government building only)	Animal Quarantine Centre (not elsewhere specified)
Broadcasting, Television and/or Film Studio	Correctional Institution
Cable Car Route and Terminal Building	Driving School
Eating Place (Canteen, Cooked Food Centre only)	Eating Place (not elsewhere specified)
Educational Institution	Flat
Exhibition or Convention Hall	Funeral Facility
Field Study/Education/Visitor Centre	Holiday Camp
Government Refuse Collection Point	Hotel
Government Use (not elsewhere specified)	House
Hospital	Marine Fuelling Station
Institutional Use (not elsewhere specified)	Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances
Library	
Market	
Pier	Off-course Betting Centre
Place of Recreation, Sports or Culture	Office
Public Clinic	Petrol Filling Station
Public Convenience	Place of Entertainment
Public Transport Terminus or Station	Private Club
Public Utility Installation	Radar, Telecommunications Electronic Microwave Repeater, Television and/or Radio Transmitter Installation
Public Vehicle Park (excluding container vehicle)	
Recyclable Collection Centre	
Religious Institution	Refuse Disposal Installation (Refuse Transfer Station only)
Research, Design and Development Centre	
School	Residential Institution
Service Reservoir	Sewage Treatment/Screening Plant
Social Welfare Facility	Shop and Services
Training Centre	Utility Installation for Private Project
Wholesale Trade	Zoo

Planning Intention

This zone is intended primarily for the provision of Government, institution or community facilities serving the needs of the local residents in the Area and, where appropriate, residents in the adjoining districts. It is also intended to provide land for uses directly related to or in support of the work of the Government, organizations providing social services to meet community needs, and other institutional establishments.

(Please see next page)

GOVERNMENT, INSTITUTION OR COMMUNITY (Cont'd)

Remarks

(1) On land designated "Government, Institution or Community", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building heights, in terms of number of storeys and/or metres above Principal Datum, as stipulated on the Plan, or height of the existing building, whichever is ***the*** greater.

(2) On land designated "Government, Institution or Community (1)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building heights, in terms of number of storeys and/or metres above Principal Datum, as stipulated on the Plan.

(3) In determining the relevant maximum number of storey(s) for the purposes of paragraphs (1) and (2) above, any basement floor(s) may be disregarded except the site at Wai Tsui Crescent to the east of Hong Kong Shue Yan University Residential and Amenities Complex.

(4) Based on individual merits of a development or redevelopment proposal, minor relaxation of the building height restrictions stated in paragraphs (1) and (2) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(5) Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restrictions as stipulated on the Plan may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

OPEN SPACE

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Aviary Field Study/Education/Visitor Centre Park and Garden Pavilion Pedestrian Area Picnic Area Playground/Playing Field Promenade Public Convenience Sitting Out Area Zoo	Cable Car Route and Terminal Building Eating Place Government Refuse Collection Point Government Use (not elsewhere specified) Holiday Camp Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Pier Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Religious Institution Service Reservoir Shop and Services Tent Camping Ground Utility Installation for Private Project

Planning Intention

This zone is intended primarily for the provision of outdoor open-air space for active and/or passive recreational uses serving the needs of local residents as well as the general public.

OTHER SPECIFIED USES

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Amenity Area" Only

Amenity Area	Government Use Public Utility Installation Utility Installation for Private Project

Planning Intention

This zone is intended for the provision of major roadside amenity areas and other landscape buffers.

For "Central – Wan Chai Bypass Administration Building" Only

Highways Administration Building	Government Use Public Utility Installation

Planning Intention

This zone is intended primarily to reserve land for the development of an administration building for the Central – Wan Chai Bypass.

Remarks

(1) The exterior design of any new development or redevelopment, or any change to the exterior design of an existing structure/building, including that for a use specified in Columns 1 and 2 above, requires permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

(2) No new development, or addition, alteration and/or modification to or redevelopment of an existing building (including structure(s)) shall result in a total development and/or redevelopment in excess of the maximum building height, in terms of metres above Principal Datum, as stipulated on the Plan.

(3) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restriction stated in paragraph (2) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

For "Landscaped Deck over Central – Wan Chai Bypass Tunnel Portal" Only

Landscaped Deck	Government Use Public Utility Installation

Planning Intention

This zone is intended primarily to reserve land for the development of a landscaped deck over the Central – Wan Chai Bypass tunnel portal.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Central – Wan Chai Bypass Ventilation Building" Only

Highways Ventilation Building	Government Use Public Utility Installation

Planning Intention

This zone is intended primarily to reserve land for the development of a ventilation building for the Central – Wan Chai Bypass.

Remarks

(1) The exterior design of any new development or redevelopment, or any change to the exterior design of an existing structure/building, including that for a use specified in Columns 1 and 2 above, requires permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

(2) No new development, or addition, alteration and/or modification to or redevelopment of an existing building (including structure(s)) shall result in a total development and/or redevelopment in excess of the maximum building height, in terms of metres above Principal Datum, as stipulated on the Plan.

(3) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restriction stated in paragraph (2) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

For "Landscaped Elevated Walkway" Only

Landscaped Elevated Walkway Government Use	Public Utility Installation

Planning Intention

This zone is intended for the provision of a landscaped elevated walkway to connect the Victoria Park with the waterfront.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Pier" Only

Pier Government Use	Eating Place Exhibition or Convention Hall Flat Hotel Marine Fuelling Station Office Shop and Services (not elsewhere specified)

Planning Intention

This zone is primarily to reserve land intended for Government or public piers providing marine services in the harbour areas.

Remarks

(1) On land designated "Other Specified Uses" annotated "Pier", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height exceeding the soffit level of the Island Eastern Corridor and in terms of number of storeys, as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(2) Kiosks not greater than $10m^2$ each in area and not more than 10 in number for uses as shop and services are considered as ancillary to "Pier" use.

For "Funeral Parlour" Only

Funeral Parlour	Government Use Utility Installation not Ancillary to the Specified Use

Planning Intention

This zone is intended primarily for the provision of funeral parlour serving the needs of the general public.

Remarks

(1) On land designated "Other Specified Uses" annotated "Funeral Parlour", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height, in terms of number of storeys and metres above Principal Datum, as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(2) In determining the relevant maximum number of storey(s) for the purposes of paragraph (1) above, any basement floor(s) may be disregarded.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Sewage Treatment Plant" Only

Sewage Treatment/Screening Plant	Government Use (not elsewhere specified)
Pumping Station	Utility Installation not Ancillary to the Specified Use

Planning Intention

This zone is intended primarily for the provision of sewage treatment/screening plant and pumping station serving the needs of the general public.

Remarks

(1) On land designated "Other Specified Uses" annotated "Sewage Treatment Plant", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height, in terms of number of storeys, as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(2) In determining the relevant maximum number of storey(s) for the purposes of paragraph (1) above, any basement floor(s) may be disregarded.

GREEN BELT

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Agricultural Use Barbecue Spot Government Use (Police Reporting Centre only) Nature Reserve Nature Trail On-Farm Domestic Structure Picnic Area Public Convenience Tent Camping Ground Wild Animals Protection Area	Animal Boarding Establishment Broadcasting, Television and/or Film Studio Cable Car Route and Terminal Building Field Study/Education/Visitor Centre Flat Government Refuse Collection Point Government Use (not elsewhere specified) Holiday Camp House Marine Fuelling Station Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Petrol Filling Station Place of Recreation, Sports or Culture Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Radar, Telecommunications Electronic Microwave Repeater, Television and/or Radio Transmitter Installation Religious Institution Residential Institution School Service Reservoir Social Welfare Facility Utility Installation for Private Project Zoo

Planning Intention

The planning intention of this zone is primarily for the conservation of the existing natural environment amid the built-up areas/at the urban fringe, to safeguard it from encroachment by urban type development, and to provide additional outlets for passive recreational activities. There is a general presumption against development within this zone.

HONG KONG PLANNING AREA NO. 8

~~APPROVED~~ ***DRAFT*** NORTH POINT OUTLINE ZONING PLAN NO. S/H8/24***A***

EXPLANATORY STATEMENT

HONG KONG PLANNING AREA NO. 8

~~APPROVED~~ ***DRAFT*** NORTH POINT OUTLINE ZONING PLAN NO. S/H8/24***A***

EXPLANATORY STATEMENT

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HONG KONG PLANNING AREA NO. 8

~~APPROVED~~ ***DRAFT*** NORTH POINT OUTLINE ZONING PLAN NO. S/H8/24***A***

(Being a~~n Approved~~ ***Draft*** Plan for the Purposes of the Town Planning Ordinance)

EXPLANATORY STATEMENT

Note : For the purposes of the Town Planning Ordinance, this statement shall not be deemed to constitute a part of the Plan.

1. INTRODUCTION

This explanatory statement is intended to assist an understanding of the ~~approved~~ ***draft*** North Point Outline Zoning Plan (OZP) No. S/H8/24***A***. It reflects the planning intention and objectives of the Town Planning Board (the Board) for the various land use zonings of the Plan.

2. AUTHORITY FOR THE PLAN AND PROCEDURES

2.1 On 29 June 1956, the North Point Outline Development Plan No. LH8/15 was approved by the then Governor in Council. On 6 July 1956, the approved plan was exhibited under section 8 of the then Town Planning Ordinance (the Ordinance). Since then, the plan had been amended many times to reflect the changing circumstances.

2.2 On 19 April 1988, the then Governor in Council, under section 9(1)(a) of the Ordinance, approved the draft North Point OZP, which was subsequently renumbered as S/H8/4. On 24 October 1989, the then Governor in Council referred the approved OZP No. S/H8/4 to the Board for amendment under section 12(1)(b)(ii) of the Ordinance. Since then, the OZP had been amended five times and exhibited for public inspection under section 5 or 7 of the Ordinance to reflect the changing circumstances.

2.3 On 23 May 2000, the Chief Executive in Council (CE in C), under section 9(1)(a) of the Ordinance, approved the draft North Point OZP, which was subsequently renumbered as S/H8/10. On 27 June 2000, the CE in C referred the approved OZP No. S/H8/10 to the Board for amendment under section 12(1)(b)(ii) of the Ordinance. Since then, the OZP had been amended six times and exhibited for public inspection under section 5 or 7 of the Ordinance to reflect the changing circumstances.

2.4 On 1 April 2003, the CE in C, under section 9(1)(a) of the Ordinance, approved the draft North Point OZP, which was subsequently renumbered as S/H8/17. On 9 December 2003, the CE in C referred the approved North Point OZP No. S/H8/17 to the Board for amendment under section 12(1)(b)(ii) of the Ordinance. Since then, the OZP had been amended once to incorporate amendments to the

Notes of the OZP in accordance with the revised Master Schedule of Notes to Statutory Plans endorsed by the Board.

2.5 On 1 February 2005, the CE in C, under section 9(1)(a) of the Ordinance, approved the draft North Point OZP, which was subsequently renumbered as S/H8/19. On 19 December 2006, the CE in C referred the approved North Point OZP No. S/H8/19 to the Board for amendment under the section 12(1)(b)(ii) of the Ordinance.

2.6 On 13 April 2007, under the power delegated by the Chief Executive, the then Secretary for Housing, Planning and Lands directed the Board, under section 3(1)(a) of the Ordinance, to extend the Planning Scheme Area of the North Point OZP to incorporate the reclamation for the construction of the Central – Wan Chai Bypass (CWB). Since then, the OZP had been amended twice and exhibited for public inspection under sections 5 or 7 of the Ordinance to incorporate amendments to stipulate building height restrictions for various zones and reflect the CWB and associated road works and facilities.

2.7 On 19 May 2009, the CE in C, under section 9(1)(a) of the Ordinance, approved the draft North Point OZP, which was subsequently renumbered as S/H8/22. ~~On 22 May 2009, the approved North Point OZP No. S/H8/22 was exhibited for public inspection under section 9(5) of the Ordinance.~~ ***On 2 February 2010, the CE in C referred the approved North Point OZP No. S/H8/22 to the Board for amendments under section 12(1)(b)(ii) of the Ordinance. Since then, the OZP had been amended once to reflect the changing circumstances.***

~~2.8 On 2 February 2010, the CE in C referred the approved North Point OZP No. S/H8/22 to the Board for amendments under section 12(1)(b)(ii) of the Ordinance. The reference back of the OZP was notified in the Gazette on 12 March 2010 under section 12(2) of the Ordinance.~~

~~2.9 On 19 March 2010, the draft North Point OZP No. S/H8/23 incorporating amendments mainly to rezone the major part of the ex-North Point Estate site to "Comprehensive Development Area (3)" ("CDA(3)") and amend the maximum building height for a "Government, Institution or Community" ("G/IC") site at Mansion Street was exhibited for public inspection under section 5 of the Ordinance. During the two-month public exhibition period, a total of six representations were received. On 28 May 2010, the representations were published for three weeks for public comments. A total of two comments were received.~~

2.~~10~~***8*** ~~On 3 September 2010, the Board gave consideration to the representations and comments and decided not to uphold the representations.~~ On 30 November 2010, the CE in C, under section 9(1)(a) of the Ordinance, approved the draft North Point OZP, which was subsequently renumbered as S/H8/24. On 10 December 2010, the approved North Point OZP No. S/H8/24 ~~(the Plan)~~ was exhibited for public inspection under section 9(5) of the Ordinance.

2.9 On 30 October 2012, the CE in C referred the approved North Point OZP No. S/H8/24 to the Board for amendment under section 12(1)(b)(ii) of the

Ordinance. The reference back of the OZP was notified in the Gazette on 9 November 2012 under section 12(2) of the Ordinance.

2.10 On XX XX 2016, the draft North Point Outline Zoning Plan No. S/H8/25 (the Plan) incorporating amendments mainly to rezone the Tin Chiu Street Playground from "Government, Institution or Community" ("G/IC") to "Residential (Group A)" ("R(A)") and to incorporate 'Art Studio (excluding those involving direct provision of services or goods)' as Column 1 use in Schedule II of the "Residential (Group E)" ("R(E)") zone, was exhibited for public inspection under section 5 of the Ordinance.

3. OBJECT OF THE PLAN

3.1 The object of the Plan is to indicate the broad land use zonings and major transport networks so that development and redevelopment within the Area can be put under statutory planning control.

3.2 The Plan is to illustrate only the broad principles of development within the Area. As it is a small-scale plan, the road and railway alignments and boundaries between the land use zones may be subject to minor adjustments as detailed planning and development proceed.

3.3 Since the Plan is to show broad land use zonings, there would be situations in which small strips of land not intended for building development purposes and carry no development right under the lease, such as the areas restricted for garden, slope maintenance and access road purposes, are included in the residential zones. The general principle is that such areas should not be taken into account in plot ratio and site coverage calculation. Development within residential zones should be restricted to building lots carrying development right in order to maintain the character and amenity of the North Point area and not to overload the road network in this area.

4. NOTES OF THE PLAN

4.1 Attached to the Plan is a set of Notes which shows the types of uses or developments which are always permitted within the Planning Scheme Area and in particular zones and which may be permitted by the Board, with or without conditions, on application. The provision for application for planning permission under section 16 of the Ordinance allows greater flexibility in land use planning and control of development to meet changing needs.

4.2 For the guidance of the general public, a set of definitions that explains some of the terms used in the Notes may be obtained from the Technical Services Division of the Planning Department and can be downloaded from the Board's website at http://www.info.gov.hk/tpb.

5. THE PLANNING SCHEME AREA

5.1 The Planning Scheme Area (the Area) is shown by a heavy broken line on the Plan. The Area covers about 277 hectares ***(ha)*** of land in the northern part of Hong Kong Island. It includes the ~~planned~~ reclamation for the CWB and existing built-up area on the northern shore and the well-wooded slope rising to the Sir Cecil's Ride in the south. To the west, the Area is bounded by Hing Fat Street/Gloucester Road/Wun Sha Street and to the east, by Mansion Street/Java Road/Hoi Yu Street.

5.2 There is a mixture of commercial and residential uses in the Area. Most of the commercial/residential buildings and public housing estates are found on both sides of King's Road and Java Road. Towards the mid-levels to the south of Tin Hau Temple Road, there is a mix of high-rise residential and educational developments. Government, institution or community (GIC) facilities are situated in different locations to meet local and district needs.

5.3 The Area covers land on the waterfront of Victoria Harbour. For any development proposal affecting such land, due regard shall be given to the Vision Statement for Victoria Harbour published by the Board and the requirements under the Protection of the Harbour Ordinance (Cap. 531).

5.4 At the northwestern part of the Area, there ~~will be~~ ***is*** reclamation with an area of about 3.3 ha ~~for the construction of the CWB. The proposed reclamation is based on the WDII Review, which is to investigate the minimum practicable reclamation option for providing the~~ ***intended to provide*** essential transport infrastructure, namely the CWB and associated road connections and for re-provisio***n***ing the affected facilities. Other than meeting infrastructure needs, harbourfront enhancement will be the main use on the land formed for the construction of the CWB.

6. POPULATION

According to the 20~~06~~***11*** Population ~~By-c~~***C***ensus, the population of the Area was about ~~161,276~~***159,500***. It is estimated that the planned population of the Area would be about ~~177,928~~***181,300***.

7. BUILDING HEIGHT RESTRICTIONS ~~IN NORTH POINT PLANNING SCHEME AREA~~

7.1 In order to provide better planning control on the development intensity and building height upon development/redevelopment and to meet public aspirations for greater certainty and transparency in the statutory planning system, a review of the North Point OZP has been taken with a view to incorporating appropriate development restrictions including building height restrictions in the Notes for various development zones to guide future development/redevelopment. In the absence of building height control, tall buildings may proliferate at random locations and the scale may be out-of-context in the locality, resulting in negative

impacts on the visual quality of the Area. In order to prevent excessively tall or out-of-context buildings, to preserve some key urban design attributes of the area (e.g. stepped building height from the waterfront) and to provide better control on building height profile of the Area, ~~a review has been undertaken to ascertain the appropriate~~ building height restrictions ***are imposed*** for the "Commercial" ("C"), "Commercial/Residential" ("C/R"), ~~"Residential (Group A)" ("R(A)")~~, ~~"Residential (Group E)" ("R(E)")~~, "G/IC" and "Other Specified Uses" ("OU") zones on the Plan.

7.2 The building height restrictions are to preserve the views to the ridgelines from public viewpoints and to maintain a stepped building height concept recommended in the Urban Design Guidelines Study with lower buildings along the waterfront, taking into account the local area context, the findings of an Expert Evaluation on Air Ventilation Assessment (AVA EE) of wind circulation in the area, and the need to maintain visually compatible building masses in the wider setting. There are four height bands in general – 100 metres above Principal Datum (mPD), 110mPD, 120mPD and 130mPD in the Area for the "C", "C/R", "R(A)" and "R(E)" zones - increasing progressively from the waterfront to the inland and foothill areas. The proposed building height bands help preserve views to the ridgelines, achieve a stepped height profile for visual permeability and wind penetration and circulation, reduce the solidness of the Area and maintain a more intertwined relationship with the Victoria Harbour edge.

7.3 Specific building height restrictions for the "G/IC" and "OU" zones in terms of mPD and/or number of storeys, which mainly reflects the existing building heights of developments, have been incorporated into the Plan to provide visual and spatial relief to the high-density environment of the Area.

7.4 An AVA EE has been undertaken to assess the likely impact of the proposed building heights of development sites within the Area on the pedestrian wind environment. The building height bands shown on the Plan have taken the findings of the AVA EE into consideration. In order to provide detailed site specific assessments for proposing measures to improve the ventilation condition, a consultancy study on Wind Tunnel Testing of AVA for the Area (~~the~~ AVA WT) has also been undertaken to assess the air ventilation aspect quantitatively. As pointed out in the WT Report, the annual prevailing wind in the Area is mainly from the east, north and north-east directions. In general, the wind performance and ventilation condition is better in the eastern and northern portions of the Area where they are more receptive to the prevailing wind. The air ventilation is even better in the uphill area along Pak Fuk Road and Tin Hau Temple Road where developments are spaced out and cascaded uphill when compared with ***the*** more densely developed area along Java Road, Electric Road and King's Road on flat land.

7.5 Both the AVA EE and WT have concluded that the building height restrictions on the Plan would ensure no major problems on the overall air ventilation. The ventilation environment is generally maintained, except a few areas with planned or committed developments which would cause some reduction in the ventilation condition. This is mainly due to the development layout of buildings upon

redevelopment. In order to minimize negative air ventilation impact, future developments are encouraged to adopt suitable design measures to minimize any possible adverse impact. These include lower podium height, greater permeability of podium, wider gap between buildings, non-building area to create air path for better ventilation and minimizing the blocking of air flow through positioning of building towers and podiums to align with the prevailing wind directions, as appropriate.

7.6 A minor relaxation clause in respect of the building height restrictions is incorporated into the Notes of the Plan in order to provide incentive for developments/redevelopments with design merits/planning gains. Each application of minor relaxation of building height restrictions will be considered on its own merits and the relevant criteria for consideration of such relaxation are as follows:

(a) amalgamating smaller sites for achieving better urban design and local area improvements;

(b) accommodating the bonus plot ratio granted under the Buildings Ordinance in relation to surrender/dedication of land/area for use as a public passage/street widening;

(c) providing better streetscape/good quality street level public urban space;

(d) providing separation between buildings to enhance air and visual permeability;

(e) accommodating building design to address specific site constraints in achieving the permissible plot ratio under the Plan; and

(f) other factors, such as need for tree preservation, innovative building design and planning merits that would bring about improvements to townscape and amenity of the locality and would not cause adverse landscape and visual impacts.

7.7 However, for existing buildings with building heights already exceeding the building height restrictions in terms of mPD and/or number of storeys as shown on the Notes of the Plan and/or stipulated on the Plan, there is a general presumption against such application for minor relaxation unless under exceptional circumstances.

8. LAND USE ZONINGS

8.1 Commercial ("C") : Total Area 4.56 ha

8.1.1 This zone is intended primarily for commercial developments, which may include uses such as office, shop, services, place of entertainment, eating place and hotel, functioning as regional or district

commercial/shopping centre(s). These areas are usually major employment nodes.

8.1.2 This zone covers two major shopping centres at Cloud View Road and Braemar Hill Road to provide retail facilities for residents in the area south of the Tin Hau Temple Road. The commercial sites on Whitfield Road, Electric Road and King's Road to the east of Kam Hong Street are intended for retail shop and office purposes. City Garden Hotel at City Garden Road is also included in this zone.

8.1.3 Although some of the "C" sites (on King's Road/Java Road near Healthy Street East) and the "C(1)" site at Watson Road are currently occupied by industrial buildings, they are planned for commercial/office developments. The intention to include these sites in this zoning is to encourage their redevelopment to commercial/office uses.

8.1.4 Developments and redevelopments in the "C" sites and the "C(1)" sites are subject to a maximum building height in terms of mPD and/or number of storeys as stipulated on the Plan.

8.1.5 At the "C(1)" site on Watson Road, the development or redevelopment is subject to a maximum gross floor area (GFA) of 109,120m^2 to reflect the maximum GFA permitted under the existing leases and Building (Planning) Regulations.

8.1.6 In order to provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the GFA and building height restrictions as mentioned above may be considered by the Board through the planning permission system. Each proposal will be considered on its individual planning merits.

8.2 Comprehensive Development Area ("CDA") : Total Area 1.19 ha

8.2.1 The "CDA" zone covers a site located at Oil Street which was previously occupied by the Government Supplies Department as headquarters and storage depot. This zone is intended for comprehensive redevelopment of the site for a mix of residential, office, hotel, retail uses with the provision of open space and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of various environmental, traffic, infrastructure and other constraints.

8.2.2 Since the site is subject to development constraints, including the severe noise impact and the adverse air quality from the adjacent ***Island Eastern Corridor (***IEC***)*** and the proposed CWB, the capacities of the existing infrastructure provisions such as the local road network and the drainage and sewerage systems, the development of the site requires comprehensive planning to take into account such factors. The designation of a "CDA" zoning for this site can achieve such purpose.

8.2.3 A Master Layout Plan (MLP) submission for the Board's approval is required for developments in the "CDA" site. In the MLP submission, the development intensity, building heights and open space provision of the future development should be in line with those set out in the planning brief prepared for the "CDA" site.

8.3 Comprehensive Development Area ("CDA(1)") : Total Area 0.69 ha

8.3.1 The "CDA(1)" zone covers two sites as demarcated by a chain-dotted line on the Plan. The one at the junction of Oil Street and King Wah Road is intended to facilitate a ~~proposed~~ hotel development ~~with cultural, commercial, leisure and tourism related uses~~ on the waterfront. The one adjacent to Harbour Heights at ~~the junction of~~ ***14-30*** King Wah Road ~~and Fook Yum Road~~ is intended to encourage comprehensive development with possible incorporation of residential element.

8.3.2 To maintain a buffer between the IEC and the developments within the "CDA(1)" zone, the southern and northern parts of the zone, as demarcated by a thin pecked line on the Plan, are subject to different building height and/or plot ratio restrictions. Building(s) on the southern part is subject to a maximum building height of 165mPD and a maximum plot ratio of 15. For the site at 14-30 King Wah Road, the applicant should also submit a visual impact assessment, in addition to the assessments as required under the Notes of the "CDA(1)" zone, to demonstrate that the development intensity and building height of any proposed development is acceptable to the Board.

8.3.3 To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the building height restriction for the southern part of the site may be considered by the Board through the planning permission system. Each proposal will be considered on its individual merits. Building(s) on the northern part is subject to a maximum building height of not exceeding the soffit level of the IEC. Since the northern part is close to the IEC and CWB, non air-sensitive uses should be placed or appropriate air mitigation measures should be provided. For any scheme involving development underneath ~~and~~***or*** abutting the IEC, due regard shall be given to the engineering and environmental constraints imposed by the IEC. ~~Future~~***The*** widening of this section of the IEC shall also be taken into account. The two sites within this zone demarcated by the chain-dotted line on the Plan are currently held under different ownership. In submitting a MLP to the Board for consideration, the MLP could cover the whole zone or either one of these two sites.

8.3.4 Planning applications to the Board in the form of MLP submissions are required for any developments within the "CDA(1)" zone. In the MLP submission for the "CDA(1)" site at ~~the junction of~~ ***14-30*** King Wah Road ~~and Fook Yam Road~~, the development intensity, building height and non-building area restrictions of the future development should be in line with those set out in the planning brief prepared for the site.

8.4 Comprehensive Development Area ("CDA(2)") : Total Area 1.53 ha

8.4.1 The "CDA(2)" zone covers the residential sites served by Kai Yuen Street. A MLP submission for the Board's approval is required for developments within the "CDA(2)" zone. Since the area is subject to traffic constraints primarily due to the existing substandard conditions of the local street, development or redevelopment in the area could be allowed only if the required traffic/road improvement works, including road widening and provision of pedestrian facilities, are in place to address the possible increase in vehicular and pedestrian traffic arising from the redevelopment. In order to improve the traffic conditions and to ensure pedestrian safety for the area, comprehensive development of the sites is therefore encouraged to cater for realignment of the road and provision of pedestrian facilities to meet current standards. Subject to the implementation of relevant traffic and road improvement measures, no development/redevelopment within this zone shall result in a total development/redevelopment in excess of a maximum plot ratio of 8. Developments and redevelopments within this zone are subject to two building height restrictions, with a maximum building height of 120mPD and 130mPD for the areas located respectively to the east and west of Kai Yuen Street.

8.4.2 Within the "CDA(2)" zone, there are at least three major development sites or building platforms. These sites might be held under different ownership. In order not to jeopardize redevelopment of private lots readily acquired for amalgamation, future development within the "CDA(2)" zone may be implemented by phases. However, the development potential of different phases of the redevelopment would be taken into account on a pro-rata basis, such that redevelopment implemented at an earlier phase will not take up the development potential of the later phases.

8.4.3 In submitting a MLP to the Board for consideration, an air ventilation assessment will be required along with other relevant technical assessments to address any possible impacts for development proposals with a total ~~gross floor area~~***GFA*** exceeding 100,000m^2. In addition, the applicant(s) will be required to address the traffic issues and to demonstrate that the road conditions of Kai Yuen Street could be improved in order to support for a development intensity up to a maximum plot ratio of 8 upon redevelopment. Unless otherwise approved by the Government, the upper section of the existing Kai Yuen Street should be improved to the TPDM standards i.e. the provision of a 7.3m carriageway and 2.75m footpaths on both sides of the road. Notwithstanding that the alignment for road improvement / widening for the upper section of Kai Yuen Street is shown on the Plan, it is only tentative and subject to detailed design including its alignment, gradient, width and curvature. Subject to Government's approval, the applicant(s) may also propose in the MLP an alternative road alignment, demonstrating that the traffic concerns arising from the redevelopment proposal are properly addressed. Moreover, the Kai Yuen Street upon

improvement will continue to serve as a public road in the area as well as providing emergency access to the adjacent development of Bedford Gardens.

8.4.4 To facilitate the upgrading of Kai Yuen Street and to provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the plot ratio and building height restrictions may be considered by the Board through the planning permission system. Each proposal will be considered on its individual merits.

8.5 Comprehensive Development Area ("CDA(3)") : Total Area 2.92 ha

8.5.1 The "CDA(3)" zone covers the major part of the ex-North Point Estate site. This zone is intended for comprehensive redevelopment of the site for residential and/or commercial uses with the provision of open space, GIC uses and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of various environmental, traffic, infrastructure and other constraints.

8.5.2 The site is subject to a maximum domestic GFA of 53,680m^2 and a maximum non-domestic GFA of 29,995m^2 of which a GFA of not less than 5,155m^2 shall be provided for GIC facilities, a maximum site coverage of 60% (excluding basement(s)), and a maximum building height of 80mPD. A public open space of not less than 12,680m^2 including a 20***m*** ~~metre~~ wide waterfront promenade shall be provided. Since the site is subject to development constraints, including the severe noise impact and the adverse air quality from the adjacent IEC, the capacities of the existing infrastructure provisions such as the local road network and the drainage and sewerage systems, the development of the site requires comprehensive planning to take into account such factors. The designation of a "CDA(3)" zoning for this site can achieve such purpose.

8.5.3 A MLP submission for the Board's approval is required for developments in the "CDA***(3)***" site. In the MLP submission, the future development should comply with the requirements set out in the planning brief prepared for the "CDA(3)" site.

8.6 Commercial/Residential ("C/R") : Total Area 19.25 ha

8.6.1 This zone is intended primarily for commercial and/or residential development. Commercial, residential and mixed commercial/residential uses are always permitted.

8.6.2 This zone comprises a mixture of shops, restaurants, banks, offices and residential developments. The majority of the built-up areas along King's Road, the southern parts of Electric Road and Java Road and the northern part of Fort Street have been zoned for this purpose to reflect the general character of the existing developments.

8.6.3 King's Road is heavily trafficked generating adverse traffic noise impacts on the developments along the road. Therefore, mitigation measures should be considered for new residential developments along King's Road to address the traffic noise impact and indirect mitigation measures, in the form of air-conditioning systems and insulation, should be considered as the last resort.

8.6.4 Three sites covering the comprehensive developments of Victoria Centre at Watson Road, Harbour Heights and ~~Manulife Tower~~ ***@Convoy*** at Fook Yum Road as well as Island Place and Island Place Tower at Tin Chiu Street are designated as "C/R(1)", "C/R(2)" and "C/R(3)" respectively. Maximum domestic and non-domestic GFA as well as requirements for GIC facilities and public open space in accordance with the existing developments are stipulated in the Notes. Upon redevelopment, the building in the "C/R(2)" site should be set back from Electric Road. In order to ensure the provision of breathing space for this congested area, the extent of set-back should not be less than that of the existing building. These three sites were originally zoned "Other Specified Uses" annotated "Comprehensive Redevelopment Area" ("OU(CRA)") with a restriction of maximum domestic plot ratio of 6 having regard to the traffic and infrastructure capacities/constraints and the existing and planned provisions of GIC facilities in the North Point area. The current ***GFA*** restrictions***/requirements stipulated in the Notes*** on these sites are to reflect the existing developments. It is the planning intention to restrict the existing residential buildings for residential use and existing commercial buildings or non-domestic part of the commercial/residential buildings for commercial uses.

8.6.5 Developments and redevelopments in the "C/R", "C/R(1)", "C/R(2)" and "C/R(3)" sites are subject to maximum building heights of 100mPD, 110mPD and 120mPD as stipulated on the Plan.

8.6.6 The AVA WT study identified that the wind performance in the area bounded by Electric Road, King's Road, North Point Road and Fuk Yuen Street as well as the area bounded by Electric Road, King's Road, Shell Street and Lau Sin Street is comparatively low. In order to improve the situation, future developments are strongly encouraged to adopt suitable design measures including lower podium height, greater permeability of podium, wider gap between buildings, and aligning building towers with the prevailing wind directions.

8.6.7 Specifically, a 10m wide strip of land with a maximum building height of 27mPD, after taking account of the site level, is demarcated in an east-west direction on the State Theatre site for better ventilation. Also, a 1.5m wide non-building area is imposed on an area designated as "C/R(4)" on the Plan fronting the southern side of Tsing Fung Street to improve air penetration, the streetscape and environmental conditions upon redevelopment. Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restriction on land designated "C/R(4)" may be considered

by the Board through the planning permission system. Each proposal will be considered on its individual merits.

8.6.8 To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the GFA/building height restrictions may be considered by the Board through the planning permission system. Each proposal will be considered on its individual merits.

8.7 Residential (Group A) ("R(A)") : Total Area ~~31.85~~ ***31.97*** ha

8.7.1 The "R(A)" zone is intended primarily for high-density residential development. Commercial uses are always permitted on the lowest three floors of a building or in the purpose-designed non-residential portion of an existing building***, except in the "R(A)4" zone***. This zone includes public housing estates, such as the Healthy Village Estate and Lai Tak Tsuen, as well as some private residential developments.

8.7.2 City Garden, Provident Centre and Tanner Garden are designated "R(A)1", "R(A)2" and "R(A)3" respectively. Developments within these sub-areas are restricted to ***the*** maximum domestic and non-domestic GFA as specified in the Notes. Requirements for public open space and/or GIC facilities are also stipulated in the Notes. These sites were originally zoned "OU(CRA)" with a restriction of maximum domestic plot ratio of 6. The current ***GFA*** restrictions/requirements stipulated under "R(A)1", "R(A)2" and "R(A)3" zones are to reflect the existing developments.

8.7.3 The "R(A)4" zone is intended primarily for high-density residential developments. As the zone is located at the end of Ming Yuen Western Street, which is a steep and narrow private street, uses that may cause traffic circulation problem are not permitted.

8.7.4 Developments and redevelopments in the "R(A)" sites are subject to a maximum building height of 100mPD, 110mPD, 120mPD and 130mPD as stipulated on the Plan. To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the GFA/building height restrictions may be considered by the Board through the planning permission system. Each application will be considered on its individual merits.

8.7.5 According to the AVA WT Study, a strip of land within the Model Housing Estate site is designated as a 10m wide non-building area to provide a east-west open corridor connecting the open space at Hoi Chak Street with Tsat Tsz Mui Road for better ventilation. Two strips of Government land of about 8m wide which are currently open corridors between the developments of Ruby Court, Elegance House and La Place de Victoria are also designated as non-building areas to maintain the existing north-south air flow.

8.7.6 The AVA WT Study has also identified that the wind performance in the area around Kam Ping Street, Ming Yuen Western Street, Fort Street and Kin Wah Street are affected by developments lying in a north-south direction blocking the prevailing easterly wind, especially those along Ming Yuen Western Street and Kam Ping Street. In order to improve the situation and to provide east-west air corridor, future developments are strongly encouraged to adopt suitable design measures including lower podium height, greater permeability of podium, wider gap between buildings, and aligning building towers with the prevailing wind directions. Specifically, a 8m wide strip of land with a maximum building height of 40mPD after taking account of the site level is demarcated in an east-west direction on The ~~ex-Hong Kong Housing Society public rental housing~~ ***Tanner Hill elderly housing*** site for better ventilation.

8.7.7 Besides, a 1.5m wide non-building area is imposed on area designated "R(A)5" fronting the southern side of Tsing Fung Street to improve air penetration, the streetscape and environmental conditions upon redevelopment.

8.7.8 ***An AVA EE (2016) has been carried out for the "R(A)" site at the junction of Java Road, Tin Chiu Street and Marble Road. It is found that design measures including corner splays design with setbacks from the site boundary and a ground floor empty bay would facilitate wind flow and alleviate the potential ventilation impact to the surrounding area. The requirement for these measures will be incorporated in the Planning Brief for implementation. Should the project proponent wish to make any changes to these measures, a quantitative AVA should be carried out to demonstrate that no unacceptable pedestrian level air ventilation impact in the vicinity would be resulted.***

8.7.9 Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restrictions on land as stipulated on the Plan ***and/or in the Notes*** may be considered by the Board through the planning permission system. Each proposal will be considered on its individual merits.

8.8 Residential (Group B) ("R(B)") : Total Area 15.11 ha

8.8.1 This zone is intended primarily for medium-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Board. This zone includes residential developments ~~at~~ around Tin Hau Temple Road, Braemar Hill Road, Cloud View Road and Tai Hang Road.

8.8.2 For sites zoned "R(B)", developments are restricted to a maximum plot ratio of 5 and a maximum building height of 30 storeys including carports, or the plot ratio and the building height of the existing building, whichever is the greater.

8.8.3 Four "R(B)" sites comprising Braemar Hill Mansions, Oxford Court, ~~7 Wai Tsui Crescent~~***Braemar Heights***, and ~~Lai Sang Court~~ ***Serenade*** are designated as "R(B)1", "R(B)2", "R(B)3", and "R(B)4" respectively. Development within each sub-area will be subject to specific maximum GFA or plot ratio and building height restrictions as stipulated under the Notes of the Plan.

8.8.4 The planning intention of the restriction on development intensity is to preserve the local character of the long-established medium-density residential development along Tin Hau Temple Road, Braemar Hill Road and Cloud View Road. It also helps prevent the local roads from being overloaded. The building height restriction is intended to preserve the existing coherent stepping building profile.

8.8.5 To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the PR***/GFA***/building height restrictions may be considered by the Board through the planning permission system. Each application will be considered on its individual merits.

8.9 Residential (Group C) ("R(C)") : Total Area 0.80 ha

8.9.1 This zoning is intended primarily for low-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Board. This zone covers the Comfort Terrace area where residential developments are restricted to a maximum plot ratio of 3.3 for Class A sites and 3.75 for Class B sites because of inadequate vehicular access. Buildings are also restricted to a maximum height of 20 storeys including carports to preserve the local character.

8.9.2 To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the PR/building height restrictions may be considered by the Board through the planning permission system. Each application will be considered on its individual merits.

8.10 Residential (Group E) ("R(E)") : Total Area 0.43 ha

8.10.1 This zone covers ~~five~~***four*** industrial buildings at King's Road and Tsat Tsz Mui Road. This zoning is intended primarily for phasing out of the existing industrial uses through redevelopment (or conversion) for residential use on application to the Board. Residential development may be permitted with or without conditions on application to the Board. The developers will be required to submit adequate information to demonstrate that the new residential development will be environmentally acceptable, and suitable mitigation measures, if required, will be implemented to address the potential industrial/residential (I/R) interface problems.

8.10.2 Under this zoning, existing industrial uses will be tolerated. Yet, new industrial development will not be permitted upon redevelopment in order to avoid the perpetuation or aggravation of the I/R interface problems with the new residential development during the redevelopment process. In existing industrial buildings, new developments involving offensive trades will not be permitted. Any modification of use from non-industrial to industrial uses within existing industrial buildings will also require the permission of the Board.

8.10.3 All of the existing industrial buildings in this zone are under multiple ownership. It is expected that the "R(E)" zones would contribute to phasing out these residual industrial lots by expediting their redevelopment for residential use.

8.10.4 Developments and redevelopments in the "R(E)" sites are subject to a maximum building height of 110mPD and 120mPD as stipulated on the Plan. To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the building height restrictions may be considered by the Board through the planning permission system. Each application will be considered on its individual merits.

8.11 Government, Institution or Community ("G/IC"): Total Area ~~27.61~~ ***27.49*** ha

8.11.1 This zone is intended primarily for the provision of various GIC facilities serving the needs of the local residents in the Area and, where appropriate, residents in the adjoining districts. It is also intended to provide land for uses directly related to or in support of the work of the Government, organizations providing social services to meet community needs, and other institutional establishments. This zone includes sites for Government facilities, bus terminus, clinic, markets, ferry concourse, community centres and schools. Uses such as temple, church, electricity substation and telephone exchange also fall within this zone.

8.11.2 Developments and redevelopments in the "G/IC" sites are subject to a maximum building height in terms of mPD and/or number of storeys as stipulated on the Plan. Building height restriction for most of the "G/IC" sites is stipulated in terms of number of storeys while office-type "G/IC" developments are controlled in terms of mPD. To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the building height restrictions may be considered by the Board through the planning permission system. Each application will be considered on its individual merits.

8.11.3 This zone covers the Hong Kong Shue Yan University site with four major developments. The building height restrictions of a maximum of 13 storeys and not exceeding 180mPD for the Lady Lily Shaw Hall and a maximum of 17 storeys and not exceeding 220mPD for the Library Complex are to reflect the existing height of the buildings. The proposed extension of Hong Kong Shue Yan University for the Research and

Hostel Complex is subject to a ~~maximum~~ building height restriction of 20 storeys and not exceeding 210mPD to ensure that the building height will be compatible with the surrounding developments.

8.11.4 The 31-storey Residential and Amenities Complex of the Hong Kong Shue Yan University is considered out-of-context and visually prominent with overwhelming and dwarfing effects on the surrounding developments which have a general building height of 20 storeys. It is zoned "G/IC(1)" with the intention to restrict the building height of the Complex to a maximum of 20 storeys and not exceeding 210mPD upon redevelopment to be in line with the surrounding buildings and to lessen the adverse visual impact on the ridgeline.

8.11.5 According to the AVA WT Study, the existing footpath between the Anne Black Health Centre and the North Point Market is recommended to be widened and designated as a 10m wide non-building area to improve the north-south air flow. A 10m wide strip of land lying in an east-west direction within the ex-Tanner Hill Police Married Quarters site is also designated as non-building area to maintain an open corridor connecting the open space at Pak Fuk Road to the Bedford Gardens area.

8.11.6 Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restrictions as stipulated on the Plan may be considered by the Board through the planning permission system. Each proposal will be considered on its individual merits.

8.12 Open Space ("O") : Total Area 34.36 ha

8.12.1 This zone is intended primarily for the provision of outdoor open-air space for both active and/or passive recreational uses serving the needs of local residents as well as the general public.

8.12.2 Victoria Park is the largest open space in the Area. It provides a wide range of active and passive recreational facilities for residents within and outside North Point. Choi Sai Woo Park, which is the second largest open space in North Point, is located in close proximity to the residential and educational developments in the North Point mid-level.

8.12.3 A major open space will be provided in the ~~planned~~ reclamation formed for the CWB project. ~~The a~~***A***ccess to the open space will be via Hing Fat Street, Watson Road***, Fook Yum Road*** and Oil Street. Other open space sites, including sitting-out areas and rest gardens, are also provided to meet the recreational needs of the local population and to serve as breathing space among high-rise buildings in the area. Local open spaces are also reserved within existing and new comprehensive developments although they do not fall within this zoning.

8.13 Other Specified Uses ("OU") : Total Area 3.55 ha

8.13.1 This zone covers land reserved for purposes as specified on the Plan including ferry piers, an existing funeral parlour, a sewage treatment plant, the planned landscaped deck over the CWB tunnel portal, ~~the planned~~ CWB ventilation building, ~~the planned~~ CWB administration building~~,~~ ***and*** the adjacent amenity area***s*** ~~providing access to the building and emergency access to the portal~~, and the planned landscaped elevated walkway extending from Victoria Park to Causeway Bay Typhoon Shelter.

8.13.2 Except for the "OU(Amenity Area)", "OU(Landscaped Deck over Central – Wan Chai Bypass Tunnel Portal)" ***and*** "OU(~~l~~***L***andscaped Elevated Walkway)" ***sites***, developments and redevelopments in the "OU" sites are subject to a maximum building height in terms of mPD and/or number of storeys as stipulated on the Plan ***and/or in the Notes***.

8.13.3 To provide flexibility for innovative design, minor relaxation of the building height restriction for the "OU(Central – Wan Chai Bypass Administration Building)" and "OU(Central – Wan Chai Bypass Ventilation Building)" zones may be considered by the Board through the planning permission system. Each proposal will be considered on its individual planning merits.

8.13.4 The "OU(Central – Wan Chai Bypass Administration Building)" and "OU(Central – Wan Chai Bypass Ventilation Building)" zones are located at the waterfront. In addition to the building height restrictions, the exterior design of any new development or redevelopment, or any change to the exterior design of an existing structure/building, including that for a use specified in Columns 1 and 2 of the Notes, requires permission from the Board under section 16 of the Ordinance.

8.14 Green Belt ("GB") : Total Area 87.88 ha

8.14.1 This zone covers areas in Braemar Hill, Lin Fa Kung Hill and areas south of Braemar Hill Mansion***s***. The planning intention of this zoning is primarily for conservation of the existing natural environment amid the built-up areas/at the urban fringe, to safeguard it from encroachment by urban type developments and to provide additional outlets for passive recreational uses.

8.14.2 These areas are generally well-wooded hill-slopes forming a green backdrop to North Point. Where appropriate, passive recreational facilities such as walking trails and sitting-out areas are provided. There is a general presumption against development within this zoning to promote conservation of the natural environment.

9. COMMUNICATIONS

9.1 Roads

9.1.1 King's Road and the IEC are the two major roads connecting North Point with the other parts of Hong Kong Island. Distributor road network for the northern coastal areas follows a grid pattern whilst that for the southern hilly areas follows the contour of the slopes.

9.1.2 The CWB is a dual three-lane road tunnel of approximately 3.7km in length between Central and North Point. The tunnel portal in North Point will be located near Oil Street and will be covered by a landscaped deck to enhance the visual amenity and provide noise mitigation. The CWB will be connected with the IEC and sections of the IEC will be realigned. The eastbound lanes immediately east of Hing Fat Street will be diverted to the north before merging with the eastbound lanes of the CWB. The westbound lanes of the IEC north of City Garden will be connected to the CWB and the existing section of IEC. In the northeastern part of Victoria Park, a westbound slip road will be built for connection to the submerged CWB.

9.2 Public Transport

9.2.1 The Area is served by various modes of public transport including Mass Transit Railway, buses, tram, public light buses, taxis and ferries.

9.2.2 Four Mass Transit Railway stations, namely Tin Hau, Fortress Hill, North Point and Quarry Bay in the vicinity provide easy access to the Area as well as to and from other districts. A significant portion of the Area is within reasonable walking distance from these stations. Passenger and vehicular ferry services are provided at the piers adjacent to the ex-North Point Estate site.

10. UTILITY SERVICES

10.1 The Area is well served with piped fresh water and salt water supply for potable and flushing purposes respectively.

10.2 The Area is served by two separate system drains and sewers. One is for the carriage and drainage of storm-water and the other for the collection of sewage from households and other premises. The Area is also adequately provided with other utilities such as electricity, gas and telephone services.

11. CULTURAL HERITAGE

There are currently ***two declared monuments, namely*** ~~four historical buildings in the Area, including the declared monument of~~ Tin Hau Temple at Tin Hau Temple Road ***and Lin Fa Temple at Tai Hang***, and ~~three~~ ***two*** ~~graded~~ historic~~al~~ buildings ~~known as~~***, namely***

the former ~~c~~***C***lubhouse of Royal Hong Kong Yacht Club ***(Grade 2)*** at Oil Street ***which has been converted to an arts promotion venue (known as Oi!)***, ~~Lin Fa Temple at Tai Hang~~ and the Hong Kong Red Swastika Society Building ***(Grade 2)*** at Dragon Road. Prior consultation with the Antiquities and Monuments Office of the Leisure and Cultural Services Department should be made if any development or rezoning proposals may affect these ***declared monuments, graded*** historic~~al~~ buildings and their immediate environs.

12. IMPLEMENTATION

12.1 Although existing uses non-conforming to the statutory zonings are tolerated, any material change of use and any other development/redevelopment must be always permitted in terms of the Plan or, if permission is required, in accordance with the permission granted by the Board. The Board has published a set of guidelines for the interpretation of existing use in the urban and new town areas. Any person who intends to claim an "existing use right" should refer to the guidelines and will need to provide sufficient evidence to support his claim. The enforcement of the zonings mainly rests with the Buildings Department, the Lands Department and the various licensing authorities.

12.2 The Plan provides a broad land use framework within which more detailed non-statutory plans for the Area are prepared by the Planning Department. These detailed plans are used as the basis for public works planning and site reservations within Government departments. Disposal of sites is undertaken by the Lands Department. Public works projects are co-ordinated by the Civil Engineering and Development Department in conjunction with the client departments and the works departments, such as the Highways Department and the Architectural Services Department. In the course of implementation of the Plan, the Eastern District Council ***and Wan Chai District Council*** would also be consulted as appropriate.

~~12.3 The reclamation works in the Area for the CWB are scheduled for commencement in late 2008. The CWB is scheduled for completion by 2015/2016.~~

12.~~4~~***3*** Planning applications to the Board will be assessed on individual merits. In general, the Board's consideration of the planning applications will take into account all relevant planning considerations which may include the departmental outline development plans/layout plans and guidelines published by the Board. The outline development plans and layout plans are available for public inspection at the Planning Department. Guidelines published by the Board are available from the Board's website, the Secretariat of the Board and the Technical Services Division of the Planning Department. Application forms and Guidance Notes for planning applications can be downloaded from the Board's website and are available from the Secretariat of the Board, the Technical Services Division and the relevant District Planning Office of the Planning Department. Applications should be supported by such materials as the Board thinks appropriate to enable it to consider the applications.

TOWN PLANNING BOARD
~~DECEMBER 2010~~ ***JULY 2016***

Provision of Open Space and Major Community Facilities in North Point Area

Type of Facilities	Hong Kong Planning Standards and Guidelines (HKPSG)	HKPSG Requirement (based on planned population)	Provision		Surplus/Shortfall (against planned provision)
			Existing Provision	Planned Provision	
District Open Space	10 ha per 100,000 persons	15.81 ha	21.00 ha	25.96 ha	+10.15 ha
Local Open Space	10 ha per 100,000 persons	15.81 ha	9.90 ha	11.32 ha	-4.49 ha
Secondary School	1 whole-day classroom for 40 persons aged 12-17	160 classrooms	389 classrooms	389 classrooms	+229 Classrooms
Primary School	1 whole-day classroom for 25.5 persons aged 6-11	220 classrooms	260 classrooms	308 classrooms	+88 Classrooms
Kindergarten / Nursery	26 classrooms for 1,000 children aged 3 to under 6	60 classrooms	154 classrooms	154 classrooms	+94 Classrooms
District Police Station	1 per 200,000 to 500,000 persons	0	1	1	+1
Divisional Police Station	1 per 100,000 to 200,000 persons	0	0	0	0
Clinic/Health Centre	1 per 100,000 persons	1	1	1	0
Magistracy (with 8 courtrooms)	1 per 660,000 persons	0	0	0	0
Integrated Children and Youth Services Centre	1 for 12,000 persons aged 6-24	1	3	3	+2
Integrated Family Services Centre	1 per 100,000 to 150,000 persons	1	3	4	+3
Library	1 district library for every 200,000 persons	0	2	2	+2
Sports Centre	1 per 50,000 to 65,000 persons	2	1	1	-1
Sports Ground/Sports Complex	1 per 200,000 to 250,000 persons	0	0	0	0
Swimming Pool Complex – standard	1 complex per 287,000 persons	0	1	1	+1

Note: The planned population for the area is 181,300.

東區區議會轄下
規劃、工程及房屋委員會
第三次會議紀錄

日期：2016年4月19日（星期二）
時間：下午2時30分
地點：東區區議會會議室

出席委員		出席時間(下午)	離席時間(下午)
丁江浩議員		2時30分	會議結束
王志鍾議員		2時30分	會議結束
王振星議員		2時30分	會議結束
王國興議員, BBS, MH		4時30分	會議結束
古桂耀議員		2時30分	會議結束
李進秋議員		2時30分	5時15分
李鎮強議員		2時30分	會議結束
林心廉議員		2時30分	會議結束
林其東議員		2時30分	會議結束
林翠蓮議員, MH		2時30分	會議結束
邵家輝議員		2時42分	會議結束
洪連杉議員		3時20分	5時35分
徐子見議員		2時30分	會議結束
張國昌議員		2時30分	會議結束
梁兆新議員		2時40分	會議結束
梁國鴻議員	(主席)	2時30分	會議結束
梁穎敏議員		5時20分	會議結束
許林慶議員		2時30分	會議結束
郭偉強議員		2時35分	4時正
麥德正議員		2時30分	會議結束
黃建彬議員, MH, JP		2時45分	會議結束
黃健興議員		2時30分	會議結束
楊斯竣議員		2時30分	會議結束
趙家賢議員		3時正	會議結束
趙資強議員		2時30分	會議結束
劉慶揚議員		2時45分	會議結束
鄭志成議員	(副主席)	2時30分	會議結束
鄭達鴻議員		2時30分	會議結束
黎志強議員		2時50分	會議結束
顏尊廉議員, MH		2時30分	會議結束

羅榮焜議員, MH	2 時 40 分	會議結束
龔栢祥議員, MH	2 時 30 分	會議結束
江玉歡女士（增選委員）	2 時 30 分	5 時 35 分
江澤濠先生, MH（增選委員）	2 時 30 分	5 時 35 分

<u>致歉未能出席者</u>

何毅淦議員
蔡素玉議員, BBS, JP

<u>定期列席的政府部門代表</u>

鄧如欣太平紳士	東區民政事務處 東區民政事務專員
黎浩雋先生	東區民政事務處 東區民政事務助理專員(2)
黃思敏女士	東區民政事務處 高級聯絡主任(2)
梁娉瑤女士	土木工程拓展署 工程師 18(港島發展部 1)
黎惠珊女士	規劃署 高級城市規劃師/港島(2)
何敏儀女士	港島東區地政處 高級產業測量師/港島東(3)
黃偉良先生	食物環境衞生署 東區衞生總督察 1
黃悅忠先生	房屋署 高級房屋事務經理/西九龍及港島 3
伍偉賢先生	房屋署 屋宇保養測量師(港島東)
黃德福先生	屋宇署 首席測量主任/B5-3
李淑嫻女士 (秘書)	東區民政事務處 一級行政主任(區議會)2

<u>應邀出席的部門及機構代表</u>

林敬智先生	房屋署 高級建築師(43)
林德強先生	房屋署 高級規劃師(4)
韋華基先生	房屋署 土木工程師(13)
駱美美女士	康樂及文化事務署 東區康樂事務經理
李淑嫻女士	康樂及文化事務署 東區副康樂事務經理 2
盧偉斌先生	康樂及文化事務署 高級行政主任（策劃事務）5
丘建輝先生	建築署 高級工程策劃經理 328
劉敏權先生	建築署 工程策劃經理 350
姜錦燕女士	規劃署 港島規劃專員
劉家榮先生	規劃署 城市規劃師/港島 4
陳建峰先生	運輸署 高級工程師/東區及一般事務
梁智華先生	運輸署 工程師/東區 1
陳燕玲女士	港島東區地政處 產業測量師/柴灣

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李昌煥先生	通訊事務管理局辦公室 高級規管事務經理(規管 12)
陳穎欣女士	瑞峰工程顧問有限公司 副總監
江穎敏女士	瑞峰工程顧問有限公司 見習工程師
Ms Susana Halliday	Superloop (Hong Kong) Limited 項目經理

歡迎辭

梁國鴻 主席歡迎各委員及政府部門代表出席會議，並特別歡迎新任的東區民政事務處高級聯絡主任黃思敏女士接替已調職的劉偉倫先生列席會議。

I. 通過規劃、工程及房屋委員會第二次會議紀錄初稿

2. 委員會確認上述初稿毋須修改，並通過會議紀錄。

II. 工作小組報告

(規劃、工程及房屋委員會文件第 13/16 號)

3. 委員備悉海濱發展及房屋管理工作小組的報告。

III. 渣華道資助出售房屋發展計劃

(規劃、工程及房屋委員會文件第 14/16 號)

IV. 重置電照街休憩公園

(規劃、工程及房屋委員會文件第 15/16 號)

V. 擬議修訂《北角分區計劃大綱核准圖編號 S/H8/24》

(規劃、工程及房屋委員會文件第 16/16 號)

4. 由於上述三份文件均與渣華道的房屋發展計劃相關，梁國鴻 主席建議而委員同意合併討論。

5. 梁國鴻 主席歡迎房屋署高級建築師(43)林敬智先生、高級規劃師(4)林德強先生、土木工程師(13)韋華基先生、康樂及文化事務署(下稱康文署)東區康樂事務經理駱美美女士、東區副康樂事務經理 2 李淑嫻女士、高級行政主任（策劃事務）5 盧偉斌先生、建築署高級工程策劃經理 328 丘建輝先生、工程策劃經理 350 劉敏權先生、規劃署港島規劃專員姜錦燕女士、高級城市規劃師/港島 2 黎惠珊女士、城市規劃師/港島 4 劉家榮先生、運輸署高級工程師

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/東區及一般事務陳建峰先生及工程師/東區 1 梁智華先生出席會議。房屋署林敬智先生、康文署盧偉斌先生、建築署丘建輝先生及規劃署黎惠珊女士分別介紹第 14/16、15/16 及 16/16 號文件。

6. 委員就題述議題申報利益如下：

委員	利益申報
林翠蓮委員	香港房屋委員會建築小組委員會成員
林心廉委員	與家人經常使用題述遊樂場設施

7. 23 位委員就議題發表意見及作出提問，內容摘錄如下：

(a) 丁江浩委員理解香港市民的住屋需求，但由於題述用地毗鄰即將有大型屋苑落成，他擔心渣華道未能承受相應增加的交通負荷，詢問運輸署有否進行交通評估。此外，他指重置後的遊樂場較接近危險品車輛使用的汽車渡輪碼頭，詢問有關環境評估的結果，以及對使用者的影響；

(b) 王振星委員詢問日後房屋售價與鄰近私人屋苑樓價的關係。他另指廉政公署總部大樓現址亦由球場改建而成，但至今仍未有相應作出補償，希望政府規劃區內休憩設施時作出一併考慮。他另詢問汽車渡輪碼頭的用途會否改變，以及請部門交代渣華道的交通流量數據；

(c) 古桂耀委員請房屋署採取適當的措施，減輕施工期間的噪音對附近學校的影響。他亦擔心工程車輛會影響渣華道的交通，請房屋署留意工程用地的出入口位置的定位。他另請房屋署交代新建資助房屋的休憩及兒童康樂設施的總面積及所佔比例，以及停車場所提供的私家車及電單車泊位數量；

(d) 李鎮強委員明白香港房屋短缺，政府有需要加快興建公營房屋。不過，他建議政府一併補償因興建廉政公署總部大樓而損失的球場，亦希望部門採取適當措施減低危險品車輛渡輪碼頭對週邊環境的影響。此外，由於題述用地鄰近學校及地區組織，附近的大型屋苑及酒店亦即將落成，他請部門交代題述計劃對環境及交通的影響；

(e) 梁兆新委員請部門再三考慮題述地皮是否合適。他解釋指題述用地附近的大型屋苑即將落成，預計將會帶動該區樓價上升，而且資助房屋屬單幢式樓宇，擔心日後售價及每戶平均管理費用高昂，令

負責者

市民難以承擔。此外，他認為項目所提供的停車位數量不足，擔心日後會引起更嚴重的違例泊車問題。他亦關注新建資助房屋對毗鄰社區組織的環境如日照及通風等所構成的影響；

(f) 徐子見 委員表示英皇道及電照街交通繁忙，亦經常有大型車輛經過，加上新建樓宇將引起更多交通流量，希望部門於規劃時仔細考慮交通情況。此外，由於新建資助房屋屬單幢式樓宇，他擔心日後售價昂貴，詢問房屋署會否提供更高的折扣率。他另詢問規劃署對「住宅(戊類)」第一欄用途內加入「藝術工作室」的詳情；

(g) 邵家輝 委員反對題述計劃。他指區內現有的休息設施不足，渣華道遊樂場屬區內僅餘的少數球場之一，加上毗鄰即將有大型屋苑落成，對區內交通將構成進一步壓力；

(h) 林翠蓮 委員基本上同意題述計劃，但擔心樓宇售價高昂，難以切合基層市民所需。為增加樓宇供應，她建議房屋署考慮與鄰近居民組織合併發展，以及預留部分單位作重建模範邨之用，在重建完成後再考慮將樓宇出售。她另建議房屋署參考日後居民的年齡分佈才落實所建議的休憩及兒童遊樂設施，以及希望康文署加快重置電照街遊樂場的工程，盡快將地盤轉交房屋署；

(i) 林心廉 委員表示在房屋工程進行期間，球場使用者必須經過工程地盤及橫過渣華道，才能抵達新的球場，請部門注意行人過路安全，增加相關配套設施。他另建議康文署一併維修渣華道遊樂場設施，配合重置後的新球場的發展；

(j) 許林慶 委員表示馬寶道的路面較窄，亦經常有車輛停泊，希望部門注意交通安排。他另詢問題述計劃所提供的私家車及電單車的泊位數量；

(k) 郭偉强 委員表示康文署的重置球場計劃清楚反映政府一直未有妥善將區內的合適地點規劃為休憩用地。不過，由於市民對市區公營房屋的需求甚殷，因此他對計劃仍予以支持。他建議政府將停車場建於新球場的地底，以增建資助房屋單位，以及滿足區內市民對停車位的需求。此外，他擔心項目提供的休憩設施將會增加屋苑管理成本，質疑於項目提供休憩設施的必要性；

(l) 麥德正 委員表示題述用地面積細小，提供的單位數量有限，擔心房屋售價高昂，令市民難以負擔。他另詢問房屋署如何訂定樓宇所建的樓層數目、擬建的單位面積，以及樓宇的售價；

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(m) 江澤濠委員表示區議會一直要求政府增加東區的休憩及康樂設施，建議康文署藉此將五人足球場改為標準足球場，以滿足市民的需要。此外，他希望房屋署採取適當的措施，減輕工程對鄰近居民組織和學校的影響，確保不會影響通風及採光等；

(n) 羅榮焜委員贊成政府加建公營房屋。不過，他建議政府簡化整體計劃，直接在擬重置球場的土地上興建房屋，因其面積較大可提供更多的住宅單位，並保留電照街遊樂場，以縮短整個建屋計劃的過程；

(o) 鄭達鴻委員同意政府加建公營房屋，但質疑題述選址是否合適。他指該處的人車流量甚高，而隨著公共運輸交匯處即將投入服務，電照街的汽車流量必會再增加，加上該處樓宇密度高，整體環境擠迫，如政府於該處興建樓高 110 米的住宅大樓，區內的交通及環境將會受到影響。此外，由於廉政公署總部大樓現址由標準足球場改建而成，他認為政府應先補償足球場的損失，然後才考慮重置遊樂場的安排。他建議政府認真檢視選址附近的交通流量、資助房屋的售價、停車位的數量，以及樓宇的高度；

(p) 黃建彬委員表示北角區的休憩用地稀少，政府應考慮長遠規劃及發展，興建標準足球場，取代擬建的五人足球場，以補償因改建廉政公署總部大樓所損失的足球場設施。此外，他擔心工程對附近的交通、居住和學習環境構成影響，加上用地附近的大型私人屋苑及交通交滙處即將落成，請部門採取相應的緩減措施。他另詢問規劃署題述地段的樓高限制；

(q) 趙資強委員支持政府增建公營房屋，以解決市民的住屋需要。不過，他指東區缺乏足夠的停車位，加上題述地段的違例泊車問題嚴重，希望部門於題述項目提供足夠的停車位，並研究在重置球場加建地庫停車場的可行性，以滿足市民的需求；

(r) 趙家賢委員以廉政公署總部大樓為例，指政府曾多次將區內休憩設施改劃作其他用途，令市民的休憩空間相應減少。他建議政府全盤考慮區內居民的需要，在規劃時作出相應的補償。他另指渣華道的交通繁忙，擔心新建項目會進一步增加汽車流量，令交通擠塞問題惡化，希望部門先進行確切評估，然後才落實計劃；

(s) 王志鍾委員支持政府加建公營房屋，但由於地皮面積細小，擔心住宅供應數量不足以滿足市民的需求。他亦關注項目對交通及環境

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的影響，希望政府採取適當緩減措施；

(t) 江玉歡 委員詢問新建項目的住宅單位面積、社區設施的配套，以及與海關總部大樓相關的保安安排。她另指重置後的足球場接近東區走廊天橋、汽車渡輪碼頭及渠務工程用地，請部門注意道路及球場使用者的安全；

(u) 龔栢祥 委員同意直接於擬重置球場的用地興建資助房屋，以提供更多的樓宇單位，減低平均建築成本及管理費用。他另指現時公共屋邨的管理服務優良，加上政府亦未有提供免息貸款等誘因，單靠折扣優惠難以吸引市民購買資助房屋，請署方審慎預期公眾銷售反應；

(v) 楊斯峻 委員表示政府在面積細小的土地興建樓宇（俗稱「插針樓」）的做法備受各界抨擊。他建議政府檢討計劃的必要、評估公眾對資助房屋的需求，以及考慮發展其他更具規模的建屋計劃；以及

(w) 鄭志成 副主席樂見康文署重置電照街球場的方案，為區內市民提供標準足球場設施。此外，由於日後巴士須經電照街駛入公共運輸交匯處，他請署方考慮題述地點的交通流量，以及重置馬寶道電單車泊位的安排。他另建議康文署於重置球場添置飲水設備。

8. 房屋署 林敬智 先生、林德強 先生、建築署 丘建輝 先生、康文署 盧偉斌 先生、駱美美 女士、運輸署 陳建峰 先生、規劃署 姜錦燕 女士、黎惠珊 女士就委員的意見及提問，回應如下：

房屋署

(a) 由於擬建單位數目較少，署方將於地下興建停車場，並提供 13 個私家車及三個電單車泊位，供資助房屋的住戶使用，預計新增的交通流量輕微；

(b) 署方會按《香港規劃標準與準則》(下稱《規劃準則》)的要求，為住戶提供足夠的休憩設施。按現行規定，每一名住戶應可享有一平方米休憩設施。兒童遊樂設施擬於住宅平台設置供住戶使用；

(c) 署方會採取適當的噪音緩解措施，以及在電照街旁預留通風空間，亦會進行氣候及日照等評估。就地盤施工情況，署方會於工程合約採取嚴格的環境控制條款，承建商須確保工程符合環境保護署及相關法例的要求，減低工程對附近市民的影響；

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(d) 署方將會參考區內物業市場售價及當時的實際情況，考慮符合資格家庭的負擔能力，從而訂定合適的折扣率，以制訂資助房屋的售價。而日後的管理費用則視乎各項設施配套、設計及單位數量而訂。按現行政策，署方將於項目完成興建前出售房屋(俗稱樓花)，由於現階段距離售樓期亦甚遠，署方無法預測樓宇售價及管理費用。署方將於會後補充資料解釋資助房屋的定價準則；

(e) 署方會與運輸署保持緊密聯繫，討論例如馬寶道的電單車泊位重置安排；

(f) 題述項目對海關大樓的保安安排沒有直接影響；

建築署

(g) 署方已就有關危險品車輛渡輪碼頭諮詢相關部門及持份者，包括環境保護署(下稱環保署)、機電工程署、消防處、海事處，以及香港油麻地小輪船有限公司(下稱輪船公司)。其中環保署已表示根據《香港規劃標準與準則》第 12 章第 4 段，該危險品車輛渡輪碼頭不屬於「具有潛在危險的裝置」。此外，機電工程署、消防處及海事處已回覆沒有意見。輪船公司亦沒有異議；

(h) 擬建的球場與海旁保持一定的距離。署方亦會按康文署要求於足球場範圍提供不少於 6 米高的圍網，確保安全；

(i) 按現行各部門的工作安排，現時的工程時間表是最理想的方案。署方會仔細審視相關流程，希望可盡快開展及完成重置項目；

(j) 受實際現場環境及財政預算所限，署方未能將擬建的標準五人足球場進一步擴大為標準七人足球場；

康文署

(k) 署方備悉委員就提供休憩及康樂設施的意見，並希望透過題述重置球場計劃改善區內的康樂設施；

(l) 受財政及用地面積所限，署方只可重置電照街休憩公園的現有籃球場及五人足球場。如需添加其他設施如停車場等，工程整體費用將超出上限，不能根據小型工程類別申請撥款，而須通過工務工程計劃按既定程序向立法會申請撥款，預計所需時間較長；

負責者

(m) 擬建項目並沒有設置飲水設備。如有需要，署方會要求建築署檢視其可行性；

運輸署

(n) 署方已於電照街近兒童遊樂場增設燈號行人過路處，方便市民從即將落成的公共運輸交匯處前往重置的球場。由於渣華道交通繁忙，為減少對上述路段的影響，署方認為於海關總部大樓外增設行人過路處橫過渣華道的建議可行性不大；

(o) 署方已諮詢電車公司的意見，電車公司認為容許巴士或其他車輛從英皇道右轉入電照街的方案將影響電車的運作，因此署方暫不會落實相關安排；

(p) 署方已審視房屋署所提交的交通影響評估，由於題述資助房屋計劃規模不大，預計所產生的交通流量不高，題述項目對附近交通沒有太大的影響。署方會繼續與房屋署協調，討論各項交通及其他配套設施，例如馬寶道的電單車泊位重置安排；

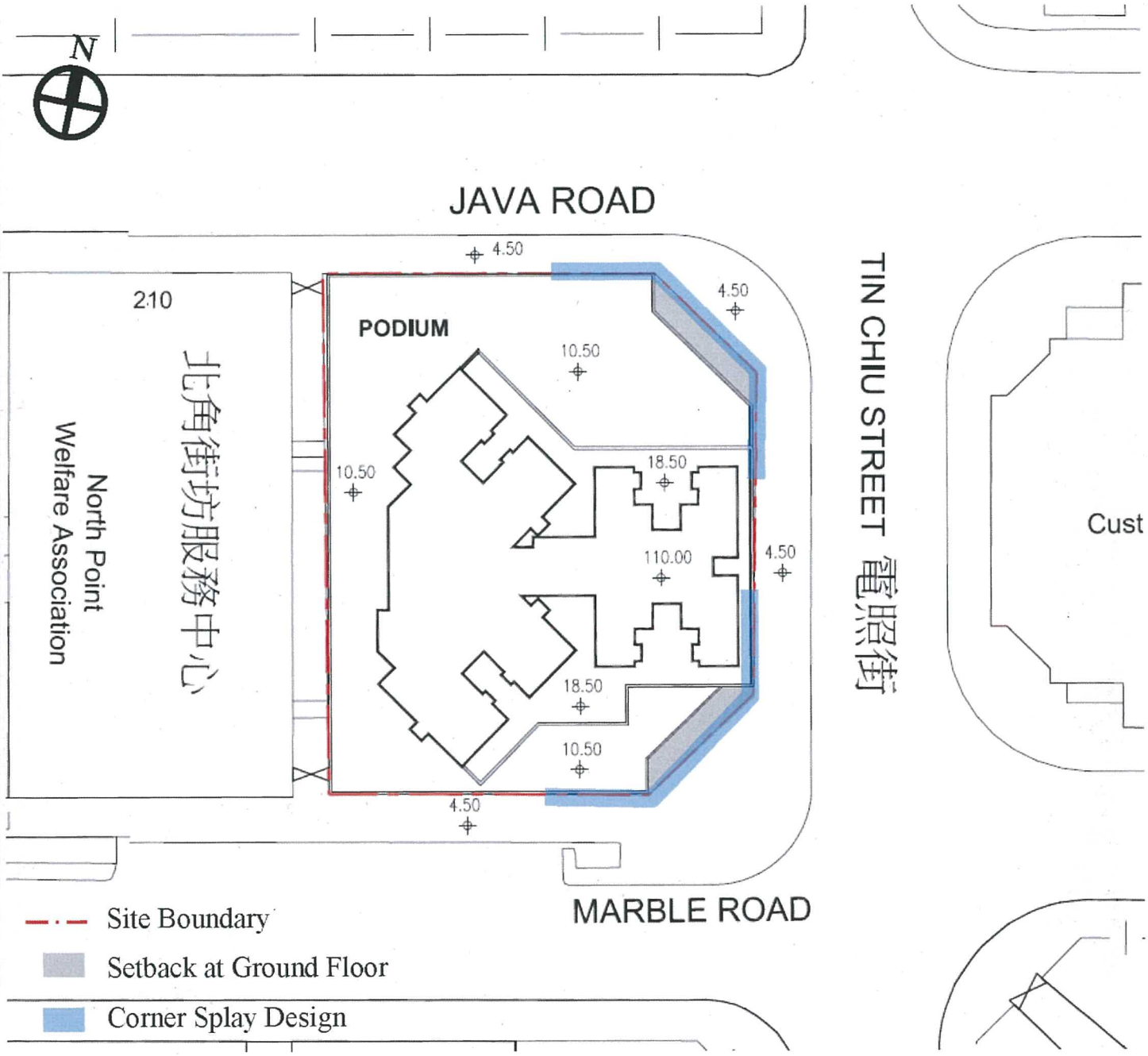
規劃署

(q) 現行的《北角分區計劃大綱核准圖編號 S/H8/24》規定海旁一帶的建築物以主水平基準上 80 米為限，建築物高度按梯級式遞增至英皇道一帶所限的主水平基準上 120 米。署方考慮到有關房屋用地位於渣華道以南和英皇道以北，故建議把其高度限制設為主水平基準上 110 米，以配合整體的建築物高度輪廓。大綱圖旨在規定建築物高度的上限，至於有關資助出售房屋發展的實際高度，則視乎房屋署的設計；

(r) 為提高土地使用的彈性，署方建議在「住宅(戊類) 」地帶內適用於現有工業樓宇或工業－辦公室樓宇的附表第一欄中，加入「藝術工作室（直接提供服務或貨品者除外）」。此技術性修訂與渣華道的資助出售房屋發展項目並無關係；

(s) 署方現階段並未有接獲任何改變汽車渡輪碼頭用途的計劃；

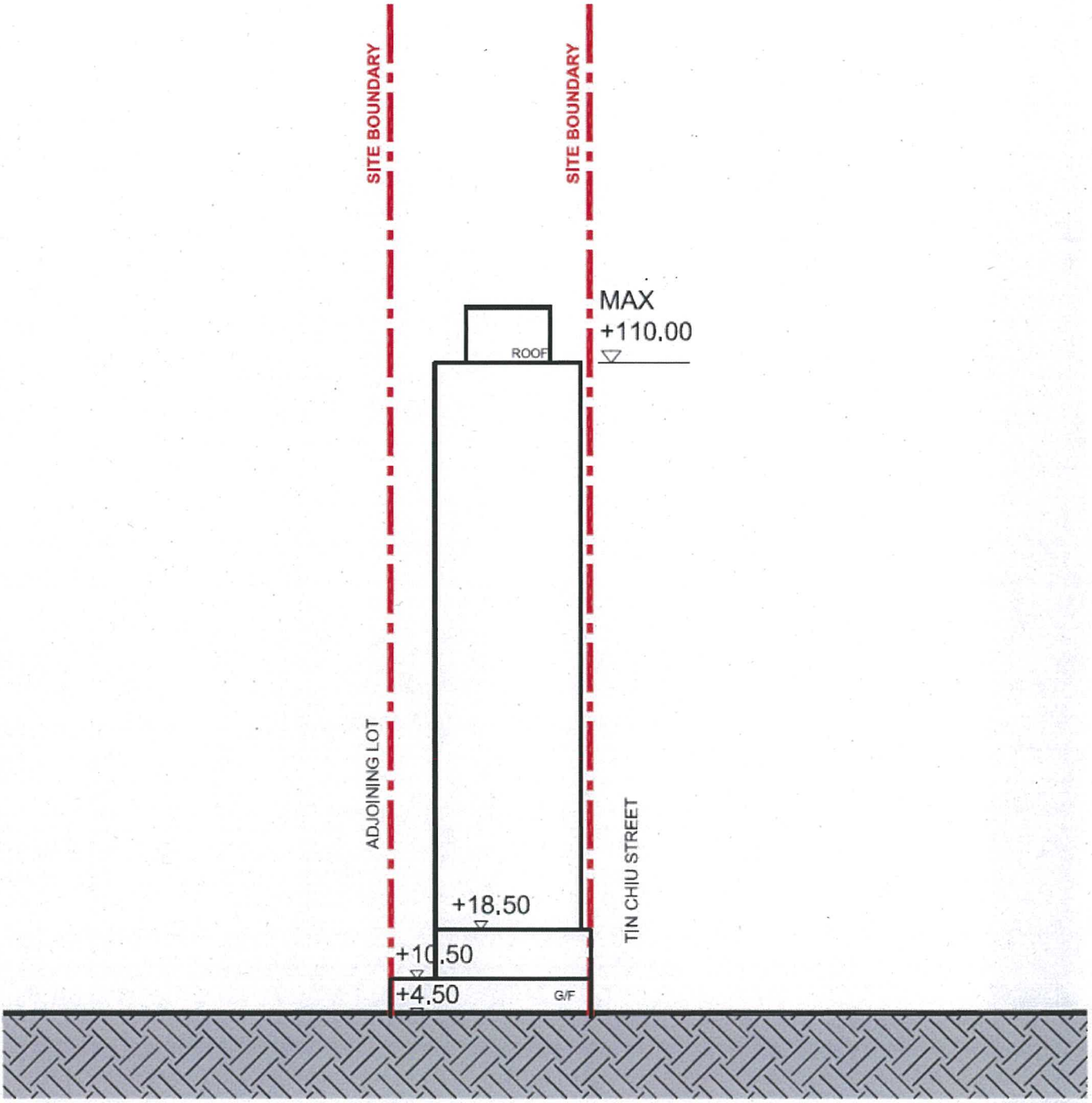
(t) 提升海濱的暢達性是署方的長遠規劃方向。擬重置電照街遊樂場的政府土地位處海濱，在用地上提供休憩設施，有助建設暢達的海濱，符合整體規劃方向。至於議員建議在新球場的地底設置公眾停車場，則是其所屬「政府、機構或社區」地帶經常准許的用途，可由相關部門研究其可行性；以及



Site Layout Plan of the Development (site layout subject to detailed design)

資料來源：房屋署
SOURCE : HOUSING DEPARTMENT

參考編號 REFERENCE No.	繪圖 DRAWING
M/H8/16/7	1



SCHEMATIC SECTION

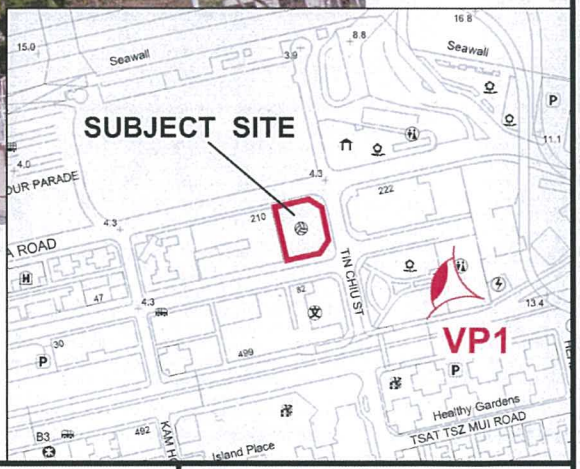
Sectional Plan of the Development (subject to detailed design)

資料來源：房屋署
SOURCE : HOUSING DEPARTMENT

參考編號 REFERENCE No.	繪 圖 DRAWING
M/H8/16/7	2

With Existing View

With Proposed Development



PHOTOMONTAGE AT VIEWPOINT (VP)1
(VIEW FROM KING'S ROAD PLAYGROUND)

HOUSING DEPARTMENT
PLANNING SECTION

PLAN 1	DATE : 10. 3. 2016

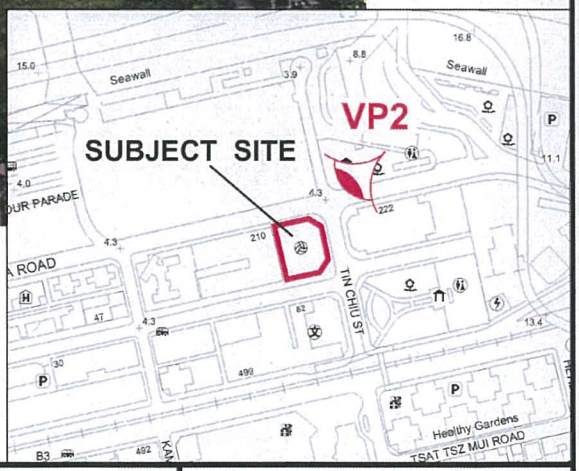
16_0054HK_vp1C

資料來源：房屋署
SOURCE : HOUSING DEPARTMENT

參考編號 REFERENCE No. M/H8/16/7	繪圖 DRAWING 3

With Existing View

With Proposed Development



PHOTOMONTAGE AT VIEWPOINT (VP)2
(VIEW FROM TIN CHIU STREET CHILDREN'S PLAYGROUND)

HOUSING DEPARTMENT
PLANNING SECTION

PLAN 2	DATE : 10. 3. 2016

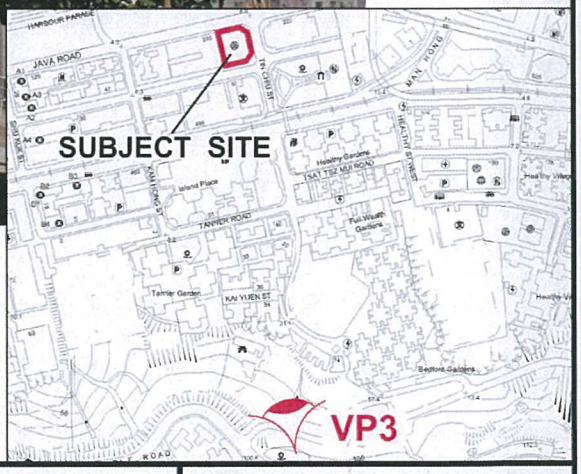
16_0054HK_vp2B

資料來源：房屋署
SOURCE : HOUSING DEPARTMENT

參考編號 REFERENCE No.	繪圖 DRAWING
M/H8/16/7	4

With Existing View

With Proposed Development



PHOTOMONTAGE AT VIEWPOINT (VP)3
(VIEW FROM TIN HAU TEMPLE ROAD PARK)

HOUSING DEPARTMENT
PLANNING SECTION

PLAN 3

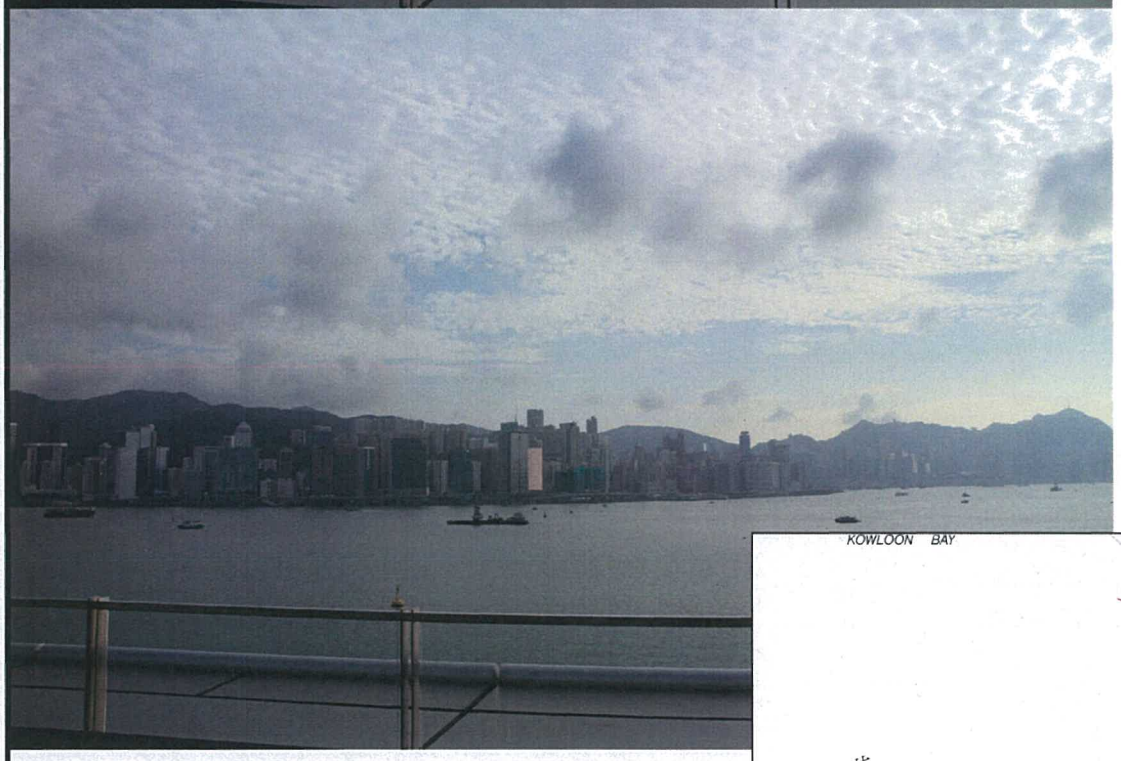
DATE :
10. 3. 2016

16_0054HK_vp3

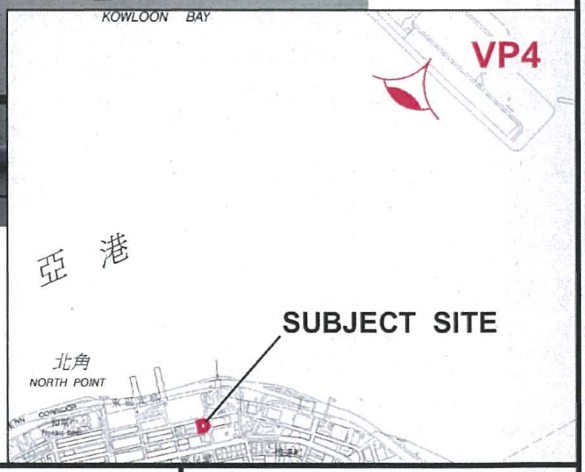
資料來源：房屋署
SOURCE : HOUSING DEPARTMENT

參考編號 REFERENCE No.	繪圖 DRAWING
M/H8/16/7	5

With Existing View



With Proposed Development



PHOTOMONTAGE AT VIEWPOINT (VP)4
(VIEW FROM ROOFTOP VIEWING DECK OF KAI TAK CRUISE TERMINAL)

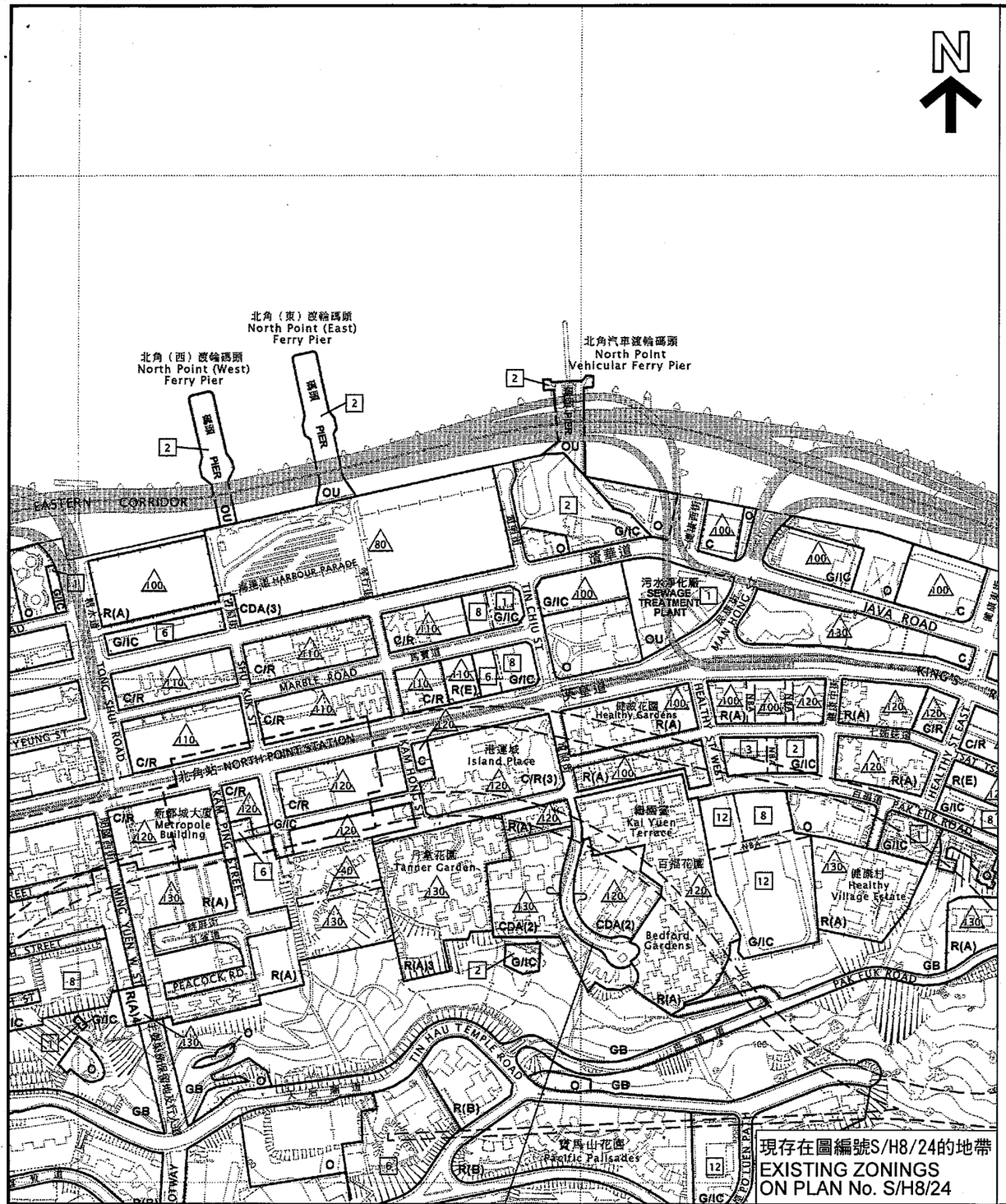
HOUSING DEPARTMENT
PLANNING SECTION

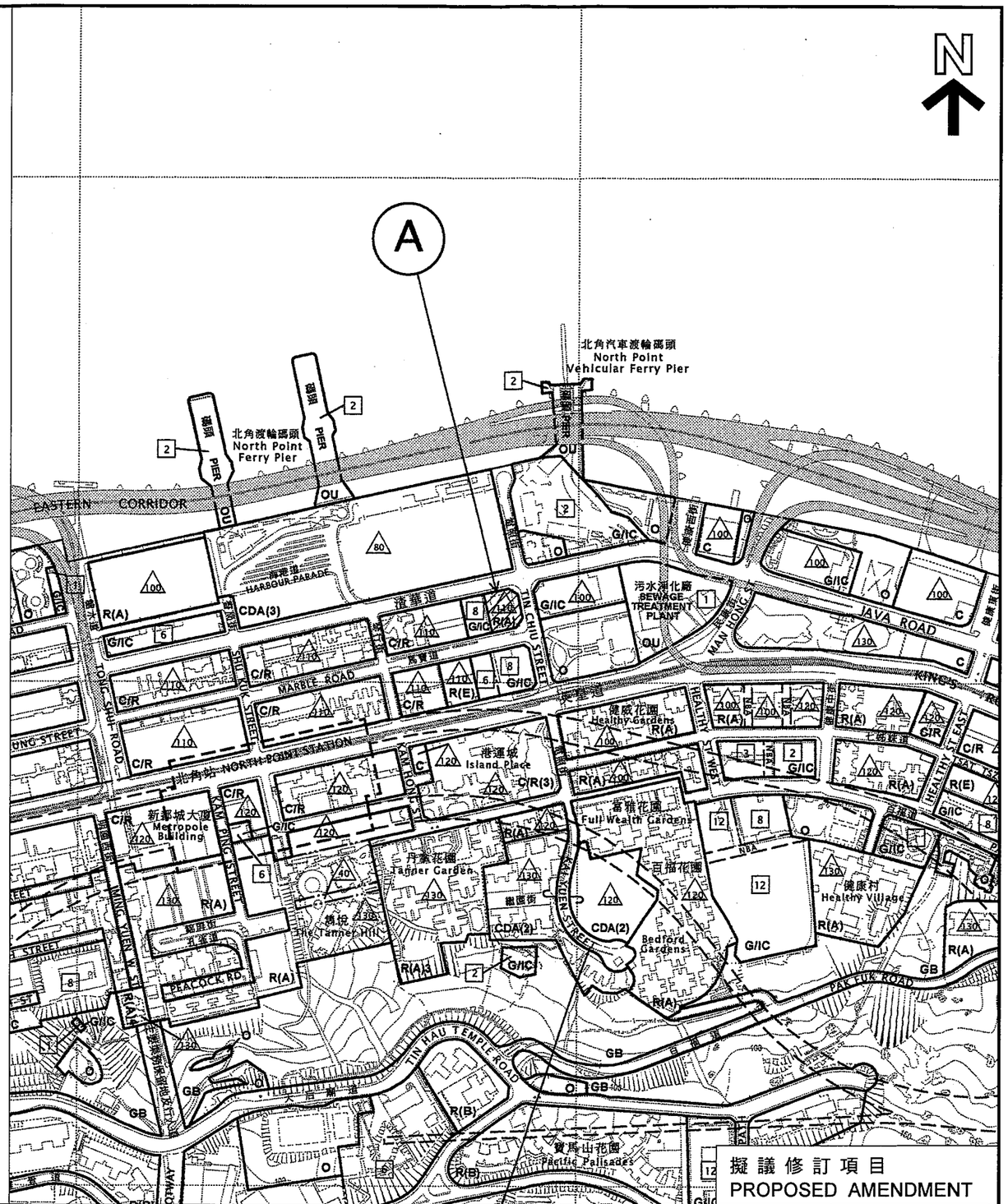
PLAN 4	DATE : 10. 3. 2016

16_0054HK_vp4

資料來源：房屋署
SOURCE : HOUSING DEPARTMENT

參考編號 REFERENCE No. M/H8/16/7	繪圖 DRAWING 6





本摘要圖於2016年5月26日擬備，
所根據的資料為於2010年11月30日
核准的分區計劃大綱圖編號S/H8/24

EXTRACT PLAN PREPARED ON 26.5.2016
BASED ON OUTLINE ZONING PLAN No. S/H8/24 APPROVED ON 30.11.2010

分區計劃大綱圖上現有與擬議用途地帶的比較
COMPARISON OF EXISTING AND PROPOSED ZONINGS ON THE OZP

北角分區計劃大綱核准圖編號 S/H8/24 的擬議修訂項目

PROPOSED AMENDMENTS TO THE APPROVED NORTH POINT OUTLINE ZONING PLAN No. S/H8/24

修訂項目A

AMENDMENT ITEM A

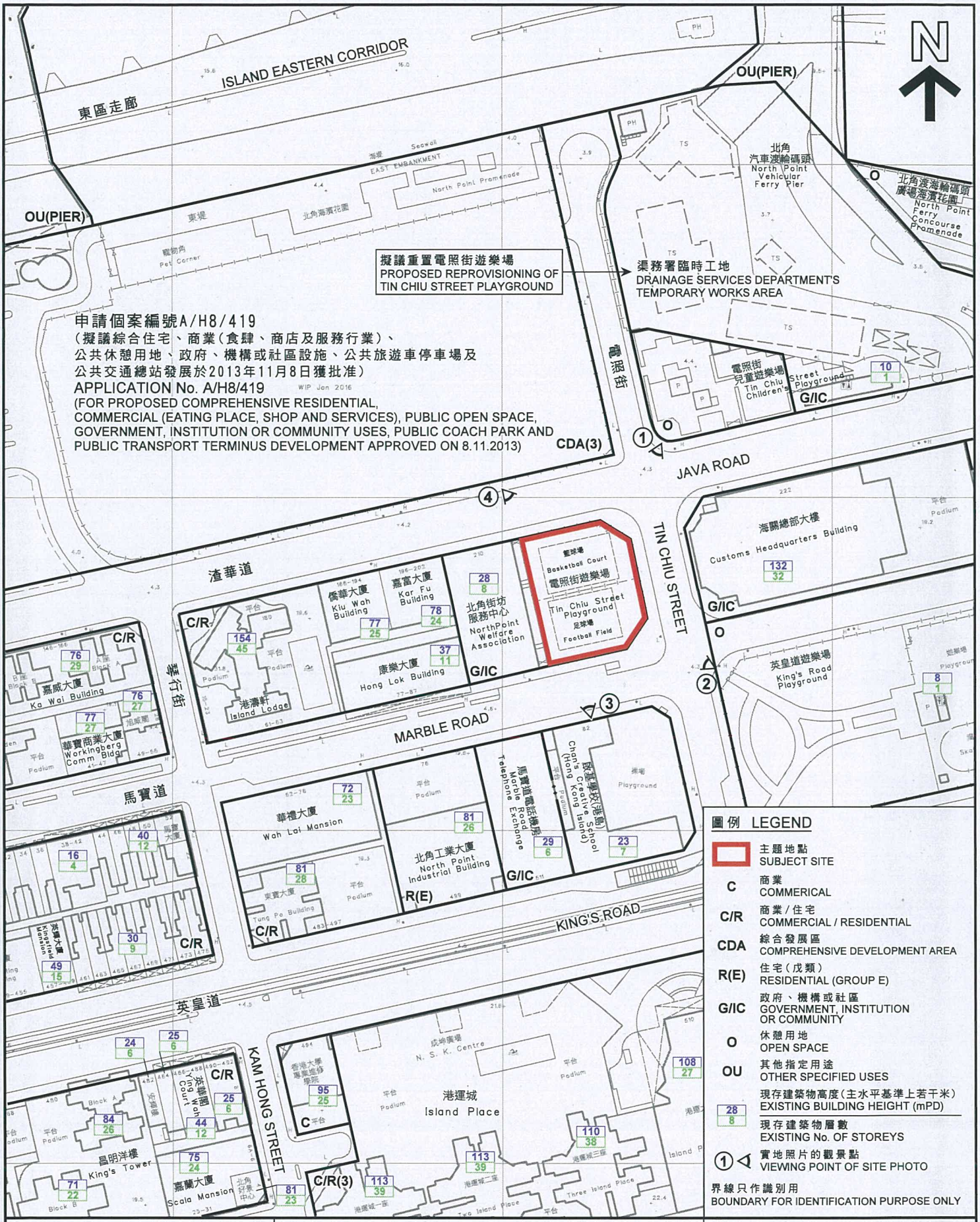
SCALE 1 : 5 000 比例尺

米 METRES 100 0 100 200 300 400 米 METRES

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/H8/16/7

圖 PLAN
1



圖例 LEGEND

	主題地點 SUBJECT SITE
C	商業 COMMERICAL
C/R	商業/住宅 COMMERCIAL / RESIDENTIAL
CDA	綜合發展區 COMPREHENSIVE DEVELOPMENT AREA
R(E)	住宅(戊類) RESIDENTIAL (GROUP E)
G/IC	政府、機構或社區 GOVERNMENT, INSTITUTION OR COMMUNITY
O	休憩用地 OPEN SPACE
OU	其他指定用途 OTHER SPECIFIED USES
28 / 8	現存建築物高度(主水平基準上若干米) EXISTING BUILDING HEIGHT (mPD) / 現存建築物層數 EXISTING No. OF STOREYS
①	實地照片的觀景點 VIEWING POINT OF SITE PHOTO

界線只作識別用
BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

本摘要圖於2016年6月29日擬備，
所根據的資料為測量圖編號
11-SE-1D及2C

EXTRACT PLAN PREPARED ON 29.6.2016
BASED ON SURVEY SHEETS No.
11-SE-1D & 2C

平面圖 SITE PLAN

電照街遊樂場
TIN CHIU STREET PLAYGROUND

擬議把「政府、機構或社區」地帶改劃為「住宅(甲類)」地帶及
訂定建築物高度限制:主水平基準上110米
PROPOSED REZONING FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP A)" WITH STIPULATION OF BUILDING HEIGHT RESTRICTION: 110 mPD

SCALE 1 : 1 500 比例尺

米 METRES 25 0 25 50 米 METRES

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/H8/16/7

圖 PLAN
2

圖例 LEGEND

主題地點
SUBJECT SITE

界線只作識別用
BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

本圖於2016年5月25日擬備，
所根據的資料為地政總署於
2016年1月1日拍得的
航攝照片編號CS62133

PLAN PREPARED ON 25.5.2016
BASED ON AERIAL PHOTO No.
CS62133 TAKEN ON 1.1.2016
BY LANDS DEPARTMENT

航攝照片 AERIAL PHOTO

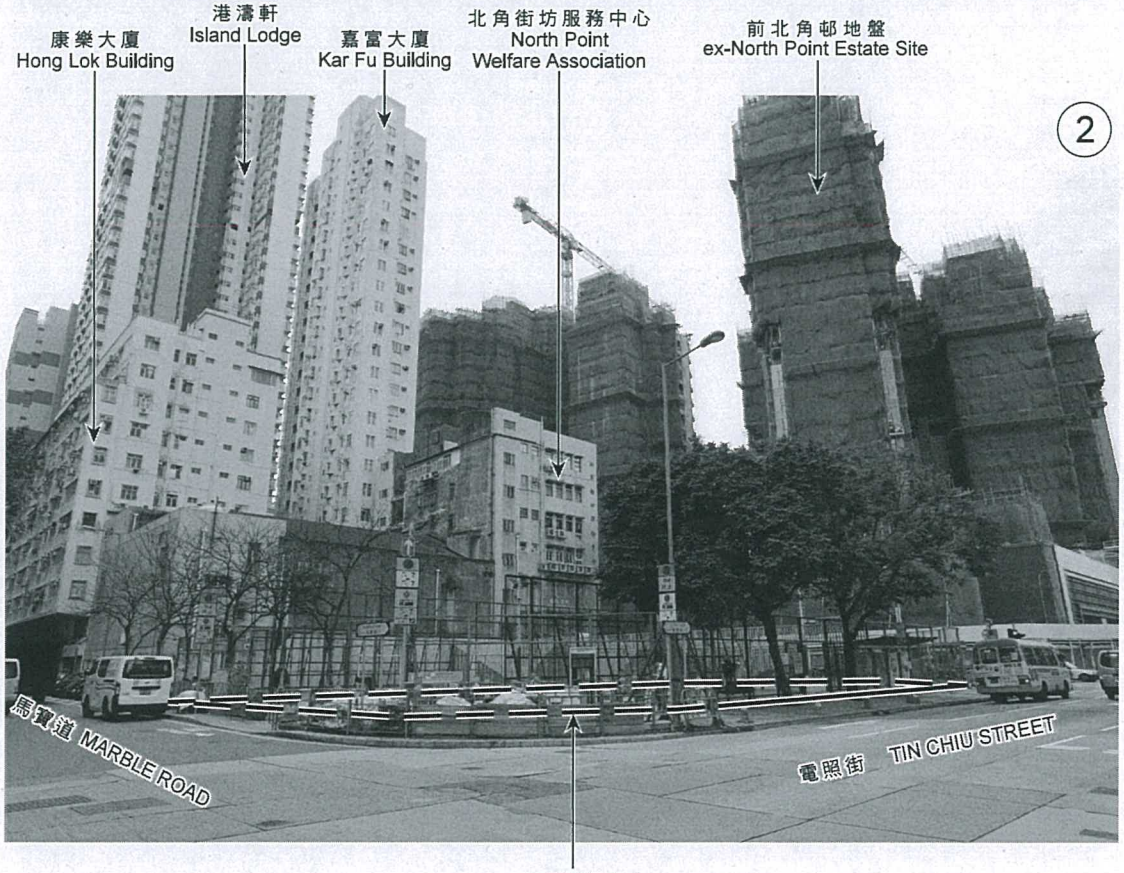
電照街遊樂場
TIN CHIU STREET PLAYGROUND

擬議把「政府、機構或社區」地帶改劃為「住宅(甲類)」地帶及
訂定建築物高度限制：主水平基準上110米
PROPOSED REZONING FROM "GOVERNMENT, INSTITUTION OR
COMMUNITY" TO "RESIDENTIAL (GROUP A)" WITH STIPULATION
OF BUILDING HEIGHT RESTRICTION: 110 mPD

規劃署
PLANNING
DEPARTMENT

參考編號
REFERENCE No.
M/H8/16/7

圖 PLAN
3



界線只作識別用
BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

本圖於2016年5月10日擬備，所根據的資料為2016年3月14日的實地照片

PLAN PREPARED ON 10.5.2016 BASED ON SITE PHOTOS TAKEN ON 14.3.2016

實地照片 SITE PHOTOS

電照街遊樂場
TIN CHIU STREET PLAYGROUND

擬議把「政府、機構或社區」地帶改劃為「住宅(甲類)」地帶及訂定建築物高度限制:主水平基準上110米
PROPOSED REZONING FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP A)" WITH STIPULATION OF BUILDING HEIGHT RESTRICTION: 110 mPD

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/H8/16/7

圖 PLAN
4

界線只作識別用
BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

本圖於2016年5月10日擬備，所根據的資料為2016年3月14日的實地照片

PLAN PREPARED ON 10.5.2016 BASED ON SITE PHOTOS TAKEN ON 14.3.2016

實地照片 SITE PHOTOS

電照街遊樂場
TIN CHIU STREET PLAYGROUND

擬議把「政府、機構或社區」地帶改劃為「住宅(甲類)」地帶及訂定建築物高度限制:主水平基準上110米
PROPOSED REZONING FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP A)" WITH STIPULATION OF BUILDING HEIGHT RESTRICTION: 110 mPD

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/H8/16/7

圖 PLAN
5

Visual Appraisal

Proposed Public Housing Development
at Java Road, North Point

1. Site Particulars and Proposed Development

1.1 The subject site (about 0.12 ha) is zoned "Government, Institution or Community" on the approved North Point Outline Zoning Plan (OZP) no. S/H8/24. It is currently occupied by Tin Chiu Street Playground (TCSP) on government land. The Tin Chiu Street Playground is proposed to be relocated to a site currently serve as a temporary works site by Drainage Services Department located adjacent to the Tin Chiu Street Children's Playground.

1.2 The subject site is located at the junction of Java Road and Tin Chiu Street in North Point. North Point Welfare Association (about 27 mPD) is located to the immediate west and high-rise residential clusters including Island Lodge (about 154 mPD) are located to the further west. Customs Headquarters Building (about 132 mPD) is found to the immediate east with North Point Preliminary Treatment Works (about 10 mPD to 13 mPD) to the further east. To the immediate north is a waterfront comprehensive development (with maximum building height of 80 mPD) currently under construction. Victoria Harbour is located to the further north. A primary school, namely, Chan's Creative School (about 24 mPD) is found to the immediate south with a mixed-use development, namely, Island Place (about 108 – 113 mPD) to the further south. Please refer to **Drawing A** for details**.**

1.3 In the visual context, the subject site is located in a built-up area in North Point abutting the Victoria Harbour, with high-rise residential buildings mingled with high-rise G/IC uses (e.g. Customs Headquarters Building) and low-rise G/IC uses (e.g. Chan's Creative School). Braemar Hill is located to the further south of the built-up area. As stipulated in the OZP, the building height restriction is imposed in the area in order to form a stepped building height profile from the waterfront towards the inland. Major visual detractor in the area includes the Island Eastern Corridor running in front of and parallel to the coastline and North Point Preliminary Treatment Works to the east of the subject site.

1.4 The subject site is proposed for public housing development, with a maximum building height of +110 mPD, and the GFA in accordance with the Building (Planning) Regulations (equivalent to plot ratio of about 10). The proposed public housing development will deliver about 240 flats to accommodate a design population of about 630 persons. The design of the development is constrained by the limited site area. The ground floor of the proposed development has to accommodate the required facilities such as the car park spaces, maneuvering space of large vehicle for loading/unloading,

space for refuse collection, essential plant rooms, green coverage area, and residential lobby. As such, a one-storey podium is proposed in providing the required local open space. In enhancing air ventilation, a setback of about 2m at northeastern and southeastern corner splay is tentatively proposed (subject to detailed design). An empty bay with dimension of about 3.5m (w) x 3.0m (h) is proposed at G/F along Tin Chiu Street (subject to detailed design). There are 12 nos. of trees adjoining the site on the pavements of Java Road, Tin Chiu Street and Marble Road. While these trees will be retained as far as practicable subject to detailed design, it can be assured that a green coverage of 20% will be provided for the proposed development which is in accordance with the Guiding Principles agreed by PlanD and HD in December 2010. Please refer to **Drawing B** for the tentative layout of the proposed development**.**

2. Viewpoints (VPs)

2.1 For the assessment of the visual impact of the proposed development, four VPs that are easily accessible and frequently used by the public for recreation and leisure are selected. They are:

VP 1	King's Road Playground
VP 2	Tin Chiu Street Children's Playground
VP 3	Tin Hau Temple Road Park
VP 4	Rooftop Viewing Deck of Kai Tak Cruise Terminal

3. Visual Appraisal

VP1 – King's Road Playground (**Plan 1** refers)

3.1 This close-range VP is at King's Road playground, which is about 120m to the southeast of the subject site. Apart from the King's Road Playground and its existing trees, the existing view from this VP mainly consists of the Island Lodge and the Customs Headquarters Building. As demonstrated in the photomontage in **Plan 1**, the proposed development will involve erecting a high-rise at the TCSP. With a maximum building height of 110 mPD, the proposed development will detract from the visual permeability in the locality. Nevertheless, the proposed development will be comparable in scale and height to the surrounding developments. Furthermore, part of the proposed development will be blocked by the existing trees in the midground within the playground. In view of the above, the visual impact brought by the proposed development from this VP is considered moderate on the surrounding area.

VP2 – Tin Chiu Street Children's Playground (**Plan 2** refers)

3.2 This close-range VP is at Tin Chiu Street Children's Playground, which is about 71m to the northeast of the subject site. Apart from the children playground facility and existing trees, the existing view from this VP mainly consists of the residential towers of the nearby comprehensive development to the north of the site, Island Lodge, North Point Industrial Building, and Customs Headquarter Building against the sky backdrop. As evident in the photomontage in **Plan 2**, the proposed development will involve erecting a high-rise at the TCSP. With the view towards the sky being partially blocked by the proposed development, certain loss in visual permeability in the locality will be resulted. Nevertheless, the proposed development will be comparable in scale and height to the surrounding developments. As such, the visual impact of the proposed development from this VP is considered moderate.

VP3 - Tin Hau Temple Road Park (**Plan 3** refers)

3.3 This VP is at the park at 102 mPD on the north-facing slope of Braemar Hill, which is about 480m to the south of the subject site. The existing view from this VP mainly consists of high-rise development cluster, including Island Place and Customs Headquarter Building against the open sky backdrop. There is also a glimpse of the Victoria Harbor from this VP. As demonstrated in the photomontage in **Plan 3**, the proposed development of 110 mPD will be blocked by the existing developments to its south and it can be barely seen through the narrow building gap between the Island Place Tower and residential development at Island Place. As such, the visual impact from this VP is considered negligible.

VP4 - Rooftop Viewing Deck of Kai Tak Cruise Terminal (**Plan 4** refers)

3.4 This distant VP is at Kai Tak Cruise Terminal, which is about 1,870m to the northeast of the subject site. The existing view from this VP consists of the Victoria Harbour and buildings along the northern shore of Hong Kong Island against the ridgelines and open sky backdrop. As evident in the photomontage in **Plan 4**, the proposed development is of appropriate scale and is considered visually compatible with the surrounding area. The views to the ridgelines or the Victoria Harbour will not be affected by the proposed development. In view of the above factors, the visual impact brought by the proposed development from this VP is considered negligible on the surrounding area.

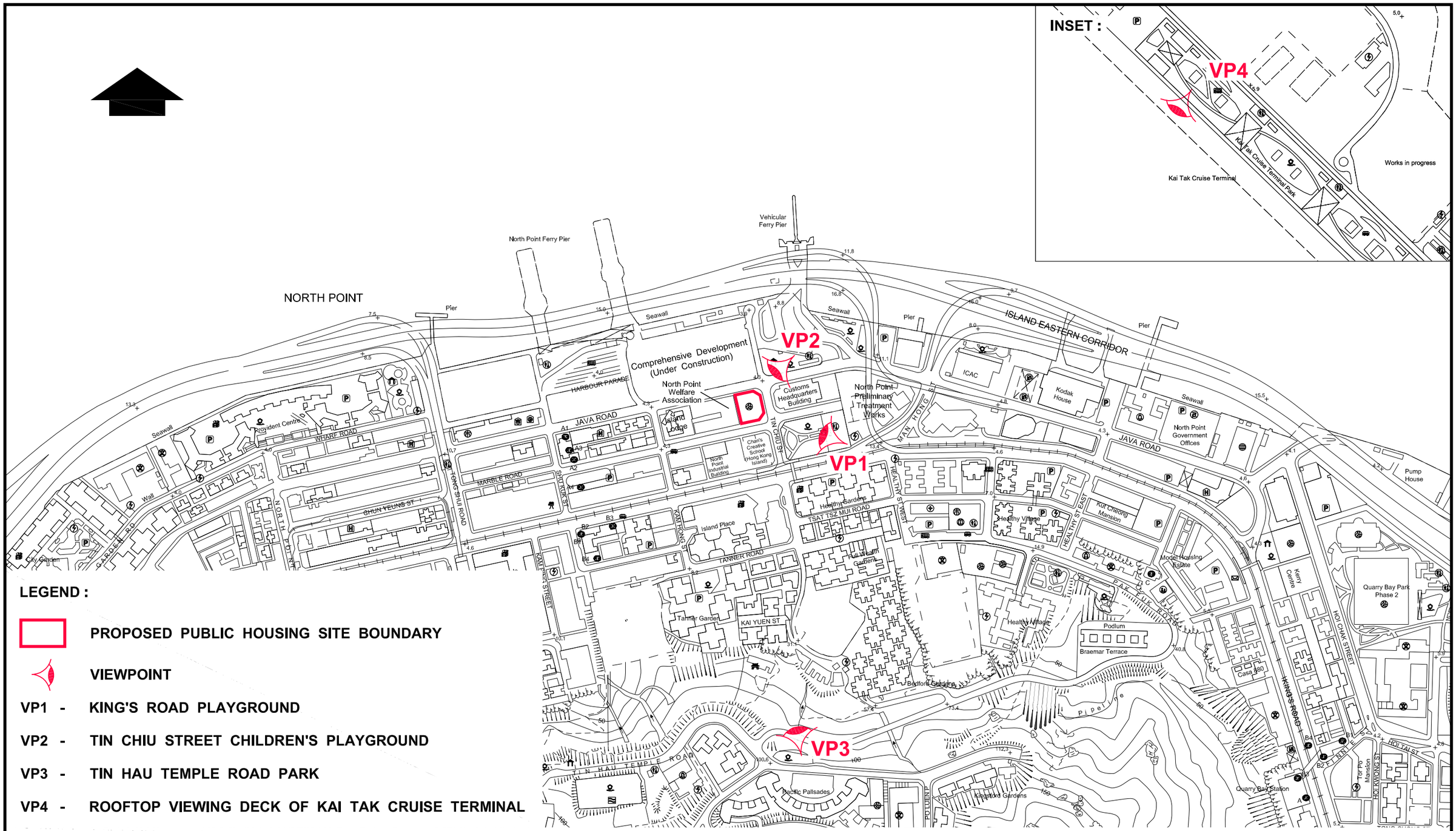
4. Conclusion

4.1 Being located in an urban built-up area, the proposed development will involve erecting a high-rise at the TCSP, which will be comparable in scale and height to the surrounding developments. As evident in the photomontages, the proposed development will not affect views to the ridgelines or the Victoria Harbor. As such, the visual effect of the proposed development on the medium range VP3 and long-range VP4 is considered negligible. As for close-range VP1 and VP2, the proposed development will inevitably result in some loss of visual permeability. Efforts will be further made to provide suitable design measures at detailed design stage as far as practicable, such as setbacks, careful podium design, as well as the empty bay at G/F in order to reduce the bulk of the podium and enhance the permeability/amenity of the locality. In overall terms, the resultant visual impact of the proposed public housing development on the prominent pedestrian nodes/key open space of the subject vicinity is considered slightly adverse and the proposed development will not be incompatible with its surroundings.

Attachments

Drawing A	Proposed Viewpoints for Visual Appraisal
Drawing B	Tentative layout
Plan 1	Photomontage at VP 1 (View from King's Road Playground)
Plan 2	Photomontage at VP 2 (View from Tin Chiu Street Children's Playground)
Plan 3	Photomontage at VP 3 (View from Tin Hau Temple Road Park)
Plan 4	Photomontage at VP 4 (View from Rooftop Viewing Deck of Kai Tak Cruise Terminal)

HOUSING DEPARTMENT
May 2016



LEGEND :

- PROPOSED PUBLIC HOUSING SITE BOUNDARY
- VIEWPOINT
- VP1 - KING'S ROAD PLAYGROUND
- VP2 - TIN CHIU STREET CHILDREN'S PLAYGROUND
- VP3 - TIN HAU TEMPLE ROAD PARK
- VP4 - ROOFTOP VIEWING DECK OF KAI TAK CRUISE TERMINAL

METRES 100 0 100 200 300 METRES

PUBLIC HOUSING SITE AT JAVA ROAD - PROPOSED VIEWPOINTS FOR VISUAL APPRAISAL

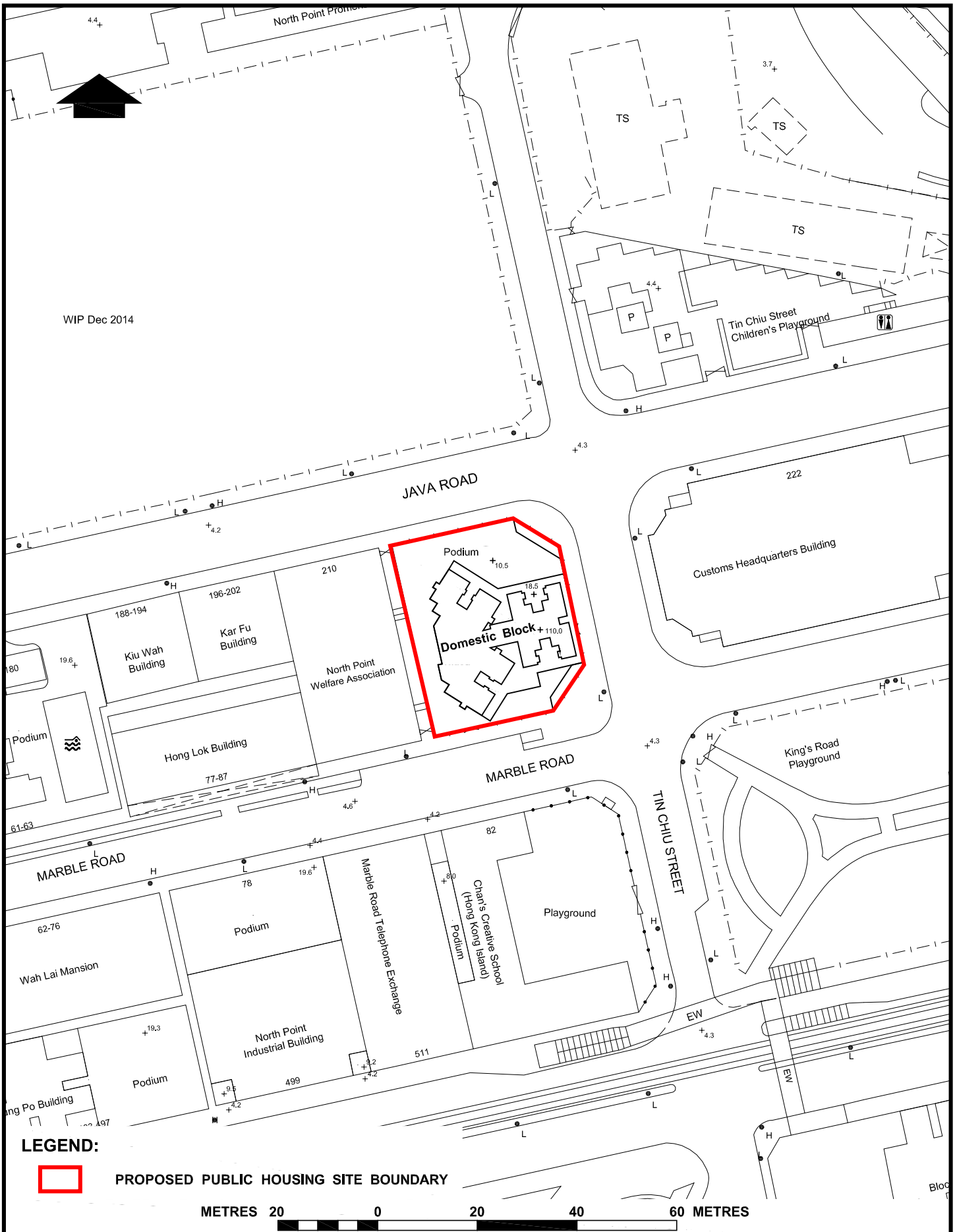
HOUSING DEPARTMENT
PLANNING SECTION

DRAWING A

DATE : 11. 3. 2016

BASE EXTRACTED FROM SHT. Nos. 11-NE-C & 11-SE-A

16_0054IIK_VPsA



LEGEND:

PROPOSED PUBLIC HOUSING SITE BOUNDARY

METRES 20 0 20 40 60 METRES

JAVA ROAD - TENTATIVE LAYOUT

(MAY BE CHANGED SUBJECT TO DETAIL DESIGN)

HOUSING DEPARTMENT
PLANNING SECTION

DRAWING B

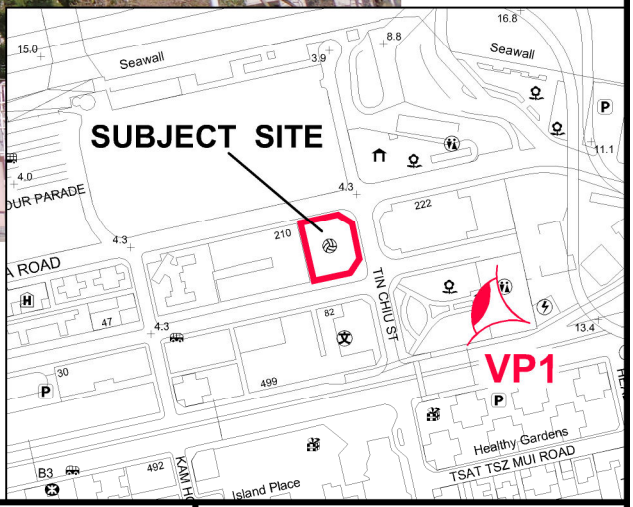
DATE : 10. 3. 2016

BASE EXTRACTED FROM SHT. No. 11-SE-1D

16_0054HK_Layout

With Existing View

With Proposed Development



PHOTOMONTAGE AT VIEWPOINT (VP)1
(VIEW FROM KING'S ROAD PLAYGROUND)

HOUSING DEPARTMENT
PLANNING SECTION

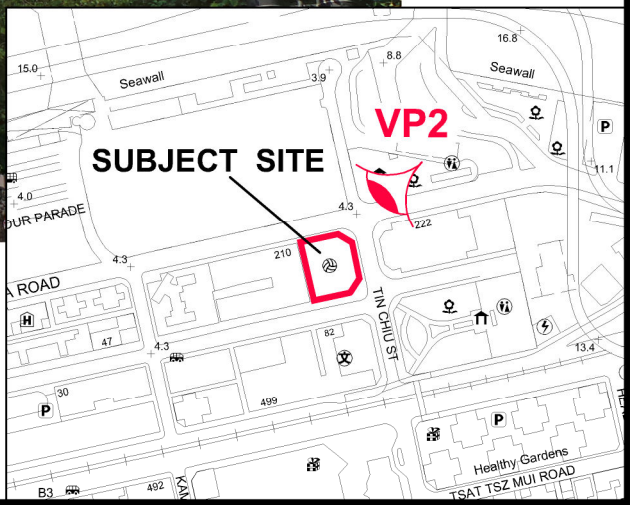
PLAN 1

DATE :
10. 3. 2016

16_0054HK_vp1C

With Existing View

With Proposed Development



PHOTOMONTAGE AT VIEWPOINT (VP)2
(VIEW FROM TIN CHIU STREET CHILDREN'S PLAYGROUND)

HOUSING DEPARTMENT
PLANNING SECTION

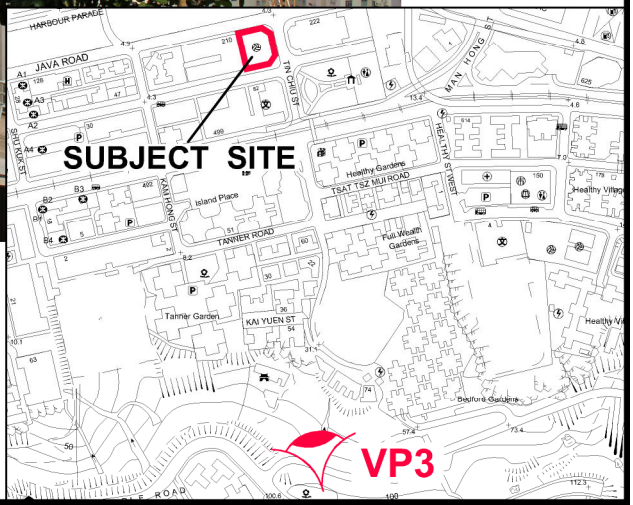
PLAN 2

DATE :
10. 3. 2016

16_0054HK_vp2B

With Existing View

With Proposed Development



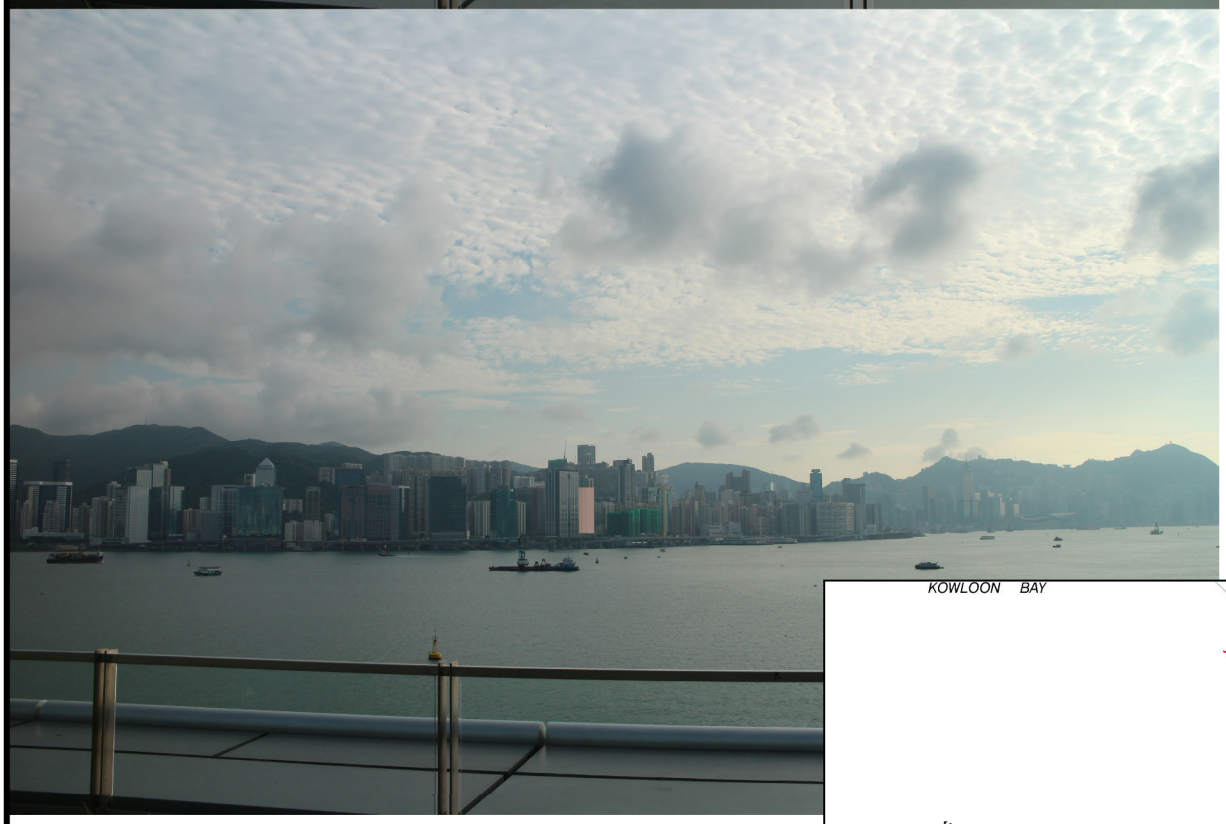
PHOTOMONTAGE AT VIEWPOINT (VP)3
(VIEW FROM TIN HAU TEMPLE ROAD PARK)

HOUSING DEPARTMENT
PLANNING SECTION

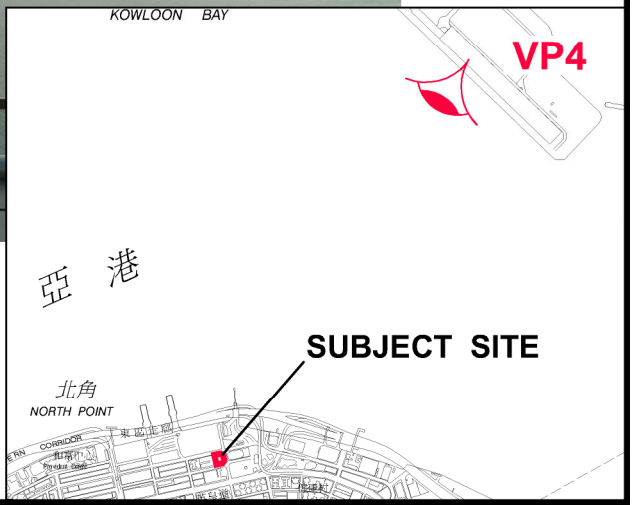
PLAN 3	DATE : 10. 3. 2016

16_0054HK_vp3

With Existing View



With Proposed Development



PHOTOMONTAGE AT VIEWPOINT (VP)4
(VIEW FROM ROOFTOP VIEWING DECK OF KAI TAK CRUISE TERMINAL)

HOUSING DEPARTMENT
PLANNING SECTION

PLAN 4

DATE :
10. 3. 2016

16_0054HK_vp4

Hong Kong Housing Authority

Air Ventilation Assessment of Proposed Public Housing Development at Java Road, North Point

Expert Evaluation Report

Issue | 23 May 2016

Job number 226853-05

Ove Arup & Partners Hong Kong Ltd
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
www.arup.com

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Document Verification

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Job title		Air Ventilation Assessment of Proposed Public Housing Development at Java Road, North Point		**Job number** 226853-05
Document title		Expert Evaluation Report		**File reference**
Document ref				
Revision	**Date**	**Filename**	20160422_JavaRoad_EE_issuev2.docx	
Issue	22 Apr 2016	**Description**	Issue	
			Prepared by	Checked by	Approved by
		Name	Agnes Chan	Henry Au	Sui-Hang Yan
		Signature			
		Filename		
		Description		
			Prepared by	Checked by	Approved by
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		Name			
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			Issue Document Verification with Document		✓

Contents

1 Introduction

1.1 Project Background

Ove Arup & Partners Hong Kong Ltd (Arup) was commissioned by the Hong Kong Housing Authority (HKHA) to carry out an Air Ventilation Assessment (AVA) – Expert Evaluation for the proposed public housing development at Java Road, North Point (the Development).

1.2 Objective

The objective of this study is to evaluate the wind performance of the Project Site using the methodology of Air Ventilation Assessment, based on the "*Housing Planning and Lands Bureau – Technical Circular No. 1/06, Environment, Transport and Works Bureau – Technical Circular No. 1/06*" issued on 19th July 2006 (the Technical Circular) and "*Technical Guide for Air Ventilation Assessment for Development in Hong Kong – Annex A*" (the Technical Guide). This report presents the findings for the study of Stage 1 – Expert Evaluation.

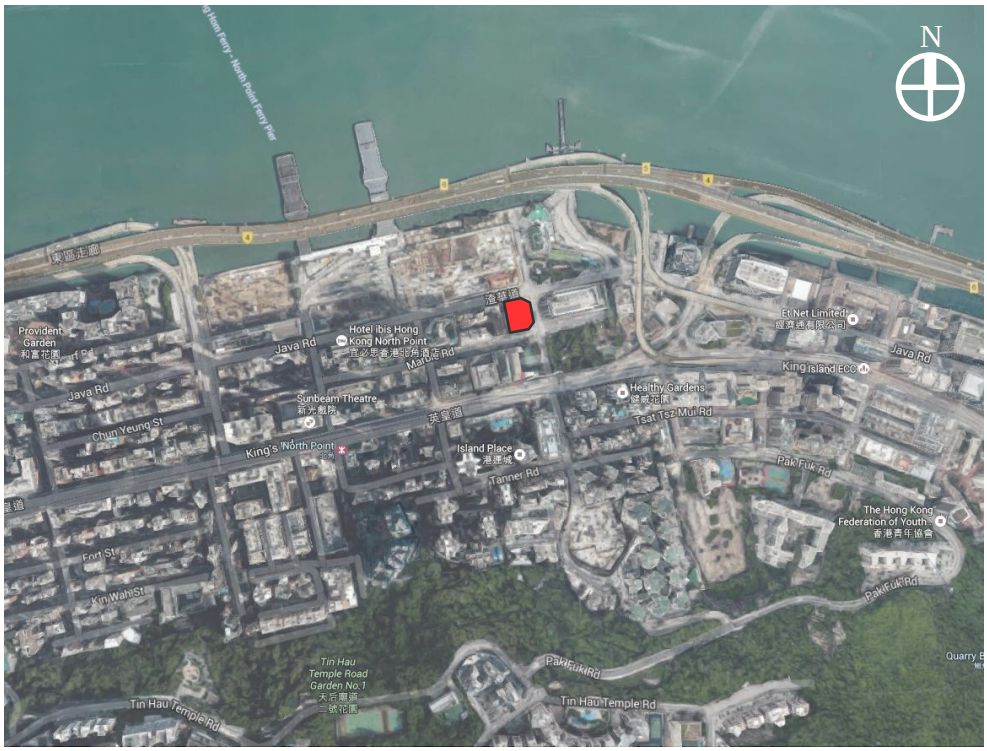
1.3 Study Tasks

The major task of this study is to carry out an expert evaluation on the characteristics of the site wind availability data of the development area and assessment of the wind performance under existing development situation and the proposed building design option in a qualitative way. The expert evaluation will cover the following tasks:

- Identify the wind condition
- Identify problem areas
- Identify good design features
- Define methodologies of the Initial Study

2 Site Characteristics

The Project Site is situated at the northern part of Hong Kong Island within North Point area. The Area is a flat built-up urban areas from east to west with gradually sloped regions to the far south, while the north of the Project Site is exposed to the Victoria Harbour. The topography of North Point area is shown in Figure 1.



Project Site

Figure 1 Topography of North Point Area (Source: Google Map)

The Project Site is located at junction of Java Road (Green line), Tin Chiu Street (Blue line) and Marble Road (Orange line). The location of the Project Site is shown in Figure 2.

An 8-storey GIC block (North Point Kai Fong Welfare Association) is at the west of the Project Site. The south side of the Project Site is the low-rise school site (Chan's Creative School (HK Island)) while the east side is the high-rise Custom Headquarters Building. A planned high-rise development at Java Road will be situated to the north of the Project Site, it is zoned as "Comprehensive Development Area (3)" ("CDA(3)") with a maximum building height of 80mPD.

Other significant surroundings around the Project Site includes high-rise residential buildings at Java Road and industrial building clusters such as North Point Industrial Building and Marble Road Telephone Exchange at south to southwest to the Project Site. Open spaces such as Tin Chiu Street Children's Playground and King's Road Playground are located at the northeast and the southeast sides of the Project Site respectively.

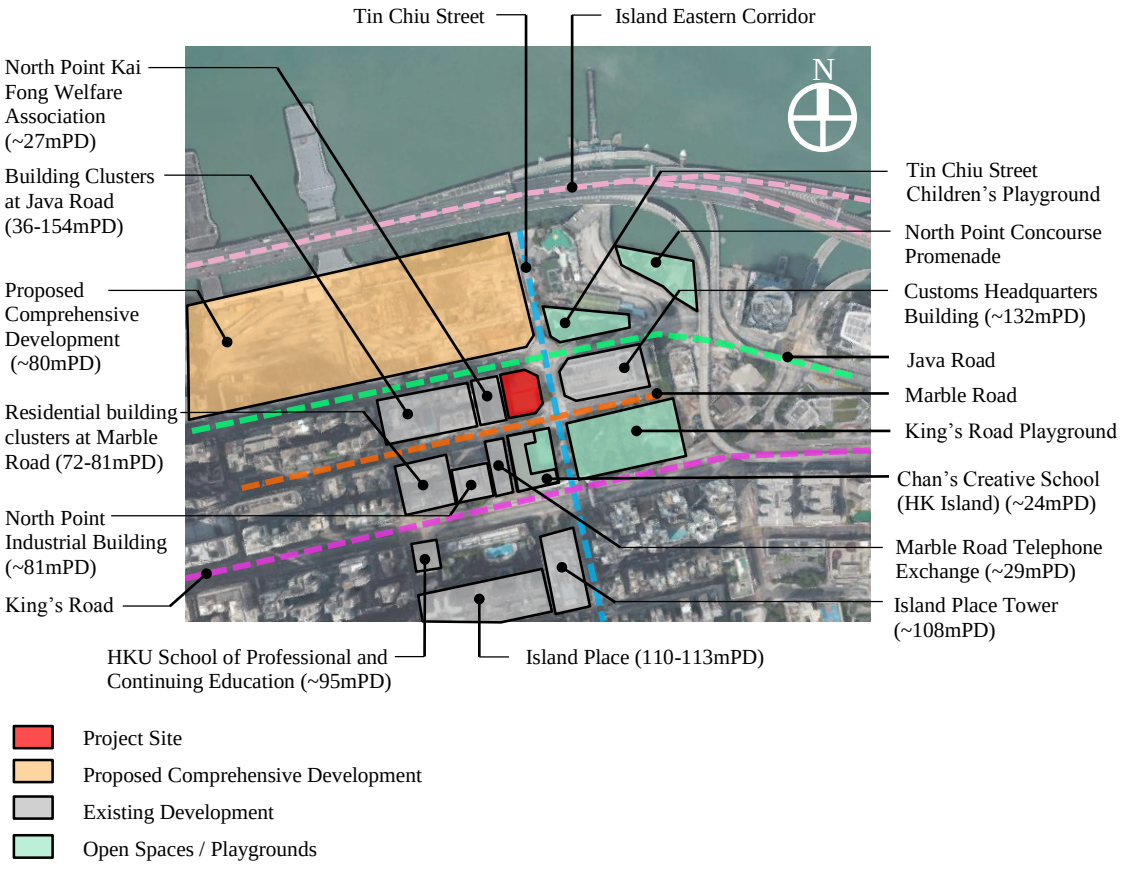


Figure 2 Location of Surrounding Major Roads and Surrounding Development (Source: Google Map)

3 Site Wind Availability

To investigate the wind performance of the Project Site, the characteristic of the natural wind availability of the site is essential. Site wind availability data presented in the wind rose could be used to assess the wind characteristics in terms of the magnitude and frequency of approaching wind from different wind directions. There are three sources of site wind data for this Development, including wind tunnel test, simulated RAMS and the nearby Hong Kong Observatory (HKO) Station – North Point Weather Station.

3.1 Wind Tunnel Test

The wind availability of this Study was referred to wind tunnel study report conducted for An Instructed Project at Ex-North Point Estate Site, North Point[1], Hong Kong. The Ex-North Point Estate Site is located just adjacent to the current project site of this study as shown in Figure 5. According to the Ex-North Point Estate Report, the site wind availability data was evaluated from a wind tunnel topographical model study previously conducted by others for a proposed development at the Oil Street site, North Point (CH2M Hill Hong Kong Limited, March 2008). The wind roses under annual and summer conditions are shown in Figure 3 and Figure 4 respectively.

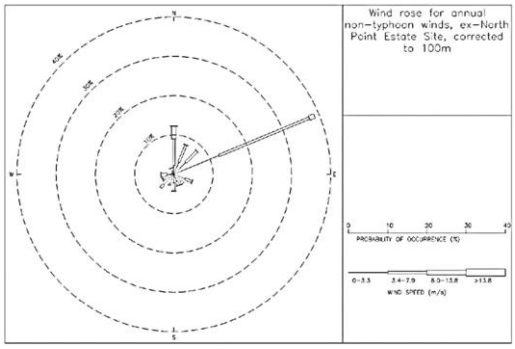


Figure 3 Wind Rose for the Project Site under Annual Wind Condition at 100m

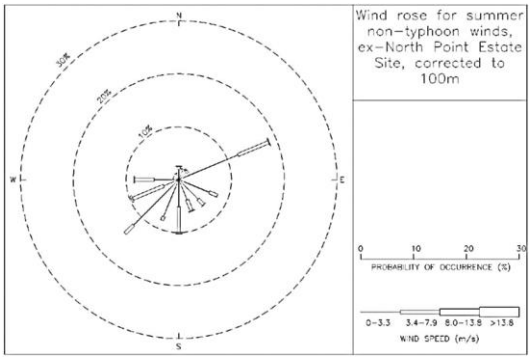


Figure 4 Wind Rose for the Project Site under Summer Wind Condition at 100m

[1] Final Report for An Instructed Project at Ex-North Point Estate Site, North Point, Hong Kong, Planning Department, HKSAR Government, December 2008

Project Site
Site Area of Ex-North Point Estate Site

Figure 5 Location of Data Extracted from Wind Tunnel Test

Table 1 Prevailing Wind Frequency by Wind Tunnel Test

Prevailing Wind	**Annual**	**Summer**
Wind Direction	ENE, N	ENE, SW, S, WSW

According to the wind data from the wind tunnel test, ENE and N winds are identified as the annual prevailing wind direction while ENE, SW, S and WSW winds are identified as the summer prevailing wind direction.

3.2 RAMS Wind Data

As stipulated in the Technical Guide, the site wind availability would be presented by using appropriate mathematical models (e.g. RAMS simulation). Planning Department (PlanD) has set up a set of wind availability data of the Territory for AVA study, which could be downloaded at Planning Department Website [2].

The wind availability data at 200mPD obtained from the grid of (x: 86, y: 36) for the RAMS simulation is utilised for the Expert Evaluation, as shown in Figure 6.

Annual (200mPD) Summer (200mPD)

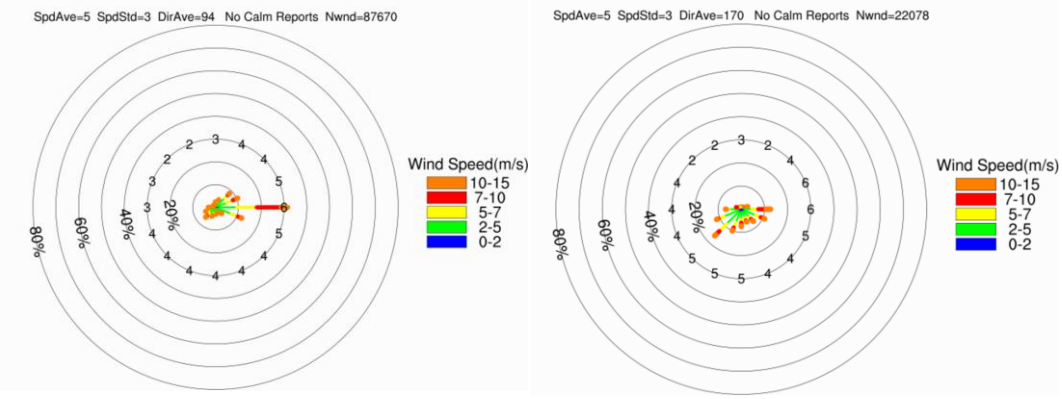


Figure 6 Wind Rose of North Point Area by RAMS Wind Data

Table 2 Prevailing Wind Frequency by RAMS Wind Data

Prevailing Wind	**Annual**			**Summer**		
Wind Direction	**E**	**ESE**	**ENE**	**SW**	**E**	**WSW**
Wind Frequency	31.6%	12.4%	10.6%	16.2%	12.7%	11.5%

According to the RAMS wind data, E, ESE and ENE winds contribute to 31.6%, 12.4% and 10.6% of the annual wind frequency respectively while the SW, E and WSW winds contribute to 16.2%, 12.7% and 11.5% of the summer wind frequency respectively. Hence, E, ESE and ENE winds are identified as the annual prevailing wind direction while SW, E and WSW winds are identified as the summer prevailing wind direction.

[2] http://www.pland.gov.hk/pland_en/info_serv/site_wind/site_wind/index.html

3.3 Hong Kong Observatory

On the other hand, the prevailing wind direction measured at the closest weather station - North Point Weather Station from the Hong Kong Observatory[3] is tabulated in Table 3 for each month in 2014. The E wind is the annual prevailing wind direction while the SW and E winds are the summer prevailing wind directions.

Table 3 Monthly Wind Direction Recorded at North Point Weather Station (Source: Hong Kong Observatory)

Month		Prevailing Wind Direction (°)
January		90
February		90
March		90
April		90
May		260
June	**(Summer)**	**260**
July		**80**
August		**260**
September		80
October		90
November		90
December		90
Annual		**90**

[3] Summary of Meteorological and Tidal Observations in Hong Kong (2014)

Figure 7 Measurement Location of North Point HKO Station

3.4 Summary of the Site Wind Availability

These three sets of wind data have been studied. The wind data from adjacent wind tunnel report, RAMS and North Point Weather Station indicated prevailing winds directions are tabulated in Table 4.

The tabulated data reflects similar annual prevailing wind directions which are N, ENE, E and ESE, whereas the summer prevailing wind directions varies from ENE, E, S, SW and WSW. The evaluation of site wind performance would consider both site wind availability data and site characteristics.

Table 4 Prevailing wind directions for the Study Area

Prevailing Wind Direction	Wind Tunnel Test	RAMS	HKO (North Point Area)
Annual	N/ENE	E/ESE/ENE	E
Summer	ENE/SW/S/WSW	E/SW/WSW	E/SW

4 Qualitative Assessment of Existing Condition of the Project Site

The Project Site is located in flat built-up area which exposes to the sea in the northern part and surrounded by building clusters in the east, west and south. With the consideration of the existing and committed developments near the Project Area, the wind environments under both annual and summer conditions are qualitatively assessed below based on the wind data presented in Section 3.

4.1 Annual Prevailing Wind Condition

Under annual wind condition, the prevailing winds are mainly from northeast quarter. The large elevated infrastructure namely, Island Eastern Corridor is situated at upstream of the wind entrance area. The infrastructure would induce wind blockage effect and slightly reduce the incoming wind speed.

Under N Wind

The incoming wind would mainly enter from the waterfront from the north. The presence of the Proposed Comprehensive Development at Java Road could divert the incoming wind to flow along Tin Chiu Street and deliver air to the further inland of North Point Area.

As the existing condition of the Project Site is a ball court with no major wind obstruction structure, a portion of incoming wind would be able to penetrate across the Project Site into Marble Road. The major portion of incoming wind would continue to flow along Tin Chiu Street and further ventilate Chan's Creative School (HK Island) and flow towards the southern North Point Area. A portion of N wind could able to skim over Chan's Creative School (HK Island) at high level and downwash to King's Road by the Island Place Tower.

Under ENE Wind

The ENE wind could enter the area from North Point Concourse Promenade through Tin Chiu Street Children's Playground. The presence of Customs Headquarters Building would divert the incoming wind to flow along Java Road. Due to no major wind obstruction structure at the existing site condition, a small portion of wind flow along Java Road could potentially penetrate across the site towards Marble Road. The prevailing wind could also penetrate from the east waterfront area and flow along Marble Road towards the center of North Point Area.

Under E Wind

The prevailing wind enters from the east waterfront area, the presence of Customs Headquarters Building would divide the wind to flow along both Java Road and Marble Road.

Under ESE Wind

The ESE wind would mainly flow along Java Road and King's Road from the ESE quarter direction. The presence of Customs Headquarters Building is expected to block the wind along Java Road towards the site, while the wind from King's Road could flow through King's Road Playground penetration into Marble Road and Java Road.

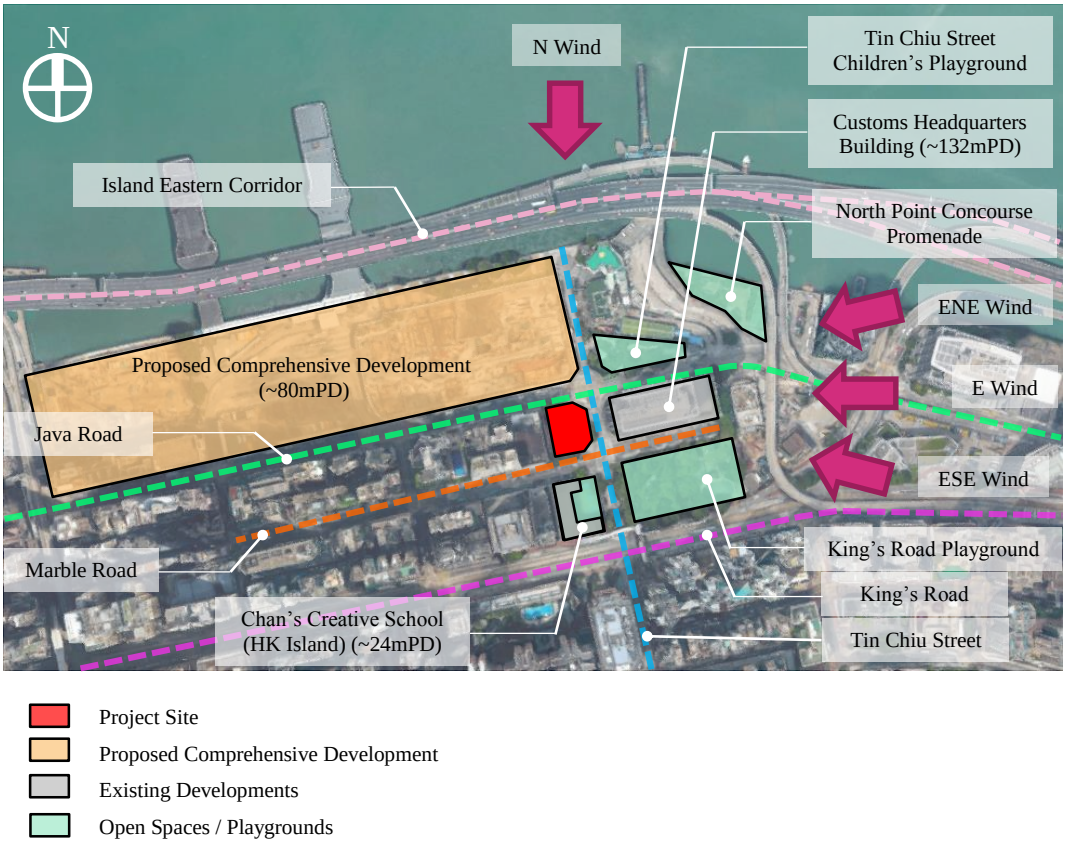


Figure 8 Wind Environment under Annual Wind Condition

4.2 Summer Prevailing Wind Condition

Under summer wind condition, the majority of the wind would come from easterly (E), east-north-easterly (ENE), southerly (S) and southwest quarter (SW and WSW).

Under ENE Wind

Similar to the Annual Wind Condition, the incoming wind would enters from North Point Concourse Promenade and then the Customs Headquarters Building would divert the incoming wind to flow along Java Road. A small portion of wind flow along Java Road could potentially penetrate across the site towards Marble Road. Marble Road could also act as a minor breezeway for the wind from the east waterfront area.

Under E Wind

Similar to the Annual Wind Condition, the prevailing wind enters from the east, the presence of Customs Headquarters Building would divide the wind to flow along both Java Road and Marble Road.

Under S Wind

The surroundings high-rise building clusters, such as Island Place Tower and Island Place building clusters at the south of the Project Site would potentially block the incoming wind to the Project Site and its leeward region. Furthermore, the presence of the Chan's Creative School (HK Island) at the upwind direction would further induce wind shadow to the Project Site. Thus, it is expected the wind environment would be relatively calm. A portion of incoming wind would mainly flow along the Tin Chiu Street toward the waterfront area and reach the Project Site.

Under SW and WSW Winds

Similar to the S wind condition, the surroundings high-rise buildings clusters at the south and southwest of the Project Site would potentially block the incoming wind to the Project Site and its leeward region. The incoming wind is expected to flow along Java Road and Marble Road from WSW to ENE and reach the Project Site and its leeward side (such as Tin Chiu Street Children's Playground).

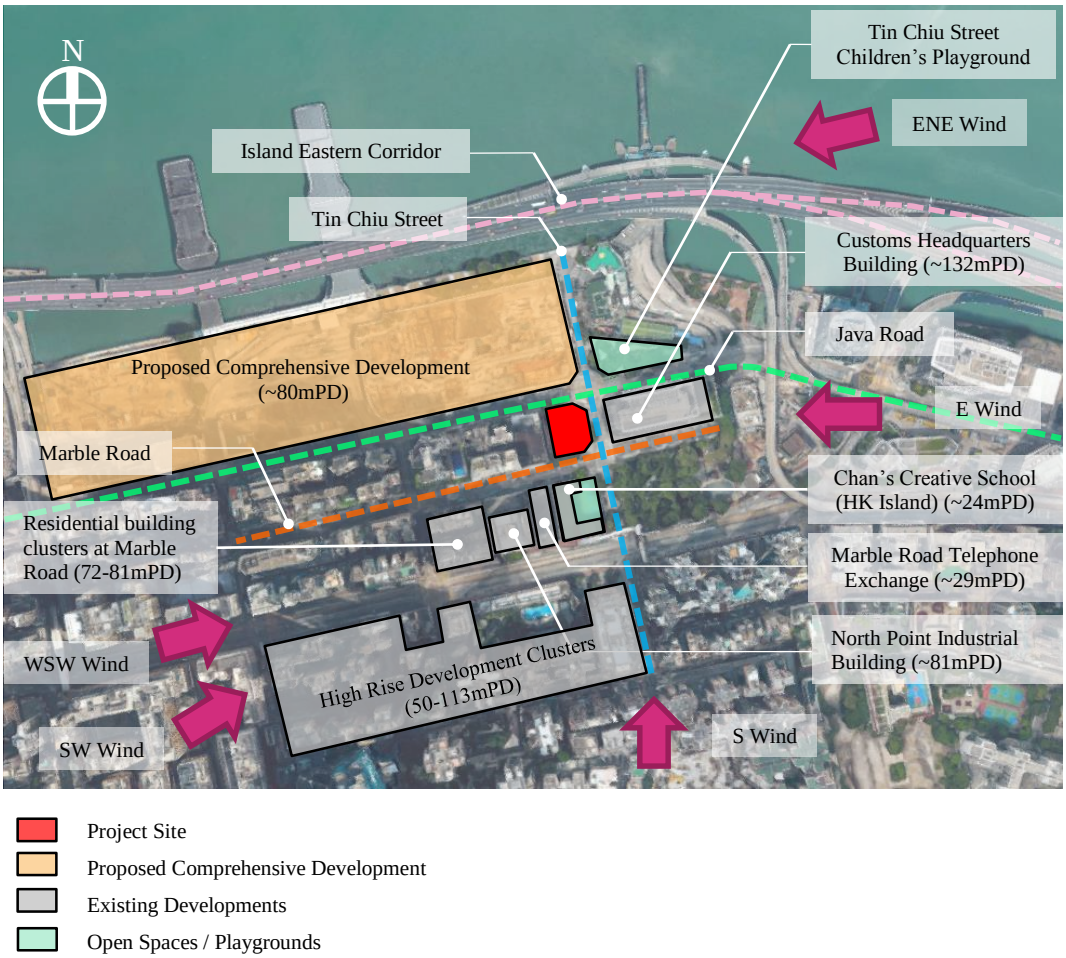


Figure 9 Wind Environment under Summer Wind Condition

5 Qualitative Assessments of OZP Compliant Scenario

While the existing use of the Project Site is a ball court, the planning intention of the Project Site is a one-storey GIC development as reflected on the OZP.

In the macroscopic point of view, the major flow pattern for the vicinity is mainly governed by the street pattern, such as Java Road, Marble Road and Tin Chiu Street, as discussed in Section 4. Even the GIC development is assumed to be full site coverage, it will not block the wind flow through any aforementioned road, and the overall flow pattern for current situation is expected similar to the existing condition.

Although the GIC development at the Project Site may alter the flow pattern under ENE wind, the impact is localized. The wind is expected to skim over the 1-storey development and able to reach Marble Road.

6 Preliminary Plan

The Development consists of a single domestic block with a maximum building height of 110mPD. The podium corners along Tin Chiu Street has truncated due to the project site boundary (hereafter "corner splay design"). This design feature could potentially help to direct wind flow between Tin Chiu Street and Java Road as well as Tin Chiu Street and Marble Road. Also, there is around 2m setbacks from the site boundary at both corner splay areas. Figure 10 and Figure 11 show the layout plan and the sectional plan of the Development respectively.

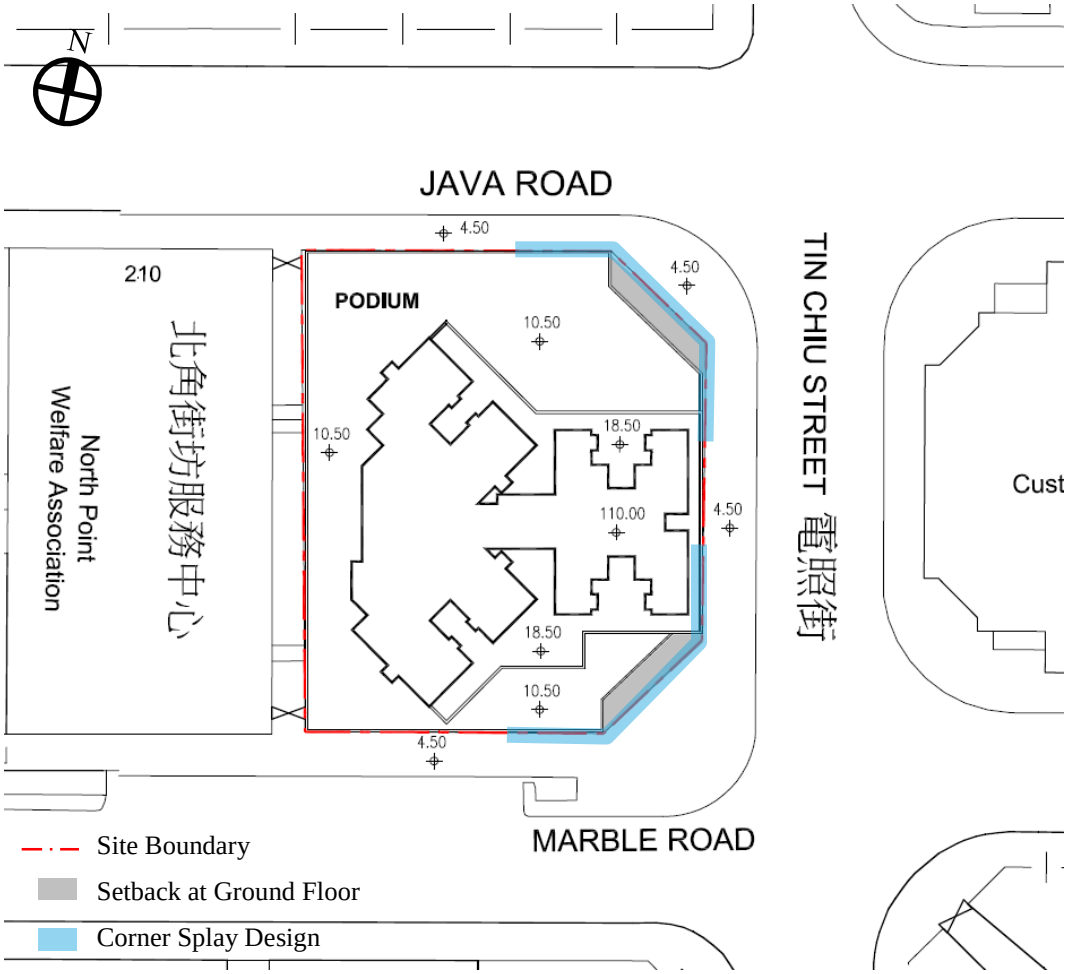


Figure 10 Site Layout Plan of the Development (site layout subject to detailed design)

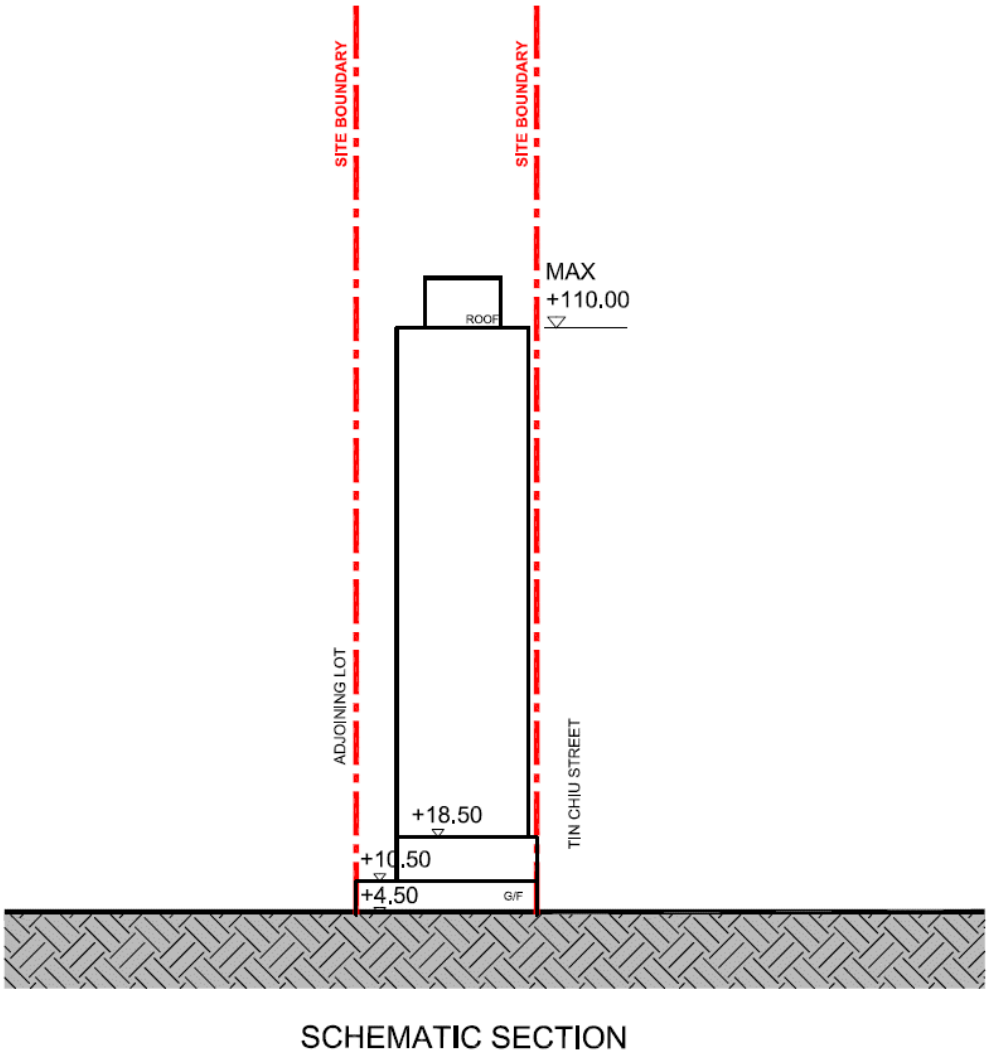


Figure 11 Sectional Plan of the Development

7 Ventilation Performance of the Proposed Development

7.1 Annual Prevailing Wind Condition

Under N Wind

The N wind would mainly enter from the north waterfront while the presence of the Proposed Comprehensive Development at Java Road could further divert the wind to flow along Tin Chiu Street and deliver air to the further inland of North Point Area.

The presence of the Development would inevitably induce wind shadow to the localized area of Marble Road and Chan's Creative School (HK Island). Nevertheless, the wind shadow is localized and would not induce significant impacts to the ventilation along Marble Road. Furthermore, the corner splay design of the current design scheme could facilitate the wind penetrate into the areas to minimize the ventilation impact.

Considering the 3m setback design along Tin Chiu Street at the Proposed Comprehensive Development (Highlighted with Purple Line and Blue area at Figure 12), the presence of the Development's building tower and podium would slightly narrow the air path along Tin Chiu Street and reduce the air volume flow across Tin Chiu Street and towards King's Road. The corner splay design of the current design scheme could facilitate the wind flow along Tin Chiu Street and minimize the ventilation impact.

On the other hand, the Development could block the high level wind penetration and reduce downwash effect of the Island Place Tower (location at the leeward side). Thus, the Development could lead to a slightly lower ventilation performance at the King's Road near Tin Chiu Street. Nevertheless, the impacts is localized and would not induce significant ventilation impacts along King's Road.

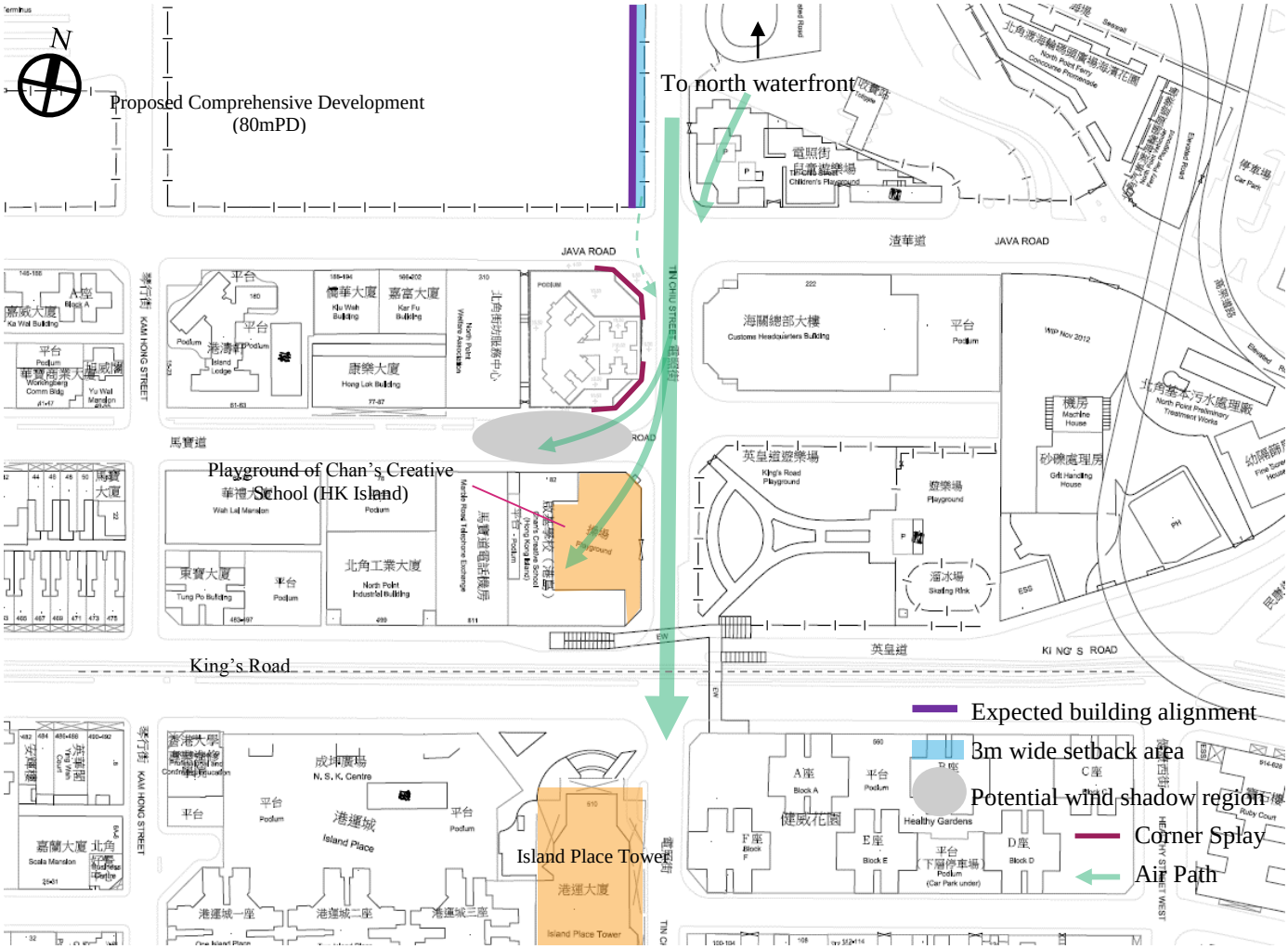


Figure 12 Wind Environment under N Winds (site layout subject to detailed design)

Under ENE Wind

Both Java Road and Marble Road are aligned to ENE direction, which encourage the ENE prevailing wind penetration. The ENE wind would also enter from North Point Concourse Promenade to Tin Chiu Street Children's Playground. The presence of Customs Headquarters Building would divert the incoming wind to flow along Java Road. The prevailing wind could also enters from the east waterfront area. Marble Road could act as a minor breezeway to deliver the wind towards the center of North Point Area.

The Development's building tower and podium is in alignment with the adjacent building blocks along the western part of Java Road including North Point Welfare Association, Kar Fu Building, Kiu Wah Building and Hong Lok Building (Highlighted with Purple Line at Figure 13). In this connection, it is expected that the presence of the Development would not induce significant impact to the wind flow along the western part of Java Road.

The presence of the Development would inevitably block the prevailing wind and prevent wind flow from Java Road to Marble Road directly. As a result, slightly lower ventilation performance is expected at the localized areas of Marble Road. The provision of the corner splay design of the Development could help to divert a small portion of wind from Java Road through Tin Chiu Street towards the Marble Road and thus to minimize the ventilation impact.

The Customs Headquarters Building (+132mPD) is situated at the ENE side of the Project Site. As the Customs Headquarters Building is at the upwind direction, it would shield the incoming wind to the Project Site, while the Development is expected to further shield the building clusters at the leeward zone, such as North Point Kai Fong Welfare Association, Kar Fu Building and Hong Lok Building.

Chan's Creative School (HK Island) is located at the south of the Project Site. As the Project Site is not located at the upwind of the school site, it is expected that the Development would not induce significant ventilation impact to the area.

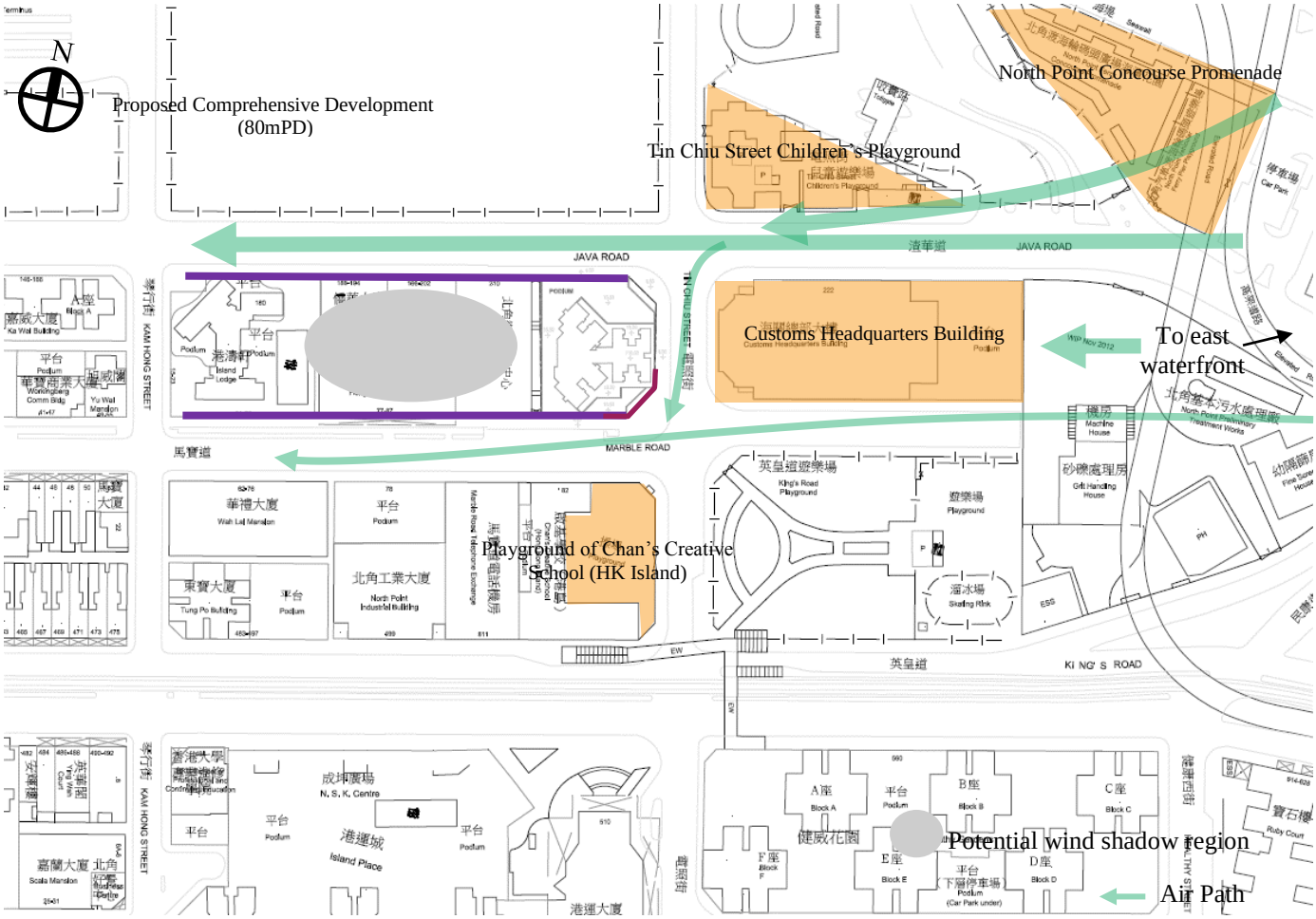


Figure 13 Wind Environment under ENE Wind (site layout subject to detailed design)

Under E Wind

The prevailing wind enters from the east waterfront. The presence of Customs Headquarters Building would divide the incoming wind to flow along both Java Road and Marble Road. The Development's building tower and podium is in alignment with the adjacent building blocks along Java Road and Marble Road including North Point Welfare Association, Kar Fu Building, Kiu Wah Building and Hong Lok Building (Highlighted with Purple Line at Figure 14). In this connection, it is expected that the presence of the Development would not induce significant disturbance to the air flow along Java Road and Marble Road, which shows a similar ventilation performance to the existing condition of the Project Site.

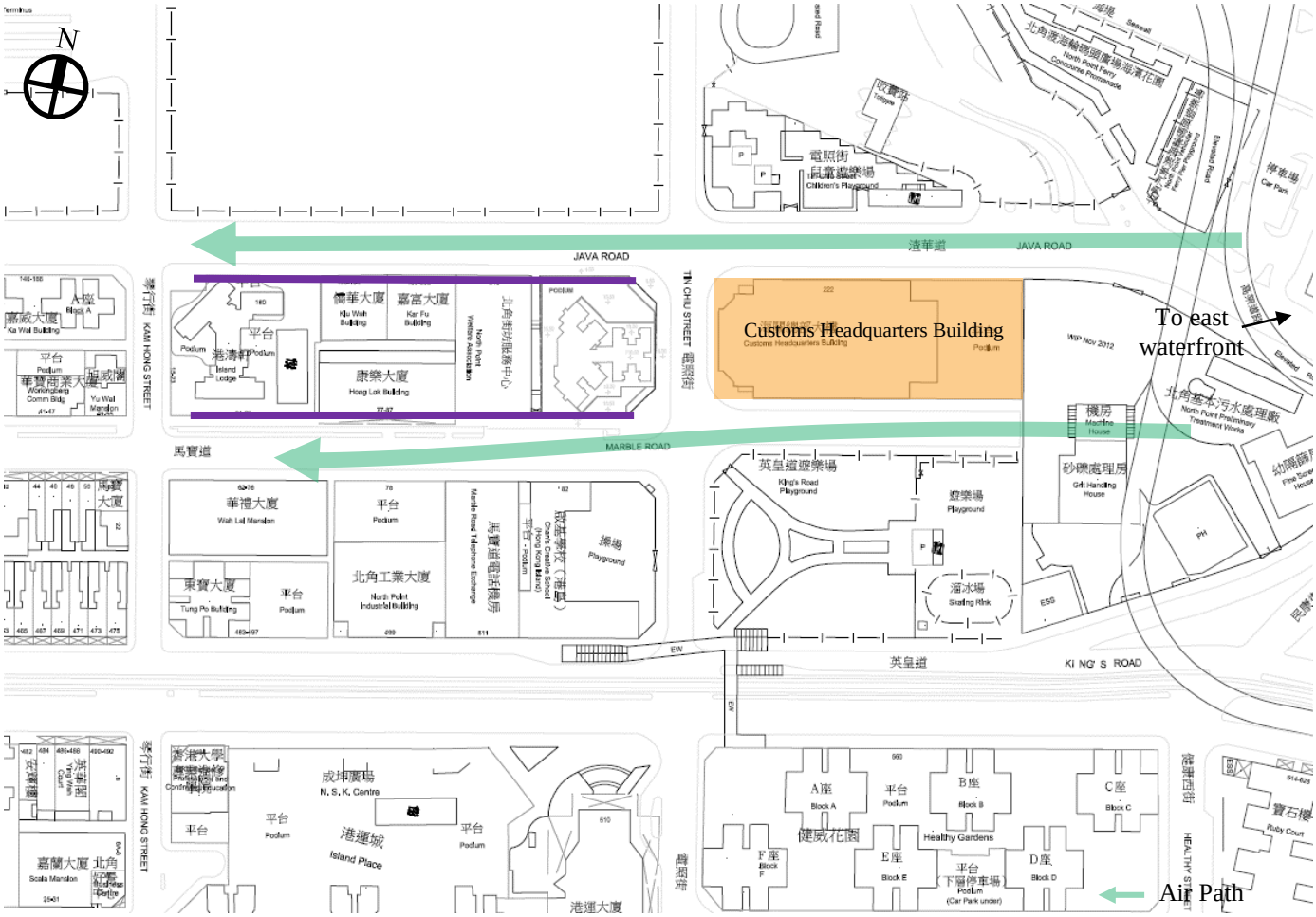


Figure 14 Wind Environment under E Wind (site layout subject to detailed design)

Under ESE Wind

The ESE wind would mainly flow along Java Road and King's Road from the ESE quarter direction. The presence of Customs Headquarters Building is expected to block the wind along Java Road towards the site and divert towards Tin Chiu Street Children's Playground. On the other hand, the wind from King's Road could flow through King's Road Playground and reach the project site. The Development could divide the incoming wind into two air streams. One air stream further flow along Marble Road and other would flow towards Tin Chiu Street and into the Java Road as well as Proposed Comprehensive Development.

The presence of the Development would inevitably induce wind shadow to the localized area of Java Road. Nevertheless, the wind shadow region is localized and would not induce significant impacts to the ventilation along Java Road. Also, the corner splay design of the Development could help to direct a portion of wind penetrate into the areas and thus to minimize the ventilation impact.

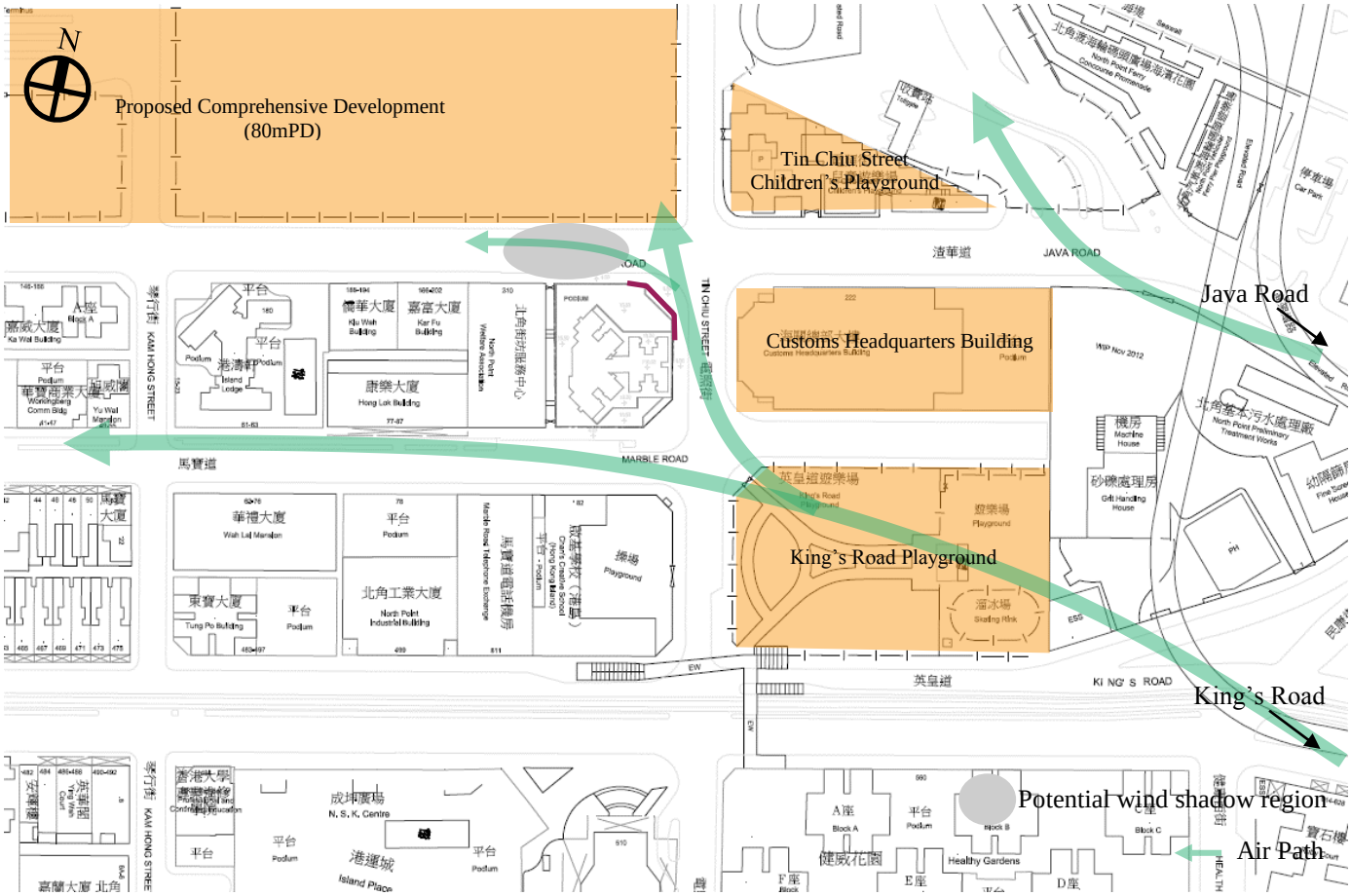


Figure 15 Wind Environment under ESE Wind (site layout subject to detailed design)

7.2 Summer Prevailing Wind Condition

Under ENE Wind

Similar to the ENE wind in previous section, both Java Road and Marble Road are aligned to ENE direction, which encourage the ENE prevailing wind penetration. The incoming wind would also enter from the waterfront. The presence of the Customs Headquarters building would divide the wind to flow along Java Road. It is expected the Development would not induce significant disturbance to the air flow along Java Road, as the Development's building bulk is in alignment with the adjacent building blocks.

While the presence of the Development would block the prevailing wind and prevent wind flow from Java Road to Marble Road directly. As a result, slightly lower ventilation performance is expected at the localized areas of Marble Road.

Under E Wind

Similar to the previous section, the prevailing wind enters from the east. The presence of Customs Headquarters Building would divide the incoming wind to flow along both Java Road and Marble Road. It is expected the Development would not induce significant disturbance to the air flow along Java Road, as the Development's building bulk is in alignment with the adjacent building blocks.

Under S Wind

The high-rise building clusters (Island Place Tower and Island Place Development) and the school site (Chan's Creative School (HK Island)) at the south of the Project Site would potentially block the incoming wind to the Project Site and its leeward region. Due to the upstream built environment, the S wind would mainly travel along Tin Chiu Street towards the waterfront area. Localized wind shadow effect would be induced by the Development to the Java Road. The provision of corner splay at the junction of Java Road and Tin Chiu Street could help to direct a portion of S wind penetrate into Java Road to reduce the ventilation impact of the area.

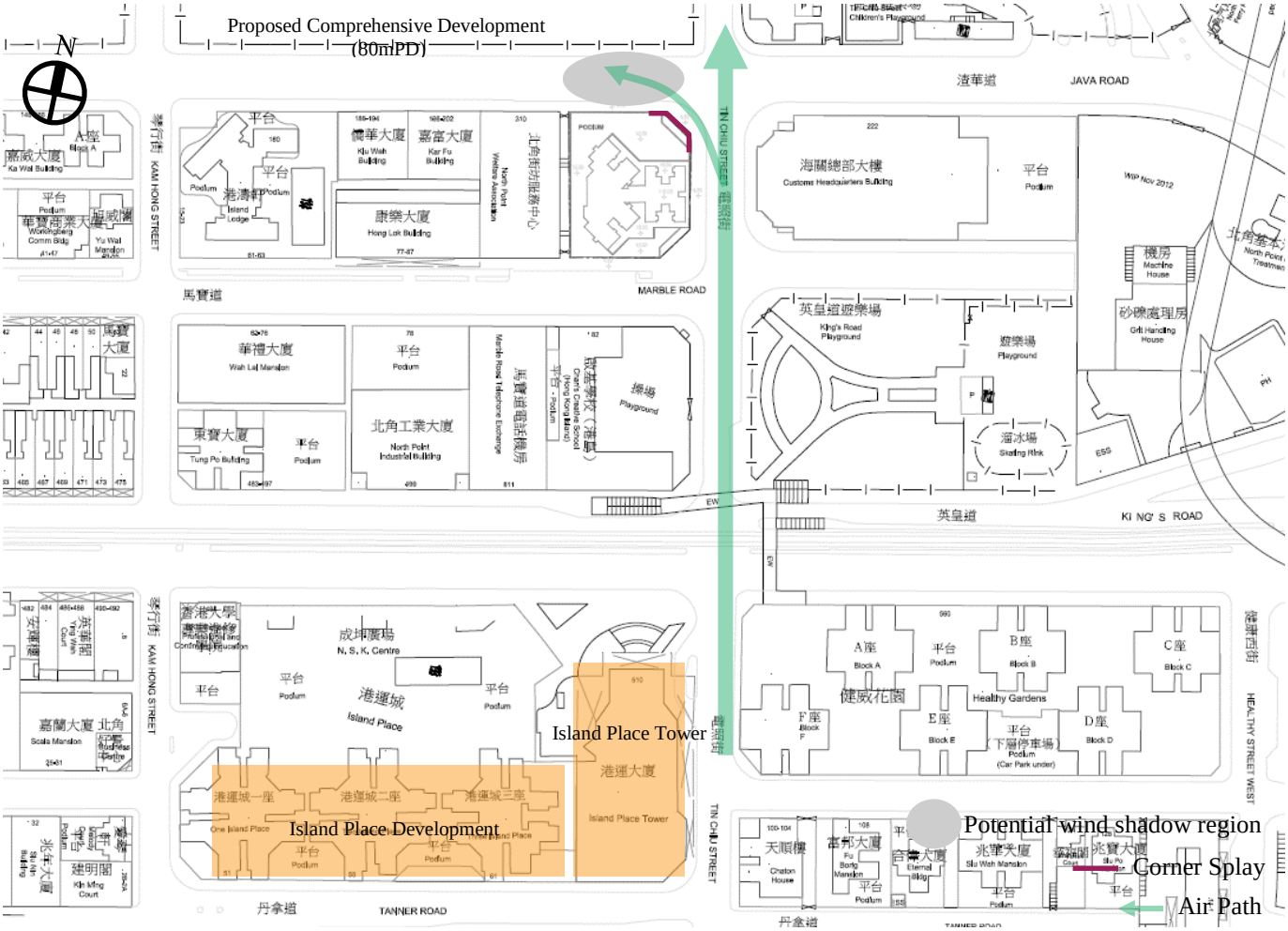


Figure 16 Wind Environment under S Wind (site layout subject to detailed design)

Under SW and WSW Winds

Similar to the S wind condition, the high-rise buildings cluster at the southern region would block the prevailing wind to the Project Site, while the street in this part of North Point is in grid pattern with Java Road and Marble Road aligned from WSW to ENE direction. It is expected that both streets are favourable for the prevailing wind, and it is expected that the wind would mainly flow along Java Road and Marble Road.

The Development's building tower and podium is in alignment with the adjacent building blocks along Java Road and Marble Road including North Point Welfare Association, Kar Fu Building, Kiu Wah Building and Hong Lok Building (Highlighted with Purple Line at Figure 17). Therefore, the presence of the Development would not induce significant disturbance to the air flow along Java Road and Marble Road.

With Tin Chiu Street being located at the immediate leeward side of the Development, it is still expected that the Development would induce localized wind shadow to the area.

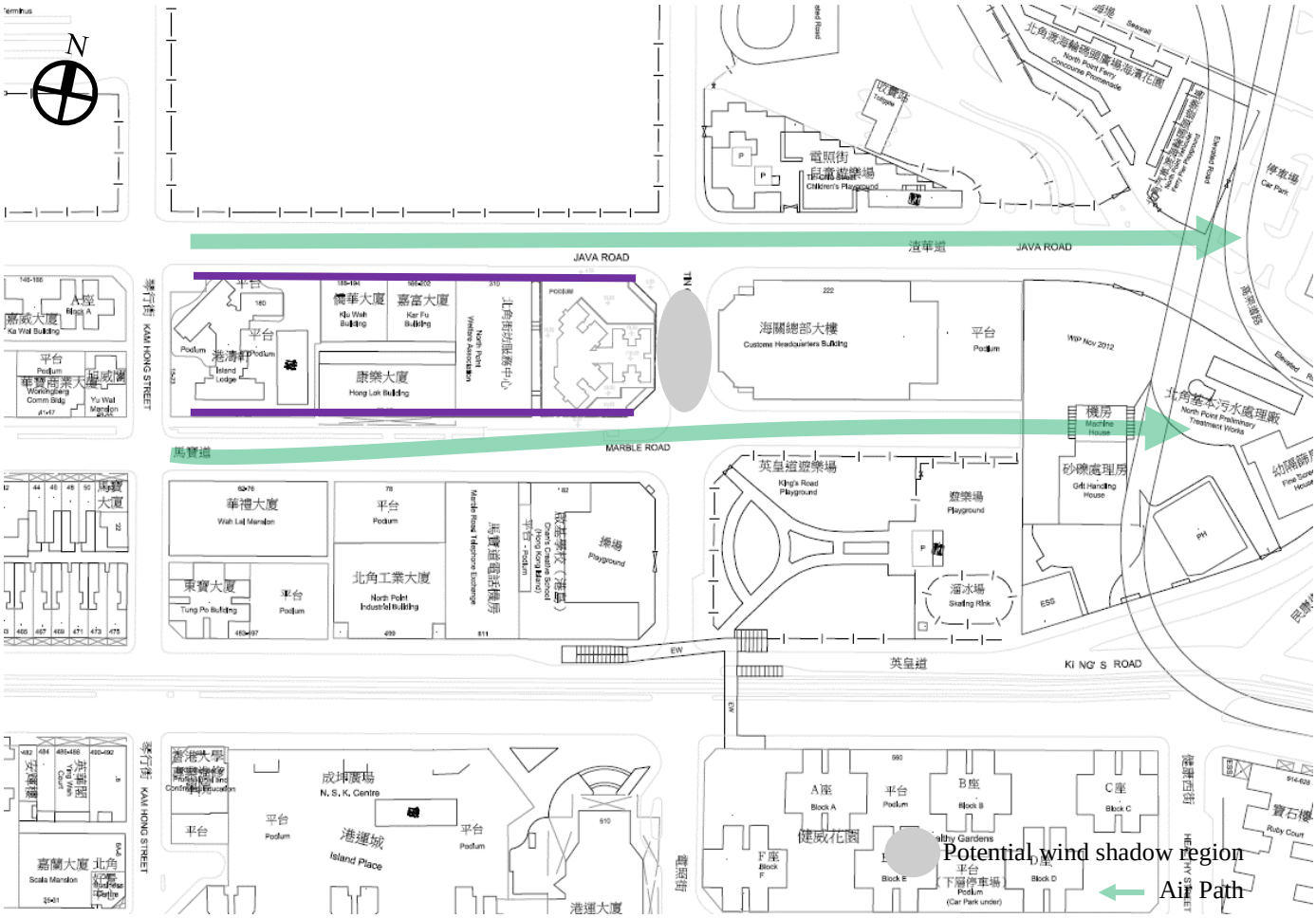


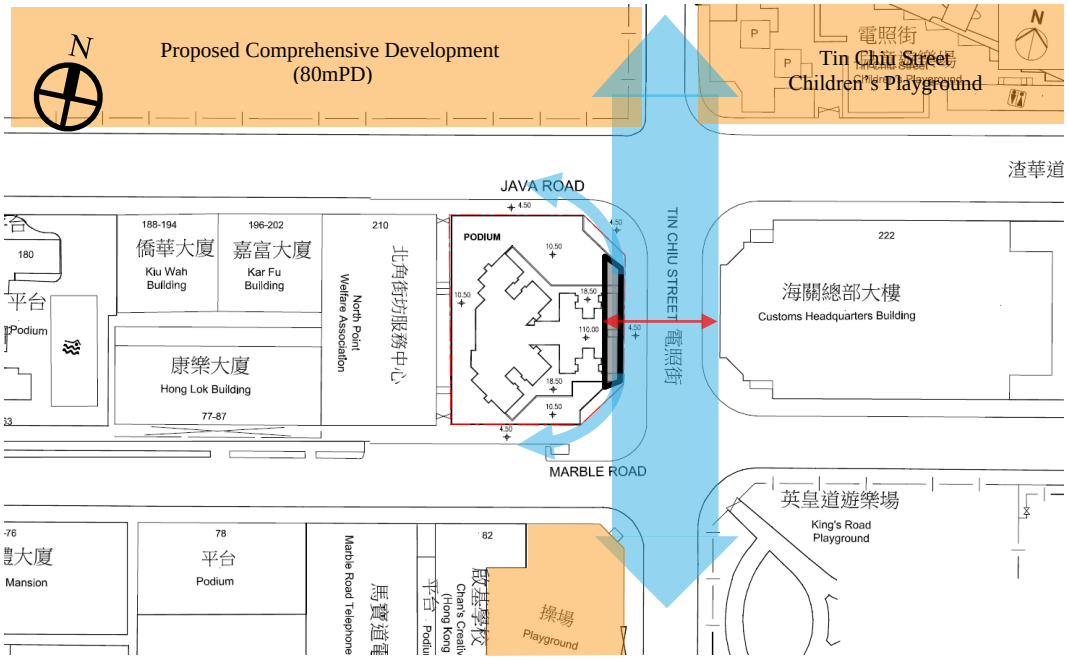
Figure 17 Wind Environment under SW and WSW Wind (site layout subject to detailed design)

8 Wind Enhancement Features and Recommendation

To further improve the wind performance of the Development and its surrounding areas and minimize localized ventilation impact on its downstream area, the following wind enhancement feature are recommended.

8.1 Empty Bay at Ground Floor Level

One storey ground floor empty bay of about 3.5m (width) x 3.0m (high) (subject to design change of building layout at detailed design) is suggested at the east wing of the Project Site to increase wind permeability area along Tin Chiu Street and to facilitate wind penetration to the leeward regions, such as Tin Chiu Street Children's Playground and Java Road under S wind and Chan's Creative School (HK Island) Playground and Marble Road under N wind.



Playground of Chan's Creative School (HK Island)

Site Boundary
Air Path
Proposed Ground Floor Empty Bay

Figure 18 Recommended Location of Ground Floor Empty Bay (site layout subject to detailed design)

9 Further Quantitative Study

For scheme optimization in the detail design stage, it is recommended to proceed with the AVA Initial study to investigate the wind performance quantitatively with considerations of the proposed wind enhancement features, which shall follow the guideline given in "*HOUSING, PLANNING AND LANDS BUREAU TECHNICAL CIRCULAR NO. 1/06 ENVIRONMENT, TRANSPORT AND WORKS BUREAU TECHNICAL CIRCULAR NO. 1/06, Technical Guide for Air Ventilation Assessment for Developments in Hong Kong*".

10 Conclusion

Qualitative assessment of the wind environment of the Development at Java Road, North Point was conducted. The Development consists of a single domestic block on top of a one storey podium.

According to the analysis, the annual prevailing wind comes from N, ENE, E and ESE directions and the summer prevailing wind is from ENE, E, S, SW and WSW direction. The findings of the EE study is summarized in below:

For Annual Wind Condition

- N wind would mainly flow along Tin Chiu Street. The presence of the Development's building tower and podium is expected to slightly reduce the air volume flow across Tin Chiu Street and towards King's Road. The implement of the corner splay design could facilitate the wind flow along Tin Chiu Street and minimize the ventilation impact.

- Under ESE winds, the Development would not induce significant disturbance to the air flow along Marble Road. However, the Development is expected to cast wind shadow at the Java Road. Nevertheless, the wind shadow localized only and would not induce significant impacts to the ventilation along Java Road.

For Summer Wind Condition

- Due to the high-rise built environment at the upstream direction, the S wind would mainly travel along Tin Chiu Street towards the waterfront area. Localized wind shadow effect would be induced by the Development to the Java Road.

- Under SW and WSW winds, the wind path mainly flow along Java Road and Marble Road. As the Development is in alignment with the adjacent building blocks along wind path. Thus it is expected that the Development would not induce significant disturbance to the air flow. Although Tin Chiu Street is located at the immediate leeward side of the Development, it is still expected that the Development would induce localized wind shadow to the area.

For Both Annual and Summer Wind Condition

- E winds would enter the area from North Point Concourse Promenade and east waterfront area. The prevailing wind would flow along Java Road and Marble Road. It is expected that the presence of the Development would not induce significant disturbance to the air flow along Java Road and Marble Road, since the building alignment to the adjacent buildings is similar along both roads.

- Both Java Road and Marble Road are aligned to ENE direction, which encourage the ENE prevailing wind penetration. The ENE wind would also enter the Project Site from North Point Concourse Promenade to Tin Chiu Street Children's Playground. Similar to the E wind, it is expected that the

presence of the Development would not induce significant disturbance to the air flow along Java Road, since the building alignment to the adjacent buildings is similar along the road.

The presence of the Development would block the ENE prevailing wind and prevent wind flow from Java Road to Marble Road directly. As a result, slightly lower ventilation performance is expected at the localized areas of Marble Road.

The Development has incorporated corner splays design with around 2m setback from the site boundary. These design features could potentially help to direct wind flow between Tin Chiu Street and Java Road as well as Tin Chiu Street and Marble Road and help to minimize the ventilation impacts.

To further enhance the ventilation performance, it is recommended to adopt 1-storey podium level empty bay of about 3.5m (width) x 3.0m (high) to facilitate wind penetration across the Development and to enhance the ventilation of the surrounding, such as Tin Chiu Street Children's Playground, playground of Chan's Creative School (HK Island) as well as the localized area of Java Road and Marble Road.

This Expert Evaluation provides qualitative analysis of wind performance of the Development. For scheme optimization in the detailed design stage, AVA Initial study is recommended to further investigate the wind performance quantitatively.

04/07/2016

Reference number: CHK50019645

TERM TRAFFIC AND ENVIRONMENTAL CONSULTANCY SERVICES 2014 - 2016
INSTRUCTION NO. M32
PUBLIC HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT
TRAFFIC IMPACT ASSESSMENT STUDY
FINAL REPORT

Hong Kong Housing Authority
香港房屋委員會

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

MVA
SYSTRA GROUP

PUBLIC HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT

TRAFFIC IMPACT ASSESSMENT STUDY

IDENTIFICATION TABLE	
Client/Project owner	Hong Kong Housing Authority
Project	Public Housing Development at Java Road, North Point
Study	Traffic Impact Assessment Study
Type of document	Final Report
Date	04/07/2016
File name	g:\mva\hk500196\chk50019642 (m28)\report\final tia-rpt1 (m28).docx
Reference number	CHK50019645

APPROVAL					
Version	**Name**		**Position**	**Date**	**Modifications**
1	Author	George Lee	Associate	04/07/2016	
	Checked by	Steven Ho	Divisional Director	04/07/2016	
	Approved by	Francis SooToo	Director	04/07/2016	

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1. INTRODUCTION

1.1 Background

1.1.1 MVA Hong Kong Limited (MVA) was commissioned by the Hong Kong Housing Authority (HKHA) in 2016 to conduct a Traffic Impact Assessment (TIA) study for the Public Housing Development at Java Road. **Drawing No. 1.1** shows the location of the development site.

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

1.2 Study Objectives

1.2.1 The main objectives of the study are as follows:

- to assess the existing traffic conditions in the vicinity of the proposed development;
- to forecast traffic demands on the adjacent road network in the design year 2025;
- to estimate the likely traffic generated by the proposed development based on the updated planning parameters;
- to assess the impacts of traffic generated by the proposed development on the adjacent road network;
- to recommend improvement measures, if necessary, to alleviate any traffic problems on the road network; and
- to investigate the provision of public transport services and pedestrian needs in the near vicinity.

1.3 Structure of the Report

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

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

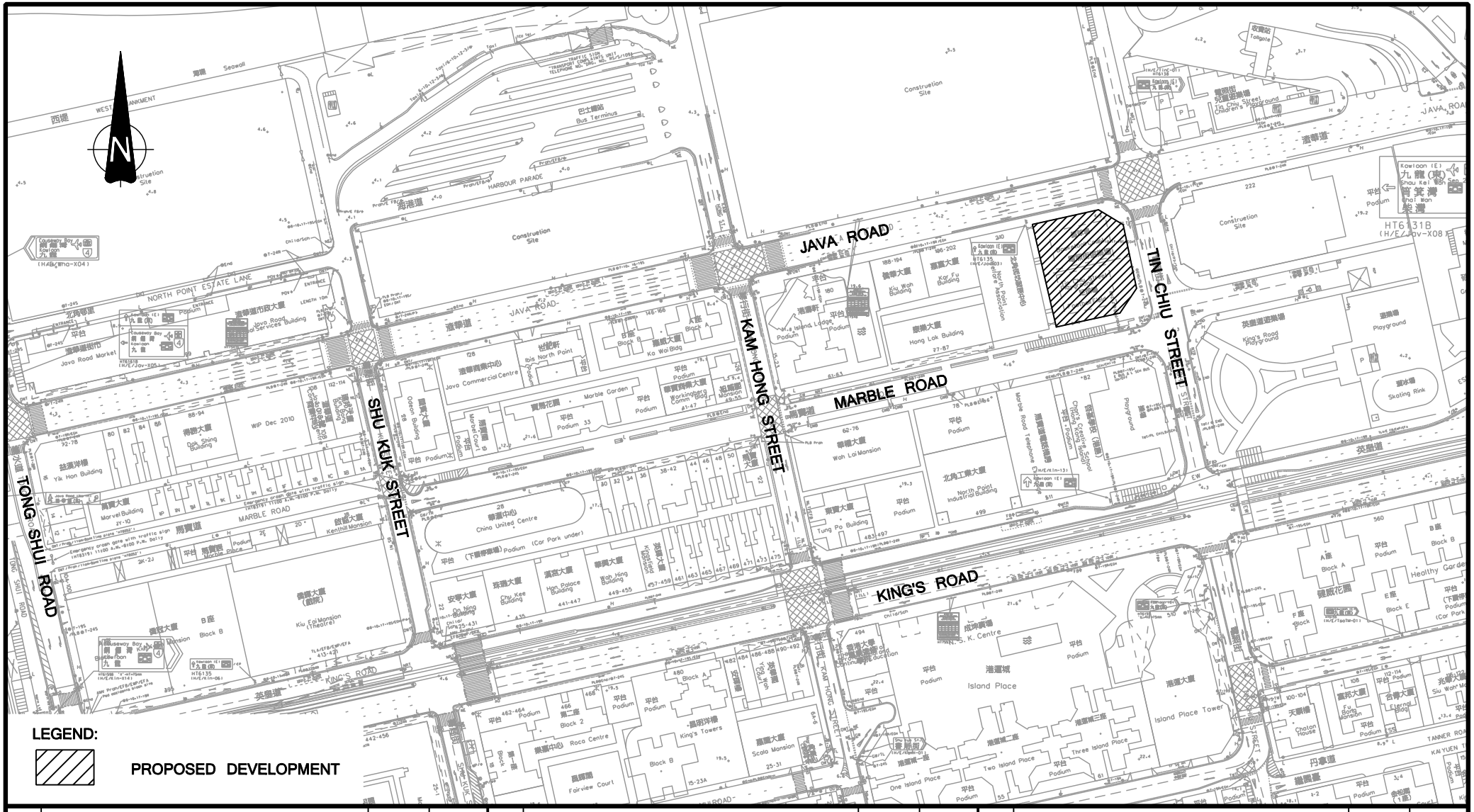
1.3.3 **Chapter 3 – Existing Traffic Conditions**, which describes the existing road network in the vicinity of the proposed development, presents the summary of traffic count survey and assesses the existing traffic conditions.

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

1.3.5 **Chapter 5 – Traffic Impact Assessment**, which presents the findings of the traffic impact assessment in the future design year and recommends improvement measures, if necessary.

1.3.6 **Chapter 6 – Public Transport Provisions Service and Pedestrian Facilities**, which provides an examination of the provisions of public transport and pedestrian facilities in the vicinity of the proposed development.

1.3.7 **Chapter 7 – Summary and Conclusion**, which summarises the findings of the study and presents the conclusion regarding the traffic issues of the proposed development.



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

Drawing Title

SITE LOCATION

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:2000(A4)	MAY 2016	1.1	-

MVA SYSTRA GROUP

CHK50019645/TIA/F11.DGN/KCF/19MAY16

2. THE PROPOSED DEVELOPMENT

2.1 Site Location

2.1.1 As shown in **Drawing No. 1.1**, the development site is located at the existing Tin Chiu Street Playground, which is bounded by Java Road to the North, Tin Chiu Street to the East and Marble Road to the South.

2.2 Proposed Development

2.2.1 The proposed development is planned as public housing development consists of about 240 Subsidized Sales Flats (SSF). The proposed development is scheduled to be completed by year 2022.

2.3 Vehicular Access of Proposed Development

2.3.1 As shown in **Drawing No. 2.1**, the vehicular access of the proposed development will be located at Marble Road near the junction with Java Road. At present Marble Road is a one-way carriageway running in eastbound direction.

2.3.2 Taken into account of the proposed vehicular access for the development, about 15 nos. of motorcycle parking spaces would be affected. Relocation proposal of the affected motorcycle parking spaces will be determined for TD's agreement in detail design stage.

2.4 Parking and Servicing Facilities Provisions of Proposed Development

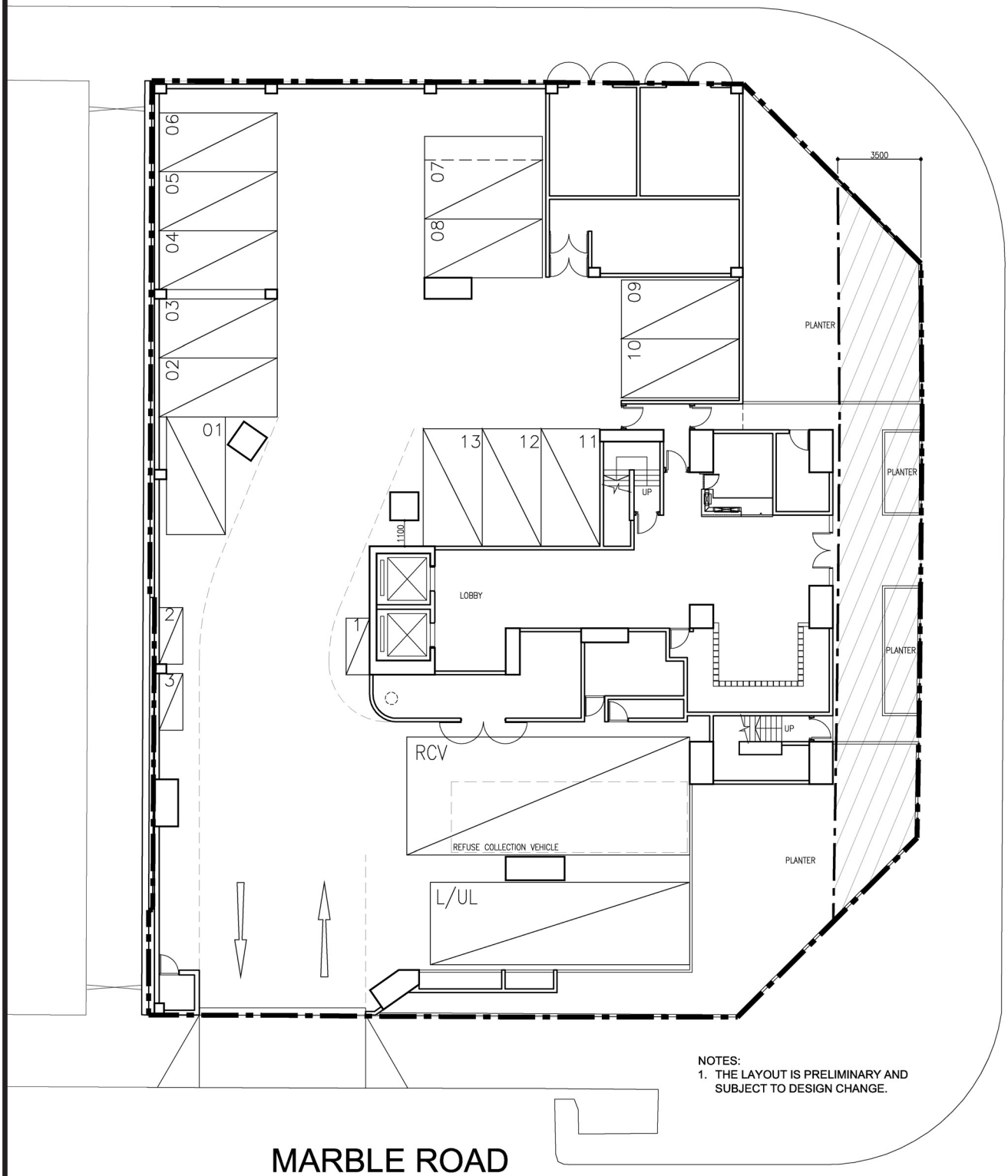
2.4.1 Based on the Departmental Circular No.2/2012 - Interim Parking Standards, the proposed parking provisions for the proposed development are summarized in **Table 2.1**.

Table 2.1 Proposed Parking Provisions for the Proposed Development

Parking Facilities	Standard	Requirements	Proposed Provision
Subsidized Sales Flats (SSF) - 240 units			
Private Car	GPS(1) X R1(2) X R2(3)	11-16	11 (4)
Motorcycle	1 space per 110 flats	3	3
Visitor Parking	2-3 visitor spaces per block	2-3	2
Loading/ unloading	1 bay per block	1	1

Remark: (1) GPS: Global Parking Standard = 1 car space per 6 – 9 flats
(2) R1: Demand Adjustment Ratio = 0.48
(3) R2: Accessibility Adjustment Ratio = 0.85
(4) According to HKPSG, the current proposal of 11 parking spaces includes 1 accessible parking spaces (HKPSG Requirement: 1 for 1-50 carparking space, 2 for 51-150 carparking space, 3 for 151-250 carparking space, 4 for 251-350 carparking space and 5 for 351-450 carparking space and 6 for above 450 carparking space)

JAVA ROAD



NOTES:
1. THE LAYOUT IS PRELIMINARY AND SUBJECT TO DESIGN CHANGE.

MARBLE ROAD

Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
B	MINOR AMENDMENT	GPH	22JUN16	-	-	-	-
A	MINOR AMENDMENT	GPH	26MAY16	-	-	-	-

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

Drawing Title

GROUND FLOOR LAYOUT PLAN OF PROPOSED DEVELOPMENT

MVA SYSTRA GROUP

Designed	Checked	Scale	Date	Drawing No.	Rev.
AYF	GPH	NTS	MAY 2016	2.1	B

CHK50019645/TIA/F21-B.CDR/LLH/22JUN16

3. EXISTING TRAFFIC CONDITIONS

3.1 Existing Road Network

3.1.1 **Drawing No. 3.1** shows the existing road network that serves the proposed development. The proposed development is mainly served by King's Road, Java Road, Marble Road and Tin Chiu Street.

3.1.2 King's Road is a primary distributor in form of a dual carriageway. It is a major public transport corridor with tram and bus routes running in the east-west direction. The eastbound of King's Road between North Point Road and Tin Chiu Street is restricted for franchised bus except with permit or local access. Within the study area, King's Road forms signalised junctions at its intersections with Tong Shui Road, Shu Kuk Street, Kam Hong Street, Tin Chiu Street and Man Hong Street.

3.1.3 Java Road is a district distributor running one way in eastbound direction. It connects with Electric Road in Fortress Hill at its western end and King's Road in Quarry Bay at its eastern end. Java Road forms signalised junctions at its intersections with Tong Shui Road, Shu Kuk Street, Kam Hong Street, Tin Chiu Street and Man Hong Street.

3.1.4 Marble Road is a local distributor running one way in eastbound direction between Tong Shui Road and Shu Kuk Street, while westbound direction between Tin Chiu Street and Shu Kuk Street. It also serves as the access for the proposed housing development.

3.1.5 In general, Tin Chiu Street is a two-way local distributor (except for the section between King's Road and Marble Road which operates in a one-way northbound direction) connecting Tanner Road at its southern end and forms a cul-de-sac at its northern end next to the Tin Chiu Street Children Playground.

3.2 Critical Junctions

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

Table 3.1 Critical Junctions for Assessment

Ref.	Junction	Type	Drawing No.
A	Java Road / Shu Kuk Street	Signalized	3.2
B	Java Road / Kam Hong Street	Signalized	3.3
C	Java Road / Tin Chiu Street	Signalized	3.4
D	Marble Road / Shu Kuk Street	Priority	3.5
E	Marble Road / Kam Hong Street	Priority	3.6
F	Marble Road / Tin Chiu Street	Priority	3.7
G	King's Road / Shu Kuk Street	Signalized	3.8
H	King's Road / Kam Hong Street	Signalized	3.9
I	King's Road / Tin Chiu Street	Signalized	3.10

3.2.2 The locations of the above nine junctions are illustrated in **Drawing No. 3.1**. The existing junction layout arrangements and method of control for Junction A to Junction I are shown in **Drawings No. 3.2** to **3.10** respectively.

3.2.3 In order to appraise the existing traffic conditions of these junctions, a traffic survey in the form of manual classified count was conducted at a typical weekday in April 2016. Analysis of the observed traffic data indicates that the AM and PM peak hour flows occurred from 8:30 to 9:30 and from 17:15 to 18:15 respectively. The results are shown in **Drawing No. 3.11**.

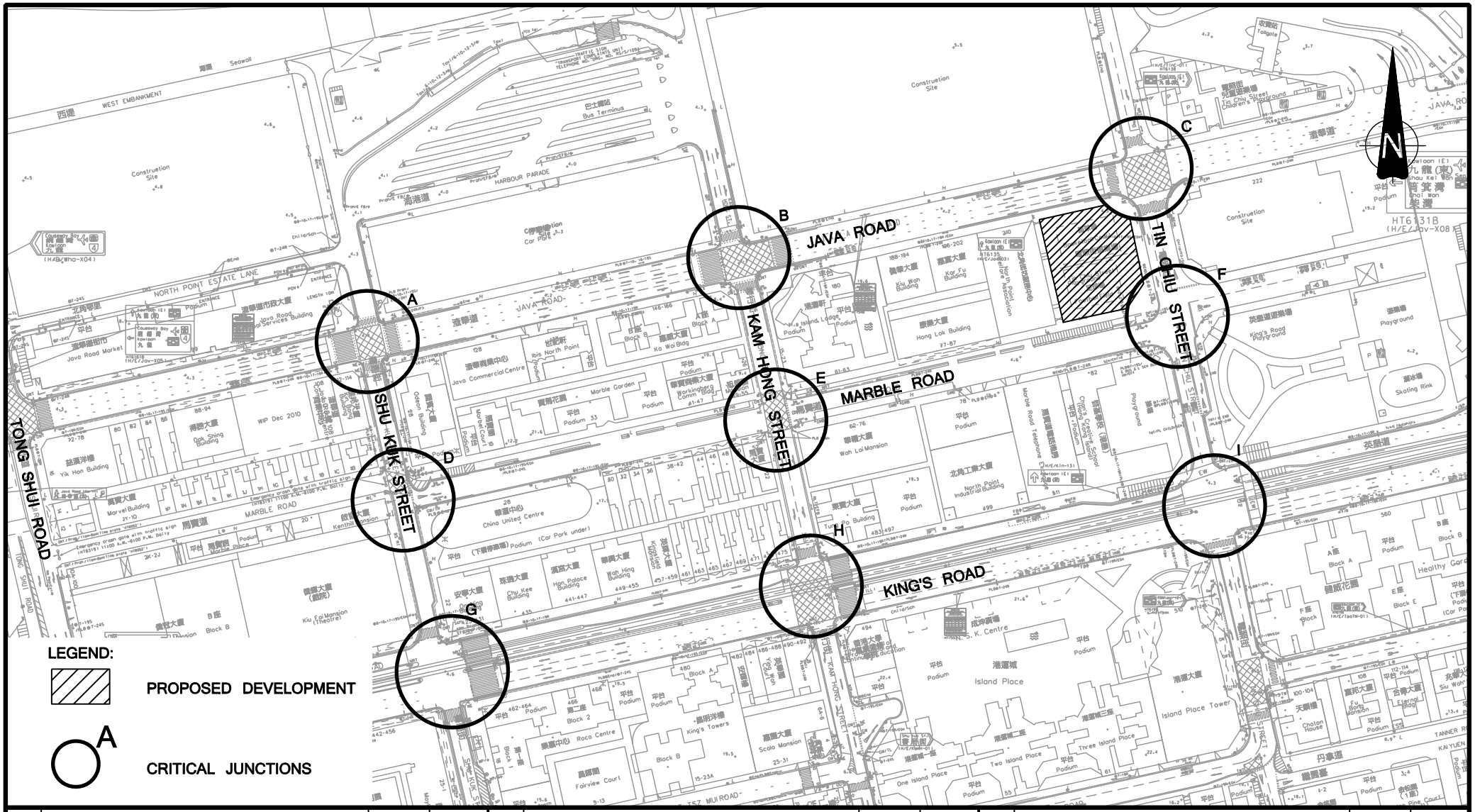
3.2.4 Existing operational performance of the critical junctions and the results are listed in **Table 3.2** below.

Table 3.2 Operational Performance of Critical Junctions in 2016

Ref.	Junction	Type	2016 RC/RFC	
			AM Peak	PM Peak
A	Java Road / Shu Kuk Street	Signalized	>100%	85%
B	Java Road / Kam Hong Street	Signalized	>100%	>100%
C	Java Road / Tin Chiu Street	Signalized	>100%	100%
D	Marble Road / Shu Kuk Street	Priority	0.27	0.34
E	Marble Road / Kam Hong Street	Priority	0.28	0.35
F	Marble Road / Tin Chiu Street	Priority	0.08	0.12
G	King's Road / Shu Kuk Street	Signalized	>100%	>100%
H	King's Road / Kam Hong Street	Signalized	54%	68%
I	King's Road / Tin Chiu Street	Signalized	65%	>100%

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

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



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

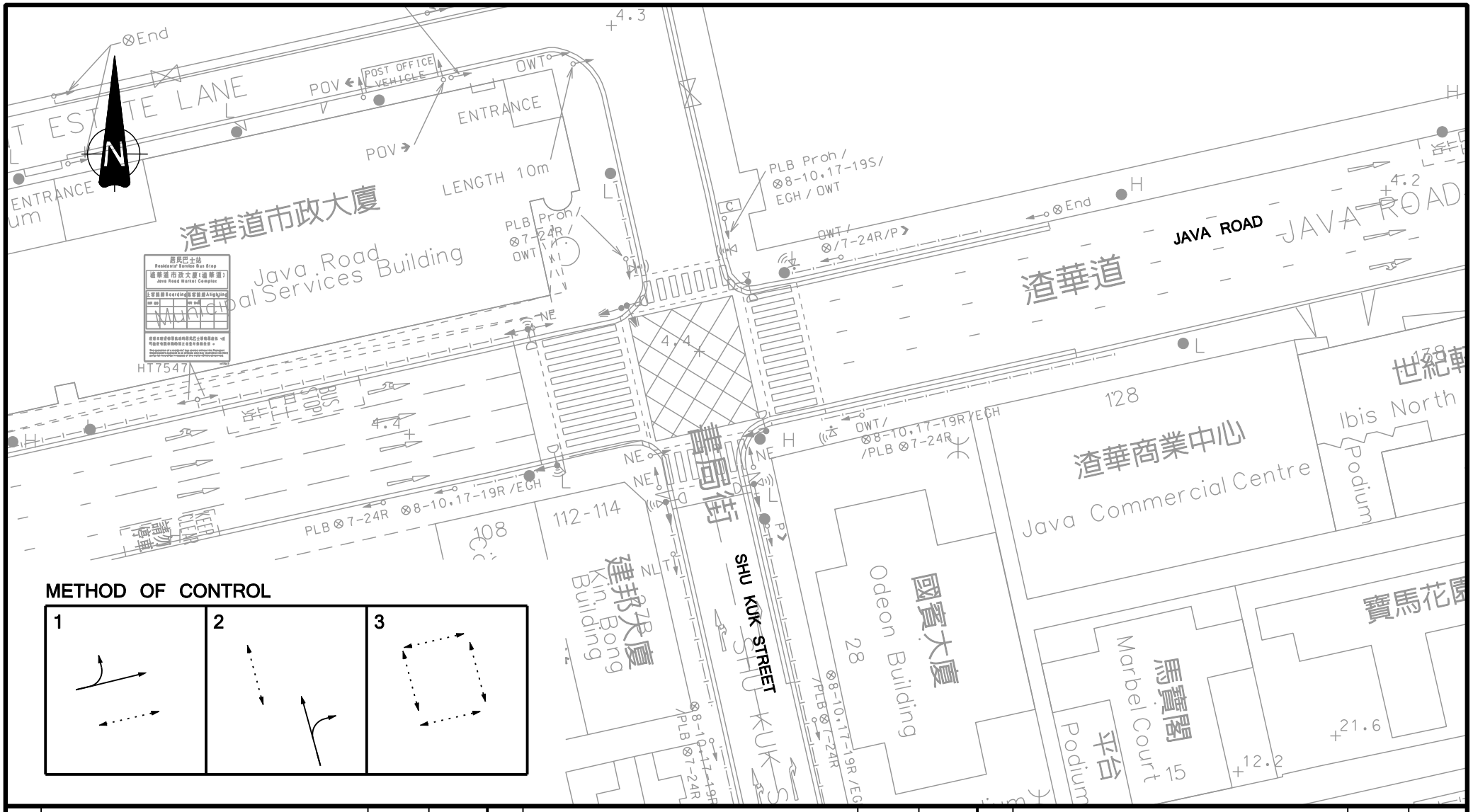
Drawing Title

EXISTING ROAD NETWORK AND CRITICAL JUNCTIONS

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:2000(A4)	MAY 2016	3.1	-

MVA SYSTRA GROUP

CHK50019645/TIA/F31.DGN/KCF/19MAY16



METHOD OF CONTROL

Rev.	Description	Checked	Date
-	-	-	-

Rev.	Description	Checked	Date
-	-	-	-

Rev.	Description	Checked	Date
-	-	-	-

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

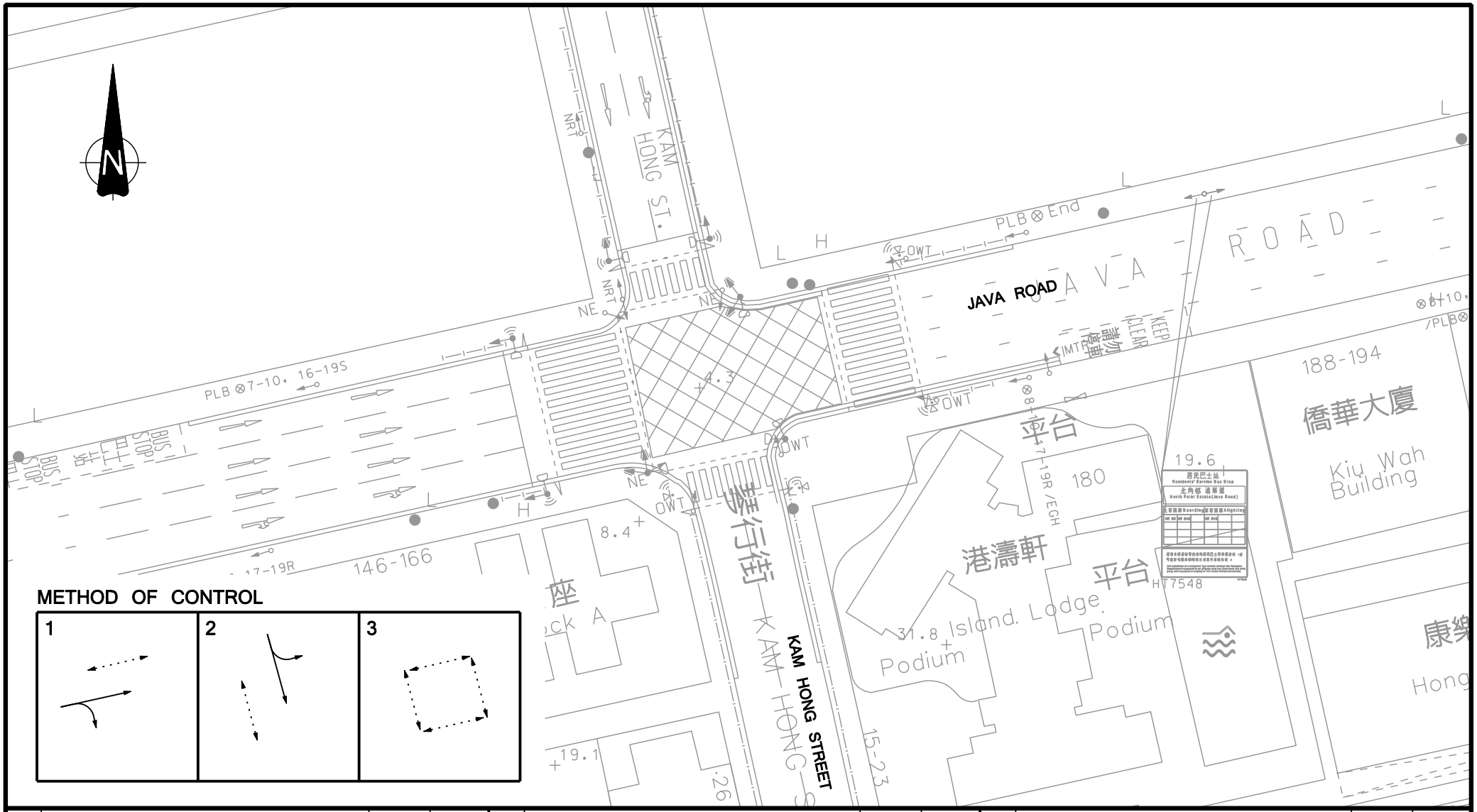
Drawing Title

EXISTING JUNCTION LAYOUT OF JAVA ROAD/ SHU KUK STREET (A)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.2	-

MVA SYSTRA GROUP

CHK50019645/TIA/F32.DGN/KCF/17MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

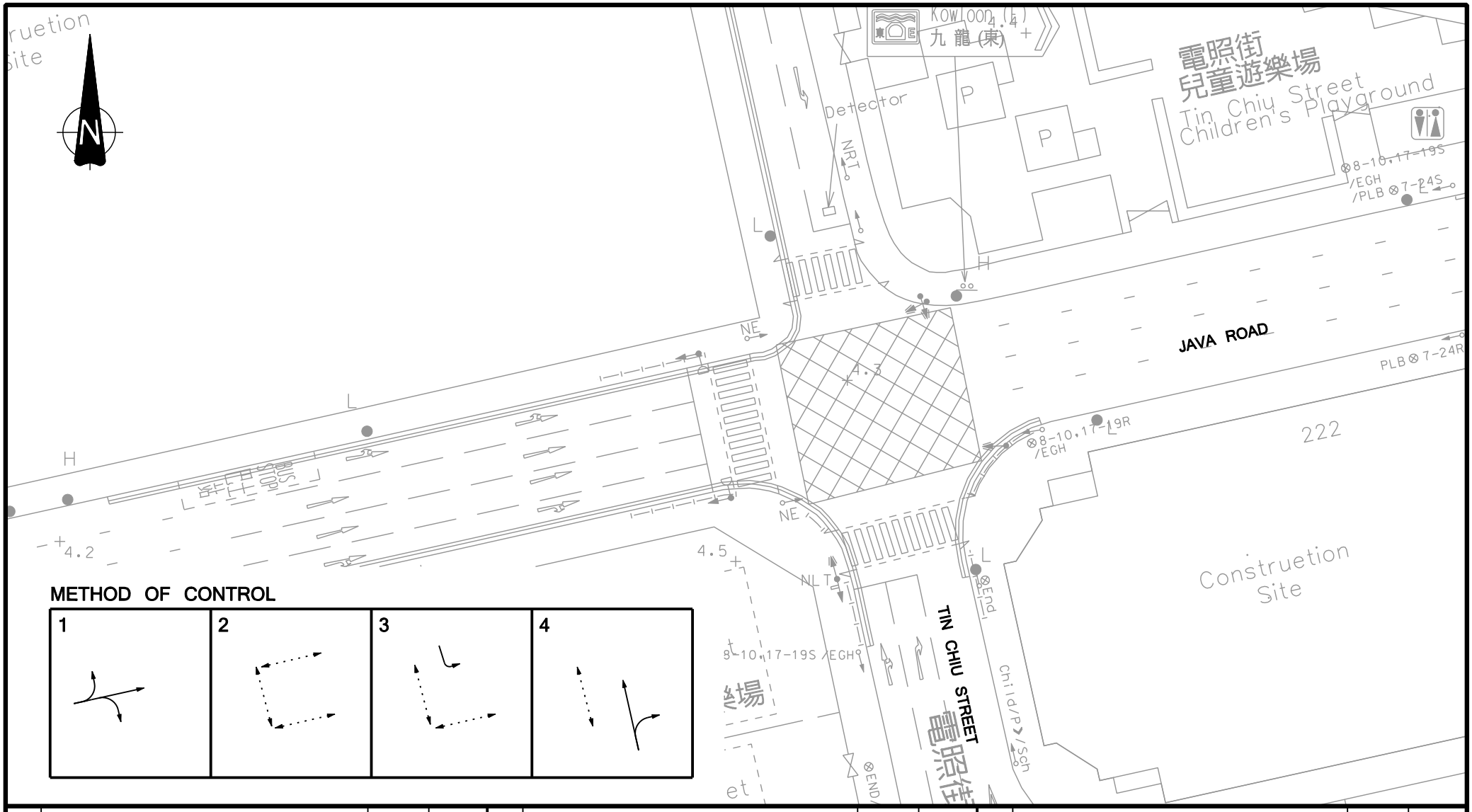
Drawing Title

EXISTING JUNCTION LAYOUT OF JAVA ROAD/ KAM HONG STREET (B)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.3	-

MVA SYSTRA GROUP

CHK50019645/TIA/F33.DGN/KCF/17MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

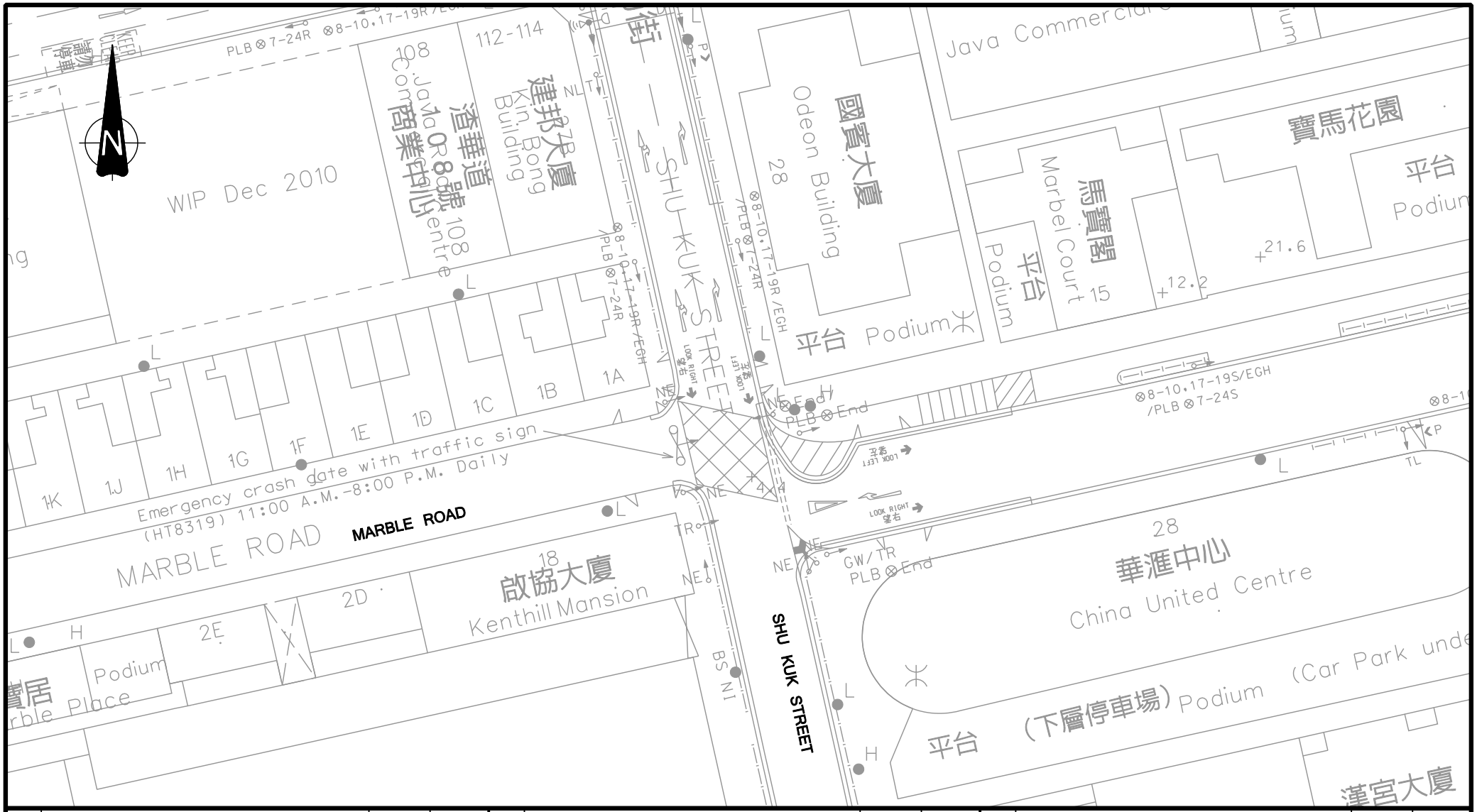
Drawing Title

EXISTING JUNCTION LAYOUT OF JAVA ROAD/ TIN CHIU STREET (C)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.4	-

MVA SYSTRA GROUP

CHK50019645/TIA/F34.DGN/KCF/18MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

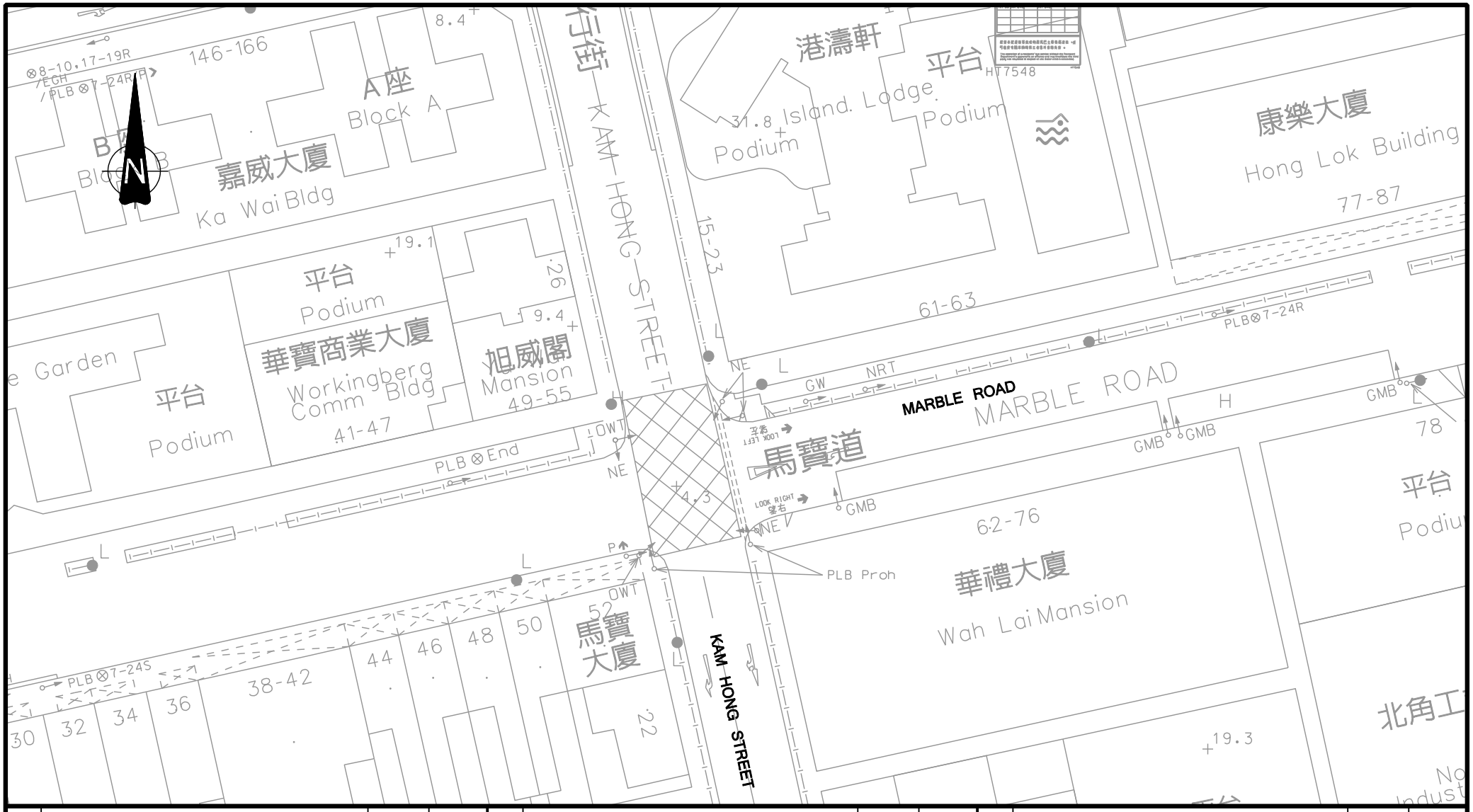
Drawing Title

EXISTING JUNCTION LAYOUT OF MARBLE ROAD/ SHU KUK STREET (D)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.5	-

MVA SYSTRA GROUP

CHK50019645/TIA/F35.DGN/KCF/18MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

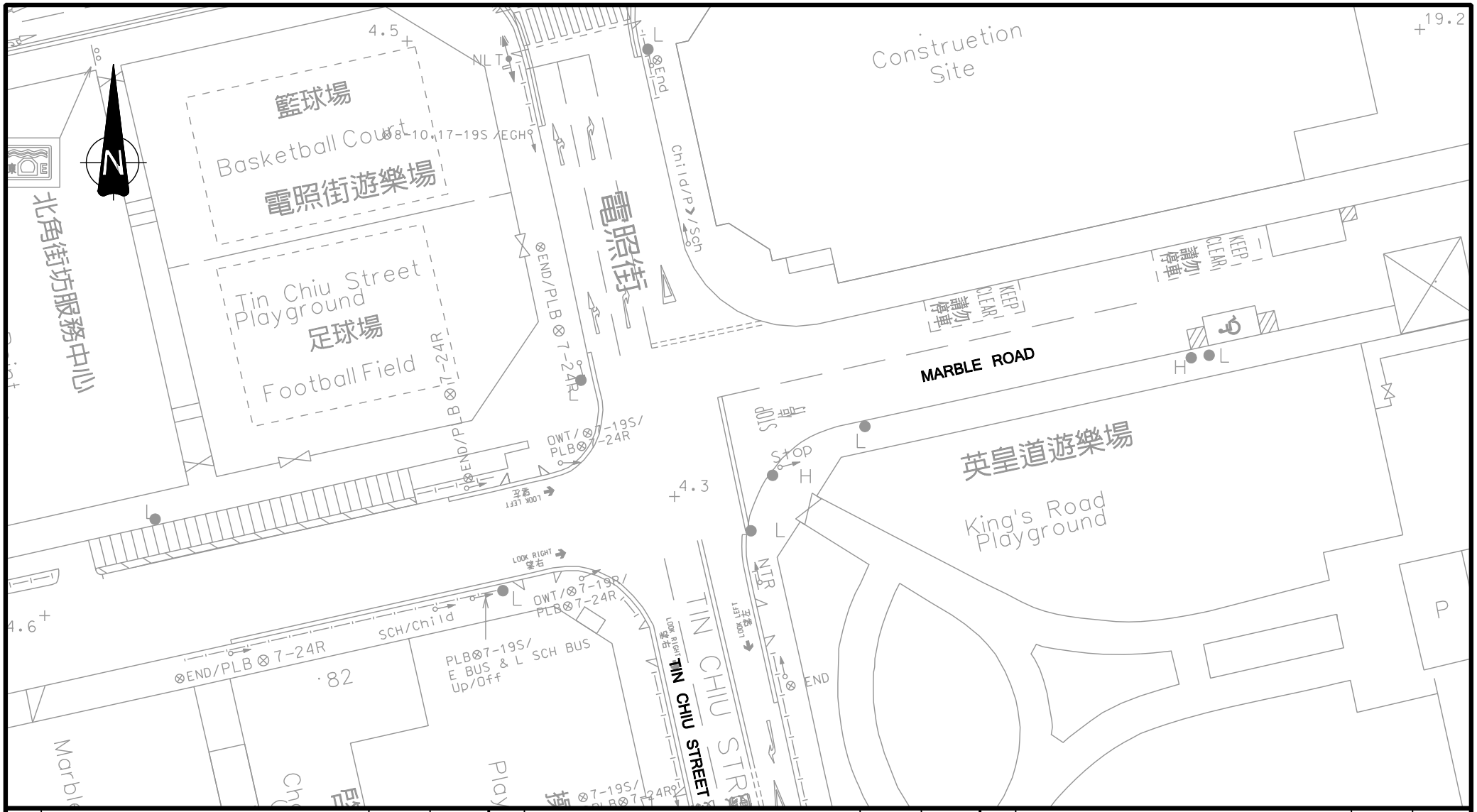
Drawing Title

EXISTING JUNCTION LAYOUT OF MARBLE ROAD/ KAM HONG STREET (E)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.6	-

MVA SYSTRA GROUP

CHK50019645/TIA/F36.DGN/KCF/17MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

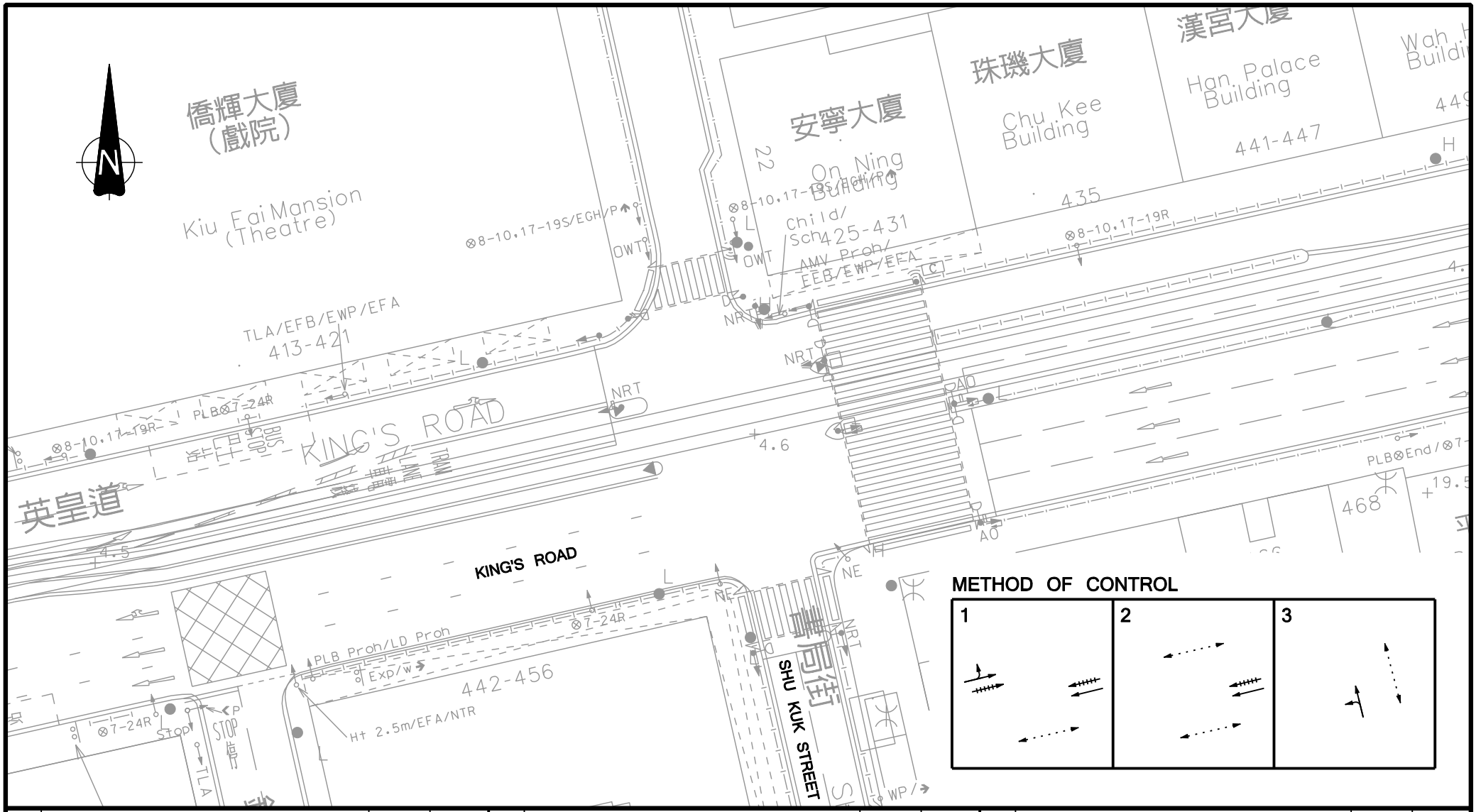
Drawing Title

EXISTING JUNCTION LAYOUT OF MARBLE ROAD/ TIN CHIU STREET (F)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.7	-

MVA SYSTRA GROUP

CHK50019645/TIA/F37.DGN/KCF/18MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

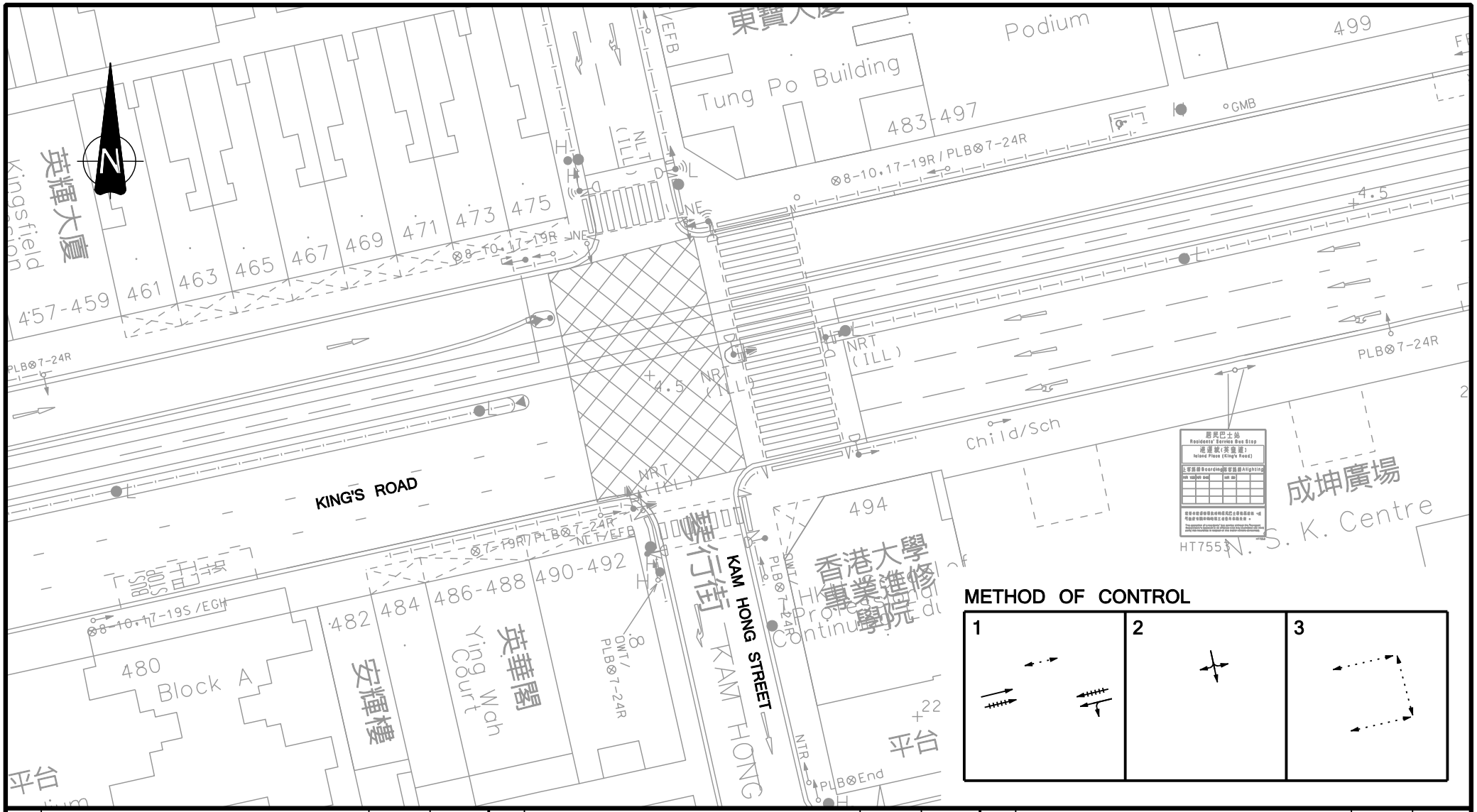
Drawing Title

EXISTING JUNCTION LAYOUT OF KING'S ROAD/ SHU KUK STREET (G)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.8	-

MVA SYSTRA GROUP

CHK50019645/TIA/F38.DGN/KCF/18MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

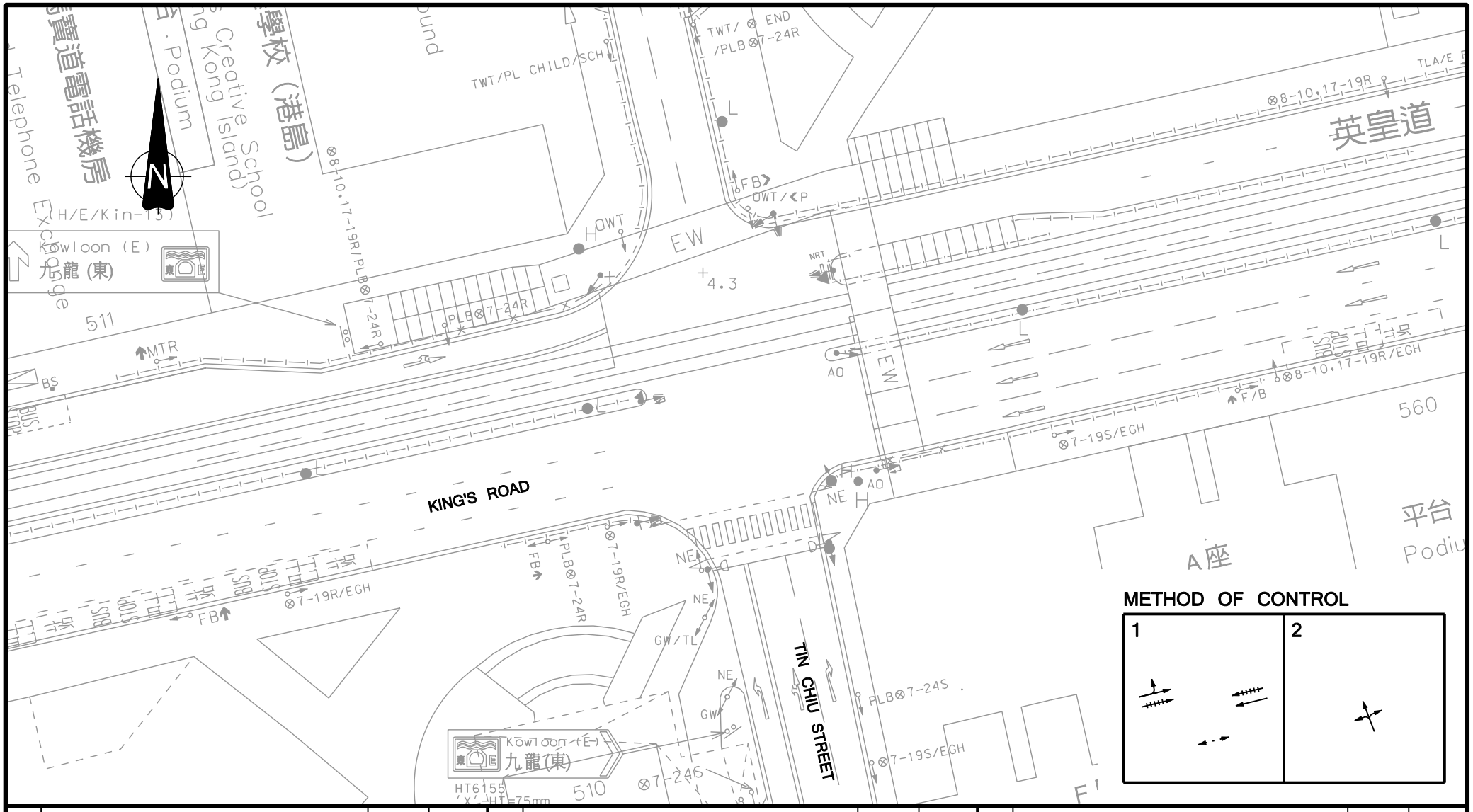
Drawing Title

EXISTING JUNCTION LAYOUT OF KING'S ROAD/ KAM HONG STREET (H)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.9	-

MVA SYSTRA GROUP

CHK50019645/TIA/F39.DGN/KCF/17MAY16



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Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

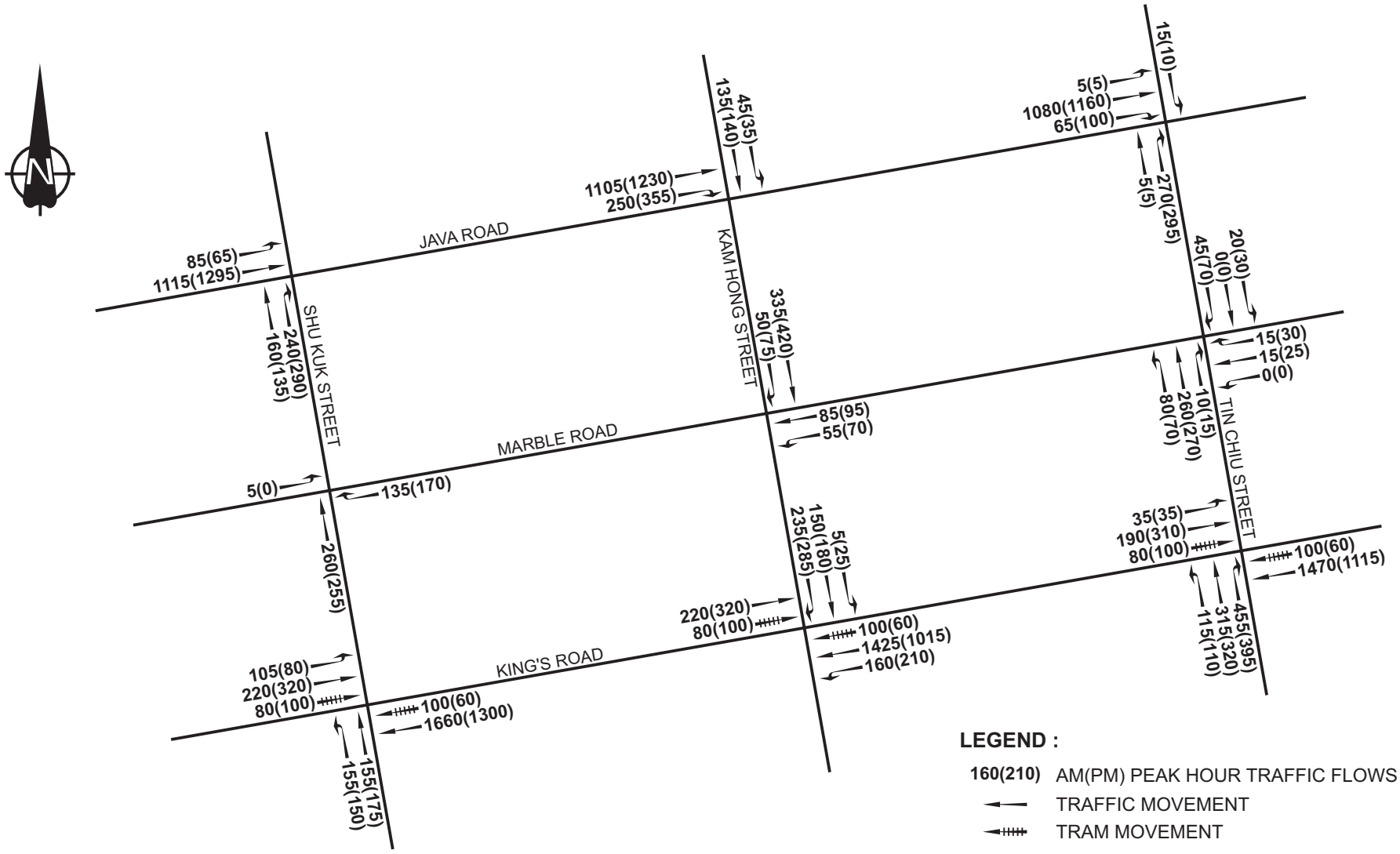
Drawing Title

EXISTING JUNCTION LAYOUT OF KING'S ROAD/ TIN CHIU STREET (I)

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	1:500(A4)	MAY 2016	3.10	-

MVA SYSTRA GROUP

CHK50019645/TIA/F310.DGN/KCF/17MAY16



Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
A	MINOR AMENDMENT	GPH	22JUN16	-	-	-	-	-	-	-	-

Project Title

PROPOSED HOUSING DEVELOPMENT AT
JAVA ROAD, NORTH POINT -
TRAFFIC IMPACT ASSESSMENT

Drawing Title

2016 OBSERVED TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	NTS	MAY 2016	3.11	A

MVA SYSTRA GROUP

CHK50019645/TIA/F311.CDR/CKM/22JUN16

4. FUTURE TRAFFIC CONDITIONS

4.1 Design Year

4.1.1 It is anticipated that the proposed development will be completed by year 2022. In order to assess the impact of the development related traffic on the local road network, it is necessary to forecast the traffic flows for year 2025, the adopted design year, which is 3 years upon completion.

4.2 Future Road Network

4.2.1 In mid-May, 2016, the North Point Ferry Pier Bus Terminus has been relocated to the CDA site at Java Road/Tin Chiu Street. The new ingress and egress of the relocated terminus are provided at Tin Chiu Street and Kam Hong Street.

4.2.2 Apart from the above, the future local road network in the vicinity of the proposed development is anticipated to remain essentially the same as the existing network.

4.3 Reference Traffic Flows

4.3.1 The reference traffic forecast has been derived based on the review of the following information:

- Historical traffic data of the Annual Traffic Census (ATC) reports published annually by transport Department; and
- 2011-Based TPEDM land use/planning data published by Planning Department.

Historical Growth Trend

4.3.2 The Transport Department has traffic count stations in the vicinity of the proposed development. The traffic count at the concerned stations over a period of 5 years between 2010 and 2014 are summarised in **Table 4.1**.

Table 4.1 ATC Counting Station Records

Station No.	Road Name	From	To	Annual Average Daily Traffic (AADT)					Growth Rate p.a. (%)
				2010	2011	2012	2013	2014	2010-2014
1202	IEC	Healthy St INT western end	Healthy St INT eastern end	91,350*	88,150*	87,950*	86,080	88,250	-0.86%
1203	IEC up-ramp W-B	King's Rd	Healthy St INT western end	13,340*	12,880*	12,850*	11,410	11,340	-3.98%
1217	Tong Shui Rd & FO	IEC	Chun Yeung St	8,960*	9,130*	9,270*	7,610	7,600	-4.03%
1218	IEC down-ramp E-B	Healthy St INT western end	Java Rd	10,380*	10,570*	10,730*	9,750	9,300	-2.71%
1242	Java Rd	Tin Chiu St	Healthy St W	20,780*	20,400*	20,350*	19,540	19,170	-2.00%

Table 4.1 ATC Counting Station Records (Con't)

Station No.	Road Name	From	To	Annual Average Daily Traffic (AADT)					Growth Rate p.a. (%)
				2010	2011	2012	2013	2014	2010-2014
1250	Tin Chiu St	Java Rd	King's Rd	4,920*	4,830*	4,820*	4,320	4,330	-3.14%
1402	IEC up-ramp E-B	Java Rd	Island Eastern Corridor	16,750	16,160*	16,130*	15,530*	14,060	-4.28%
1417	Tong Shui Rd (GL)	West Embankment	Java Rd	12,830	13,060*	13,260*	13,260*	13,150	0.62%
1418	King's Rd	Tong Shui Rd	Tin Chiu St	27,310	27,800*	28,230*	28,220*	23,030	-4.17%
1419	IEC down-ramp W-B	Island Eastern Corridor	Java Rd	15,670	15,950*	16,200*	16,200*	14,900	-1.25%
1441	Java Rd	Healthy St W	IEC down-ramp E-B	12,290	12,060*	12,030*	11,870*	11,820	-0.97%
1613	Man Hong St	Java Rd	King's Rd	21,210	24,040	24,410*	24,410*	24,300*	3.46%
1635	Java Rd	IEC down-ramp E-B	King's Rd	22,620	23,780	23,720*	23,410*	23,250*	0.69%
1805	IEC	Tong Shui Rd INT	Healthy St INT	112,270*	103,190	113,350	109,180*	111,480*	-0.18%
1824	IEC down-ramp E-B	IEC E-B	Tong Shui Rd FO northern end	9,840*	10,140	10,840	10,840*	10,790*	2.33%
1825	Tong Shui Rd	Chun Yeung St	King's Rd	10,440*	8,640	7,160	7,160*	7,130*	-9.09%
1826	King's Rd	Tin Chiu St	Healthy St W	21,720*	20,980	20,210	20,210*	20,120*	-1.89%
1856	Healthy St W & Pak Fuk Rd	King's Rd	Tin Hau Temple Rd	8,640*	9,260	9,990	9,860*	9,780*	3.15%
2020	King's Rd	Healthy St W	Java Rd	23,980*	24,410*	22,340	22,440	22,350*	-1.74%
2040	Java Rd	Tong Shui Rd	Tin Chiu St	18,180*	17,840*	17,930	18,110	17,980*	-0.28%
2047	Tong Shui Rd	Java Rd	Chun Yeung St	4,030*	3,950*	4,360	4,950	4,910*	5.06%
2643	Tsat Tsz Mui Rd	Tin Chiu St	Model Lane	6,830	6,480	5,300	5,310	4,870	-8.11%
			Total:	**494,340**	**483,700**	**491,430**	**479,670**	**473,910**	**-1.05%**

Note: (1) Number marked with "*" are estimated by growth rate.

4.3.3 From the above **Table 4.1**, it can be noted that over the past 5 years, 2010-2014, the average annual traffic growth pattern in the area shows a decreasing trend with rate of -1.05% per annum.

Planning Data

4.3.4 Reference has also been made to the latest 2011-Based Enhanced Territorial Population and Employment Data Matrices (TPEDM) planning data published by Planning Department for years 2016 and 2026 in the area. The average annual growth rate in terms of population from years 2016 to 2026 is illustrated in **Table 4.2**.

Table 4.2 Population Growth in the Local Area

TPEDM Zone	Population	
	2016	2026
22	44,800	40,350
23	26,650	27,550
24	13,050	13,700
Total	**84,500**	**81,600**
	Growth Rate per annum (%)	**-0.35%**

4.3.5 From **Table 4.2**, it can be seen that the average annual growth rate of population in the area from year 2016 to 2026 is -0.35% per annum, which also shows a slightly decreasing trend.

Growth Rate

4.3.6 The data from historical trend and planning data both indicate a decreasing trend in growth rate. For conservative, an annual growth rate of 0.5% p.a. was adopted to project the 2016 observed flows to 2025 traffic flows.

Committed Development Traffic

4.3.7 In the vicinity of the subject site, there are some planned/committed developments as summarised in **Table 4.3.** The location plan for the planned/committed developments is also shown in **Drawing No. 4.1.**

Table 4.3 Planned/committed developments in the vicinity of the proposed Public Housing Development at Java Road

Index	Planned / Committed Development	Component	Development Parameters
1	Western Part of the ex- North Point Estate	Hotel	643 Rooms
2	Inland Lot. No. 9027 and adjoining Government Land, Java Road and Tin Chiu Street, North Point, Hong Kong	Residential	702 units
		Commercial	13,500sqm GFA
3	2-4 Tanner Road, North Point	Residential	560 units
4	Upper Kai Yuen Lane, Lower Kai Yuen Lane and Kai Yuen Street, North Point	Residential	1,338 units
5	Ex- Tanner Road Police Married Quarters Site, Pak Fuk Road, North Point	School	2 no. 24-Classrooms

4.3.8 In order to estimate the traffic generation and attraction of the planned/committed development in the vicinity, reference has been made to the trip generation rates as stipulated in Volume 1 Chapter 3 Appendix D Table 1 of the latest T.P.D.M. The adopted trip rates are summarised in **Table 4.4**.

Table 4.4 Adopted Trip Rate of Planned/Committed Development

Planned/Committed Development	Component	AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Western Part of the ex-North Point Estate	Hotel	0.1329	0.1457	0.1290	0.1546
Inland Lot. No. 9027 and adjoining Government Land, Java Road and Tin Chiu Street, North Point, Hong Kong	Private Housing (Avg. Flat Size: 80 m^2) (pcu/flat/hr)	0.1058	0.0605	0.0426	0.0590
	Retail (pcu/hr/100m^2 GFA)	0.2296	0.2434	0.3100	0.3563
2-4 Tanner Road, North Point	Private Housing R(A) (Avg. Flat Size: 70 m^2) (pcu/flat/hr)	0.0888	0.0515	0.0356	0.0480
Upper Kai Yuen Lane, Lower Kai Yuen Lane and Kai Yuen Street, North Point	Private Housing R(A) (Avg. Flat Size: 90 m^2)(1) (pcu/flat/hr)	0.1228	0.0695	0.0496	0.0700
Ex- Tanner Road Police Married Quarters Site, Pak Fuk Road, North Point	Primary School (pcu/hr/school)(2)	7	30	1	1

Notes: (1) By Extrapolation of trip rates for flat Size 70 sq.m and 80 sq.m
(2) Reference to DR439 for a 30 classroom room primary school

4.3.9 Based on the planned/committed development parameters and the adopted trip rate shown in **Table 4.3** and **4.4**, **Table 4.5** summarises the volume of traffic generated by the Committed Development.

Table 4.5 Traffic Generations of Planned/Committed Development (pcu/hr)

Planned/Committed Development	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Western Part of the ex- North Point Estate	85	94	83	99
Inland Lot. No. 9027 and adjoining Government Land, Java Road and Tin Chiu Street, North Point, Hong Kong	74	42	30	41
	31	33	42	48
2-4 Tanner Road, North Point	50	29	20	27
Upper Kai Yuen Lane, Lower Kai Yuen Lane and Kai Yuen Street, North Point	164	93	66	94
Ex- Tanner Road Police Married Quarters Site, Pak Fuk Road, North Point(1)	11	48	2	2

Notes: (1) By prorata of trip rates for 1 no. 30 classroom school and 2 nos. of 24 classroom school (i.e. Trip Generations or Attractions / 30 x 24 x 2)

4.3.10 Based on an annual growth rate of 0.5% p.a. and the traffic generation of planned/committed development shown in **Table 4.5**, the 2025 reference traffic flows have been projected from 2016 observed flows as shown in **Drawing No. 4.2**.

4.3.11 2025 Reference Flows = 2016 Observed Flows x Growth Factor (0.5% p.a. for 9 years) + Planned/Committed Development Traffic

4.4 Development Traffic Generation

4.4.1 In order to estimate the traffic generation and attraction of the proposed housing development, reference has been made to the trip generation rates as stipulated in Volume 1 Chapter 3 Appendix D Table 1 of the latest T.P.D.M. The adopted trip rates are summarised in **Table 4.6**.

Table 4.6 Adopted Trip Rates

	AM Peak		PM Peak	
	Generation	**Attraction**	**Generation**	**Attraction**
Subsidised Housing: HOS/PSPS (pcu/hr/flat)	0.0622	0.0426	0.0297	0.0401

4.4.2 As a conservative approach, an additional 10% allowance had been allowed for the proposed development to cater for future design variation. The traffic impact assessment has been based on 264 SSF flats.

4.4.3 Based on the adopted trip rates given in **Table 4.6**, the total trips generated by the proposed development are computed and shown in **Table 4.7**.

Table 4.7 Traffic Generations of Proposed Development (pcu/hr)

Development Parameters	**AM Peak**		**PM Peak**	
	Generation	**Attraction**	**Generation**	**Attraction**
264 SSF Flats	16	11	8	11
Total	**16**	**11**	**8**	**11**

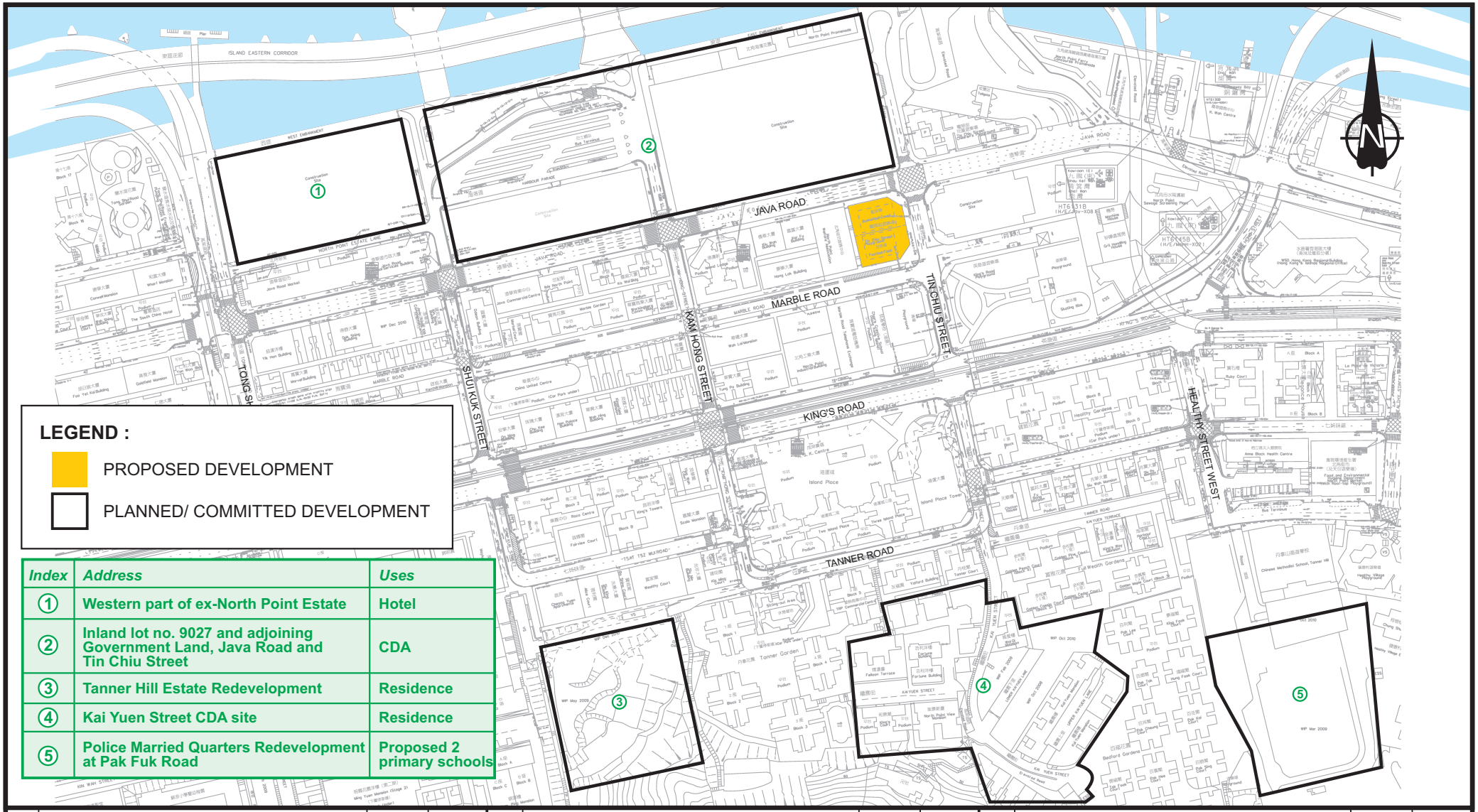
4.4.4 It is estimated that the proposed development will generate and attract about 16pcu/hr and 11pcu/hr in the AM peak hour, and generate and attract about 8pcu/hr and 11pcu/hr in the PM peak hour respectively.

4.5 Design Traffic Forecasts

4.5.1 The development traffic flows were then superimposed onto the 2025 reference traffic flows (without development) as shown in **Drawing No. 4.2** to derive the 2025 design traffic flows (with development).

4.5.2 2025 Design Flows = 2025 Reference Flows + Proposed Development Traffic

4.5.3 The 2025 AM and PM peak design traffic flows (with development) are shown in **Drawing No. 4.3**.



Index	Address	Uses
①	Western part of ex-North Point Estate	Hotel
②	Inland lot no. 9027 and adjoining Government Land, Java Road and Tin Chiu Street	CDA
③	Tanner Hill Estate Redevelopment	Residence
④	Kai Yuen Street CDA site	Residence
⑤	Police Married Quarters Redevelopment at Pak Fuk Road	Proposed 2 primary schools

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A	MINOR AMENDMENT	GPH	30JUN16	-	-	-	-	-	-	-	-

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

Drawing Title

PLANNED/ COMMITTED DEVELOPMENTS

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	NTS	MAY 2016	4.1	A

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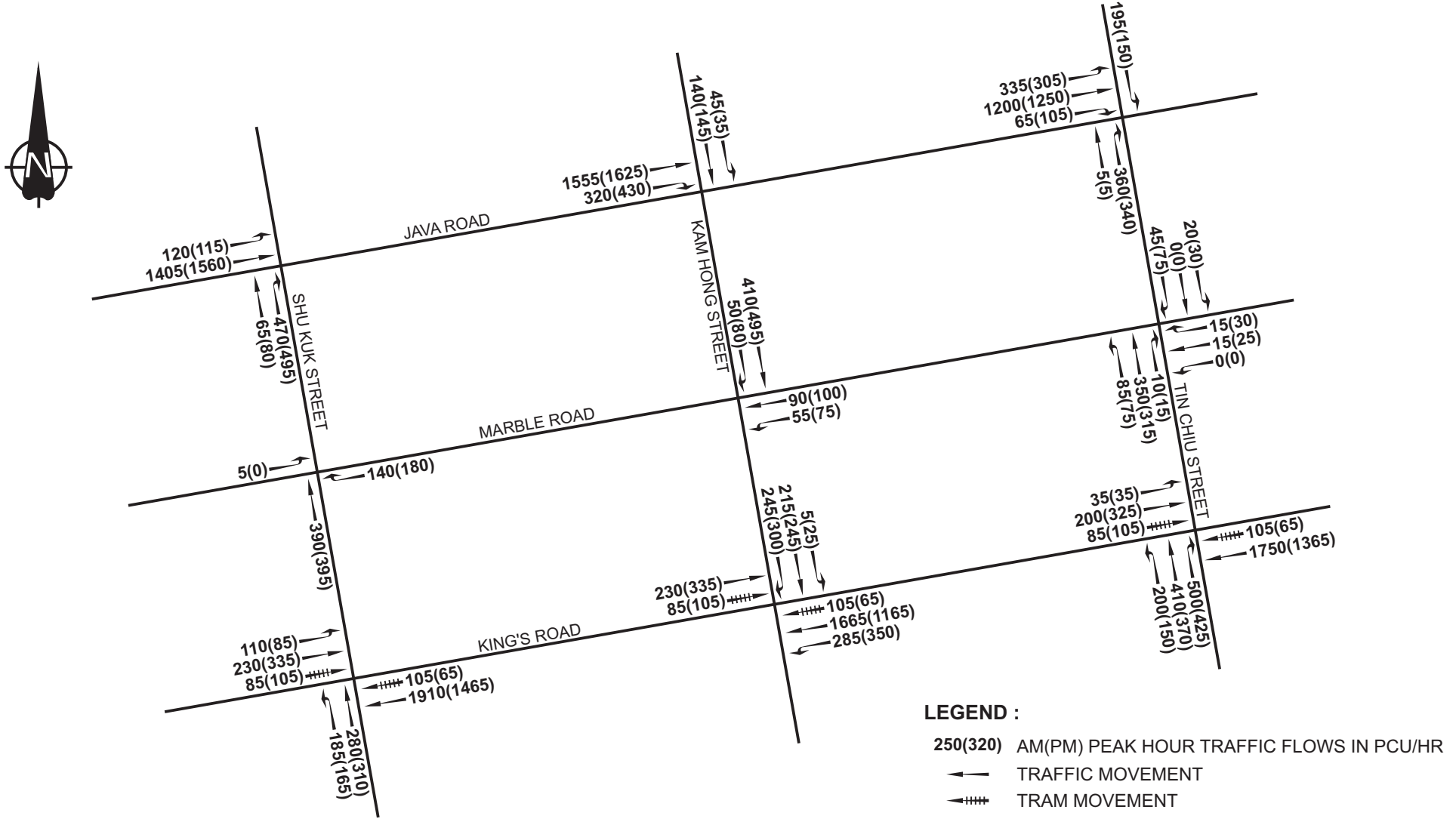

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A	MINOR AMENDMENT	GPH	1JUN16	-	-	-	-	-	-	-	-

Project Title

PROPOSED HOUSING DEVELOPMENT AT
JAVA ROAD, NORTH POINT -
TRAFFIC IMPACT ASSESSMENT

Drawing Title

2025 REFERENCE TRAFFIC FLOWS (WITHOUT DEVELOPMENT)

Designed	Checked	Scale	Date	Drawing No.	Rev.
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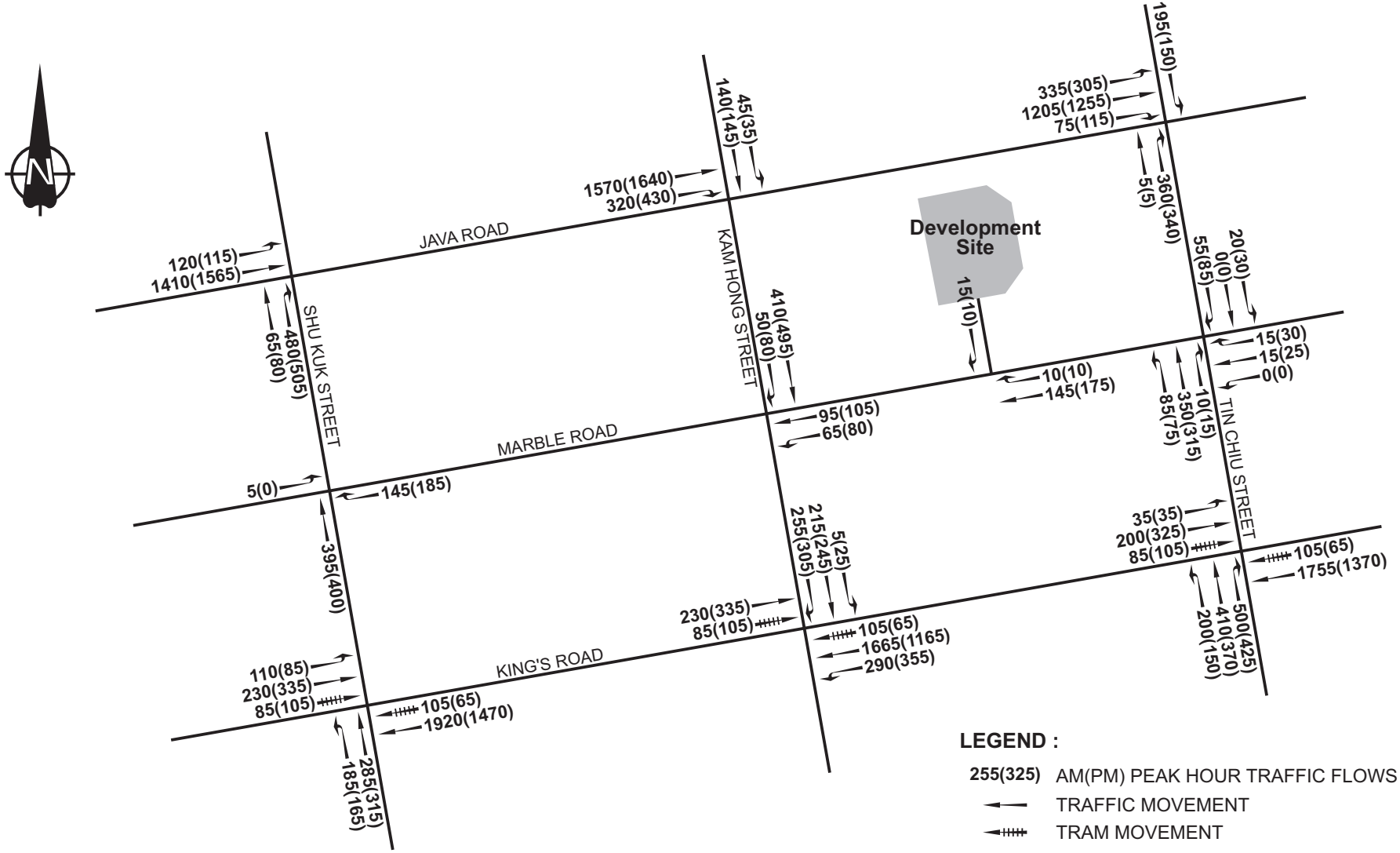

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A	MINOR AMENDMENT	GPH	1JUN16	-	-	-	-	-	-	-	-

Project Title

PROPOSED HOUSING DEVELOPMENT AT
JAVA ROAD, NORTH POINT -
TRAFFIC IMPACT ASSESSMENT

Drawing Title

2025 DESIGN TRAFFIC FLOWS (WITH DEVELOPMENT)

Designed	Checked	Scale	Date	Drawing No.	Rev.
HKH	GPH	NTS	MAY 2016	4.3	A

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5. TRAFFIC IMPACT ASSESSMENT

5.1 Operational Assessment

5.1.1 The operational assessments of the critical junctions in design year 2025 were based on their existing layout arrangements and method of control.

5.1.2 To assess the traffic impact due to the proposed development, capacity analysis of the identified critical junctions in the study area for both reference and design scenarios in year 2025 has been carried out. The results are summarised and presented in **Table 5.1**.

Table 5.1 Operational Performance of Critical Junctions in 2025

Ref.	Junction	Type	2025 RC/RFC			
			Reference Scenario (Without Development)		Design Scenario (With Development)	
			AM Peak	PM Peak	AM Peak	PM Peak
A	Java Road / Shu Kuk Street	Signalized	57%	44%	55%	43%
B	Java Road / Kam Hong Street	Signalized	80%	66%	79%	65%
C	Java Road / Tin Chiu Street	Signalized	31%	37%	30%	36%
D	Marble Road / Shu Kuk Street	Priority	0.29	0.38	0.30	0.39
E	Marble Road / Kam Hong Street	Priority	0.31	0.39	0.34	0.41
F	Marble Road / Tin Chiu Street	Priority	0.08	0.13	0.10	0.15
G	King's Road / Shu Kuk Street	Signalized	79%	90%	78%	88%
H	King's Road / Kam Hong Street	Signalized	26%	39%	25%	38%
I	King's Road / Tin Chiu Street	Signalized	45%	78%	44%	77%

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

5.1.3 The assessment results in **Table 5.1** revealed that all critical junctions will still operate within their capacities in design year 2025.

5.2 Construction Traffic Impact

5.2.1 Based on the latest construction programme of the proposed development, it is estimated that the maximum volume of construction vehicles generated per hour from the construction sites will be about 6 nos. Considering the relatively low traffic volume, the traffic impact on the local road network is anticipated to be minimal during construction stage.

6. PUBLIC TRANSPORT PROVISIONS AND PEDESTRIAN FACILITIES

6.1 Public Transport Services

6.1.1 The proposed development is well served by public transport services including Mass Transit Railway (MTR), franchised buses, minibuses and ferry.

6.1.2 The nearest rail station to the subject site would be North Point MTR Station. The future residents of the proposed development could walk along the Java Road footpath westward to the MTR entrance. Along this route, adequate at grade pedestrian facilities including footpath, crossing and drop kerbs are available. The approximate walking distance and time from the proposed development to North Point MTR Station exit A1 is about 300m and 5-7 minutes.

6.1.3 The existing North Point Ferry Pier provides ferry services between North Point and Hung Hom/Kowloon City/Kwun Tong. The future residents of the proposed development could walk along the Java Road footpath westward and Kam Hong Street northward to the North Point Ferry Pier. Along this route, adequate at grade pedestrian facilities including footpath, crossing and drop kerbs are available. The approximate walking distance and time from the proposed development to North Point Ferry Pier is about 350m and 6-8 minutes.

6.1.4 The North Point Ferry Pier Bus Terminus adjacent to the North Point Pier provides numerous Bus and GMB routes serving the district. In mid-May 2016, the bus terminus has been relocated to the CDA site at Java Road/Tin Chiu Street with new ingress and egress at Tin Chiu Street and Kam Hong Street. The New North Point Ferry Pier Public Transport Interchange is located just opposite to the development.

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

Table 6.1 Existing Public Transport Services in the Vicinity

Route	Service	Destinations	Peak Hour Frequency (minutes)	Non Peak Hour Frequency (minutes)
North Point MTR Station				
North Point Ferry Pier				
-	First Ferry	North Point – Hung Hom	30	30
-	First Ferry	North Point – Kowloon City	30	30
-	Fortune Ferry	North Point – Kwun Tong	30	30
Buses - North Point Ferry Pier PTI				
Day Time Routes				
10	CTB	Kennedy Town – North Point Ferry Pier	7-9	10-18
23	NWFB	North Point Ferry Pier – Pokfield Road	4-8	8-15

27	NWFB	North Point Ferry Pier – Braemar Hill	8	10-20
38	NWFB	Chi Fu Fa Yuen – North Point Ferry Pier	7-8	9-15
41A	CTB	Wah Fu (Central) – North Point Ferry Pier	10	15-26
42	NWFB	Wah Fu (South) – North Point Ferry Pier	10	11-15
63	NWFB	North Point Ferry Pier – Stanley Prison	20	28-40
65	NWFB	North Point Ferry Pier – Stanley Market	15	20
82	NWFB	Siu Sai Wan (Island Resort) – North Point Ferry Pier	6-9	10-15
85	CTB	Siu Sai Wan (Island Resort) – Braemar Hill (Circular)	10-12	15-20
A11	CTB	Airport (Ground Transportation Center) – North Point Ferry Pier	15	20-30
Peak Only Routes / Special Departure Routes				
41A	CTB	Wah Fu (Central) – North Point Ferry Pier (via Braemar Hill)	-	-
42C	NWFB	Cyberport – North Point Ferry Pier	-	-
682C	NWFB	North Point Ferry Pier -> City One Shatin	-	-
Buses - Java Road				
Day Time Routes				
18X	NWFB	Shau Kei Wan – Kennedy Town (Belcher Bay)	20	20
41A	CTB	Wah Fu (Central) – North Point Ferry Pier	10	15-25
110	KMB/NWFB	Shau Kei Wan – Tsim Sha Tsui (Mody Road) (Circular)	15-20	-
A12	CTB	Siu Sai Wan (Island Resort) – Airport (Ground Transportation Centre)	20	25
Peak Only Routes / Special Departure Routes				
8S	CTB	Happy Valley Racecourse -> Siu Sai Wan (Island Resort)	-	-
41A	CTB	Wah Fu (Central) – North Point Ferry Pier (via Braemar Hill)	-	-
106P	KMB/NWFB	Siu Sai Wan (Island Resort) – Wong Tai Sin	-	-
682C	NWFB	North Point Ferry Pier -> City One Shatin	-	-
Overnight Routes				
N118	KMB/CTB	Siu Sai Wan (Island Resort) – Sham Shui Po (Tonkin Street)	-	15-20
Buses - King's Road				
Day Time Routes				
2	NWFB	Grand Promenade – Central (Macau Ferry)	15	20
2A	NWFB	Yiu Tung Estate – Wan Chai North	5-9	6-15
8X	CTB	Siu Sai Wan (Island Resort) – Happy Valley (Lower)	5-18	7-25
10	CTB	Kennedy Town – North Point Ferry Pier	7-9	10-18
18P	NWFB	Kennedy Town (Belcher Bay) – North Point (Healthy Street Central)	5-12	10-20
18X	NWFB	Shau Kei Wan – Kennedy Town (Belcher Bay)	20	20
19	NWFB	Siu Sai Wan (Island Resort) – Happy Valley (Upper)	8-20	15-30
23	NWFB	North Point Ferry Pier – Pokfield Road	4-8	8-15
27	NWFB	North Point Ferry Pier – Braemar Hill	8	10-20

38	NWFB	Chi Fu Fa Yuen – North Point Ferry Pier	7-8	9-15
41A	CTB	Wah Fu (Central) – North Point Ferry Pier	10	15-26
42	NWFB	Wah Fu (South) – North Point Ferry Pier	10	11-15
63	NWFB	North Point Ferry Pier – Stanley Prison	20	28-40
65	NWFB	North Point Ferry Pier – Stanley Market	15	20
77	CTB	Tin Wan – Shau Kei Wan	10-15	12-20
81	NWFB	Hing Wah Estate – Lai Tak Tsuen	15	15-20
82	NWFB	Siu Sai Wan (Island Resort) – North Point Ferry Pier	6-9	10-15
85	CTB	Siu Sai Wan (Island Resort) – Braemar Hill (Circular)	10-12	15-20
99	CTB	South Horizons – Shau Kei Wan	10	12-20
102	KMB/CTB	Shau Kei Wan – Mei Foo	3-6	5-15
106	KMB/NWFB	Siu Sai Wan (Island Resort) – Wong Tai Sin	4-10	5-12
110	KMB/NWFB	Shau Kei Wan – Tsim Sha Tsui (Mody Road) (Circular)	15-20	15-20
112	KMB/NWFB	North Point (Pak Fuk Road) – So Uk Estate	2-6	3-10
116	KMB/NWFB	Quarry Bay (Yau Man Street) – Tsz Wan Shan (Central)	3-10	4-10
601	KMB/NWFB	Admiralty (East) – Po Tat Estate	5-12	10-15
619	KMB/CTB	Central (Macau Ferry) – Shun Lee Estate	4-9	10-25
671	KMB/CTB	Ap Lei Chau (Lee Lok Street) – Diamond Hill Station	12-20	20-30
680	KMB/NWFB	Admiralty (East) – Ma On Shan (Lee On Estate)	8-13	10-20
690	KMB/CTB	Central (Exchange Square) -> Tseung Kwan O (Hong Sing Garden)	12-15	15-25
A12	CTB	Siu Sai Wan (Island Resort) – Airport (Ground Transportation Centre)	20	25
Peak Only Routes / Special Departure Routes				
18	NWFB	Sheung Wan – North Point (Healthy Street Central)	12-15	-
19P	CTB	Shau Kei Wan -> Happy Valley (Upper)	-	-
41A	CTB	Wah Fu (Central) – North Point Ferry Pier (via Braemar Hill)	-	-
42C	NWFB	Cyberport – North Point Ferry Pier	-	-
81A	NWFB	Hing Wah Estate – Lai Tak Tsuen	-	-
85	CTB	Siu Sai Wan (Island Resort) – North Point Ferry Pier	20	-
85A	CTB	Shau Kei Wan – Braemar Hill	4-9	-
		Aldrich Bay -> Braemar Hill	-	-
85P	CTB	Siu Sai Wan (Island Resort) – Braemar Hill	-	-
102P	KMB/CTB	Shau Kei Wan – Mei Foo	-	-
307P	KMB/CTB	Tin Hau Station – Tai Po (Ting Tai Road	-	-
619X	KMB/CTB	Shun Lee Estate – Central (Macau Ferry)	-	-
678	KMB/CTB	Sheung Shui – Causeway Bay (Eastern Hospital Road)	-	-
680	KMB/NWFB	Ma On Shan (Chung On Estate) -> Admiralty (East)	-	-
680A	KMB/NWFB	Ma On Shan (Lee On Estate) -> Admiralty (East)	-	-

680B	KMB/NWFB	Ma On Shan (Chevalier Garden) -> Admiralty (East)	-	-
680P	KMB/NWFB	Ma On Shan (Wu Kai Sha Station) -> Admiralty (East)	-	-
690	KMB/CTB	Tseung Kwan O (Hong Sing Garden) (via Leighton Road) -> Central (Exchange Square)	12-15	-
962C	CTB	Tuen Mun (Lung Mun Oasis) – Taikoo (Kornhill Plaza)	-	-
969C	CTB	Quarry Bay -> Tin Shui Wai (Tin Chung Court)	-	-
A12	CTB	Siu Sai Wan (Island Resort) – Airport (via Cathay City / CAD Headquarters)	20-25	-
X8	NWFB	Siu Sai Wan Sports Ground -> Causeway Bay	-	-
Recreation Routes				
802	NWFB	Shatin Racecourse -> Siu Sai Wan (Island Resort)	-	-
Overnight Routes				
N8	NWFB	Wan Chai North – Heng Fa Chuen	-	30
N8X	CTB	Siu Sai Wan (Island Resort) – Central (Macau Ferry)	-	30
N72	CTB	Wah Kwai Estate – Quarry Bay (Hoi Chak Street)	-	15-20
N122	KMB/NWFB	Shau Kei Wan – Mei Foo	-	15
N619	KMB/CTB	Central (Macau Ferry) – Shun Lee Estate	-	20
N680	KMB/NWFB	Central (Macau Ferry) – Ma On Shan (Kam Ying Court)	-	20-30
N691	KMB/NWFB	Central (Macau Ferry) – Tiu Keng Leng (King Ling Road)	-	20-25
Buses - Shu Kuk Street / Tin Chiu Street				
Day Time Routes				
10	CTB	Kennedy Town – North Point Ferry Pier	7-9	10-18
23	NWFB	North Point Ferry Pier – Pokfield Road	4-8	8-15
27	NWFB	North Point Ferry Pier – Braemar Hill	8	10-20
38	NWFB	Chi Fu Fa Yuen – North Point Ferry Pier	7-8	9-15
42	NWFB	Wah Fu (South) – North Point Ferry Pier	10	11-15
63	NWFB	North Point Ferry Pier – Stanley Prison	20	28-40
65	NWFB	North Point Ferry Pier – Stanley Market	15	20
82	NWFB	Siu Sai Wan (Island Resort) – North Point Ferry Pier	6-9	10-15
85	CTB	Siu Sai Wan (Island Resort) – Braemar Hill (Circular)	10-12	15-20
606	KMB/CTB	Siu Sai Wan (Island Resort) – Choi Wan (Fung Shing Street)	15	15-25
682	NWFB	Chai Wan (East) – Ma On Shan (Wu Kai Sha Station)	8-12	12-20
Peak Only Routes / Special Departure Routes				
42C	NWFB	Cyberport – North Point Ferry Pier	-	-
81A	NWFB	Hing Wah Estate – Lai Tak Tsuen	-	-
85	CTB	Siu Sai Wan (Island Resort) – North Point Ferry Pier	20	-
85A	CTB	Shau Kei Wan – Braemar Hill	4-9	-
606A	KMB/CTB	Choi Wan (Fung Shing Street) – Yiu Tung Estate	20	-

682	NWFB	Chai Wan (East) – Ma On Shan (Lee On Estate)	10-15	-
682A	NWFB	Ma On Shan Town Centre – Chai Wan (East)	-	-
682B	NWFB	Shui Chuen O Estate – Chai Wan (East)	-	-
Recreation Routes				
8S	CTB	Happy Valley Racecourse -> Siu Sai Wan (Island Resort)	-	-
GMB				
19S	GMB	Hang Hau (North) -> Causeway Bay (Circular)	-	15
33	GMB	Kornhill – North Point (Marble Road)	8-15	8-15
56	GMB	Mid-Levels (Robinson Road) – North Point (Marble Road)	6-12	8-15
65	GMB	Pamela Youde Nethersole Eastern Hospital – North Point (Fort Street)	5-8	5-8
69	GMB	Cyberport – Quarry Bay (Shipyard Lane) (Circular)	9-15	12-15

6.1.6 As summarized in **Table 6.1,** there are 33 daytime bus routes, 27 peak only/special departure bus routes, 8 overnight bus routes, 2 recreation bus routes, 5 GMB routes. A taxi stand is also provided at Shu Kuk Street. Furthermore, the New North Point Ferry Public Transport Interchange and the North Point Ferry Pier are located in close proximity. Together with the MTR services, the proposed development is well served by public transport. The proposed development only consists of 264 flats and the additional pedestrian demand due to the proposed development would not be significant and therefore could be accommodated among the different transport modes.

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

6.2 Pedestrian Facilities

6.2.1 At present, a number of pedestrian crossings and footbridges are provided in the vicinity and at the nearby junctions to link up the proposed development and the existing housing developments and shopping centre. The locations of the pedestrian crossings and footbridges in the vicinity of the proposed development are shown in **Drawing 6.3.**

6.2.2 In order to estimate the potential pedestrian trip generations of the proposed development, trip generation rate of similar characteristics has been adopted for the different proposed development components. The reference surveyed trip rates are summarised in **Table 6.2**.

Table 6.2 Reference Trip Rates

	Pedestrian Trip Rates (pedestrians/flat/hr)			
	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
SSF flats(ped/hr/flat)(1)	0.99	0.21	0.33	0.57

Note: (1) Trip rate obtained from survey at Bauhinia Garden

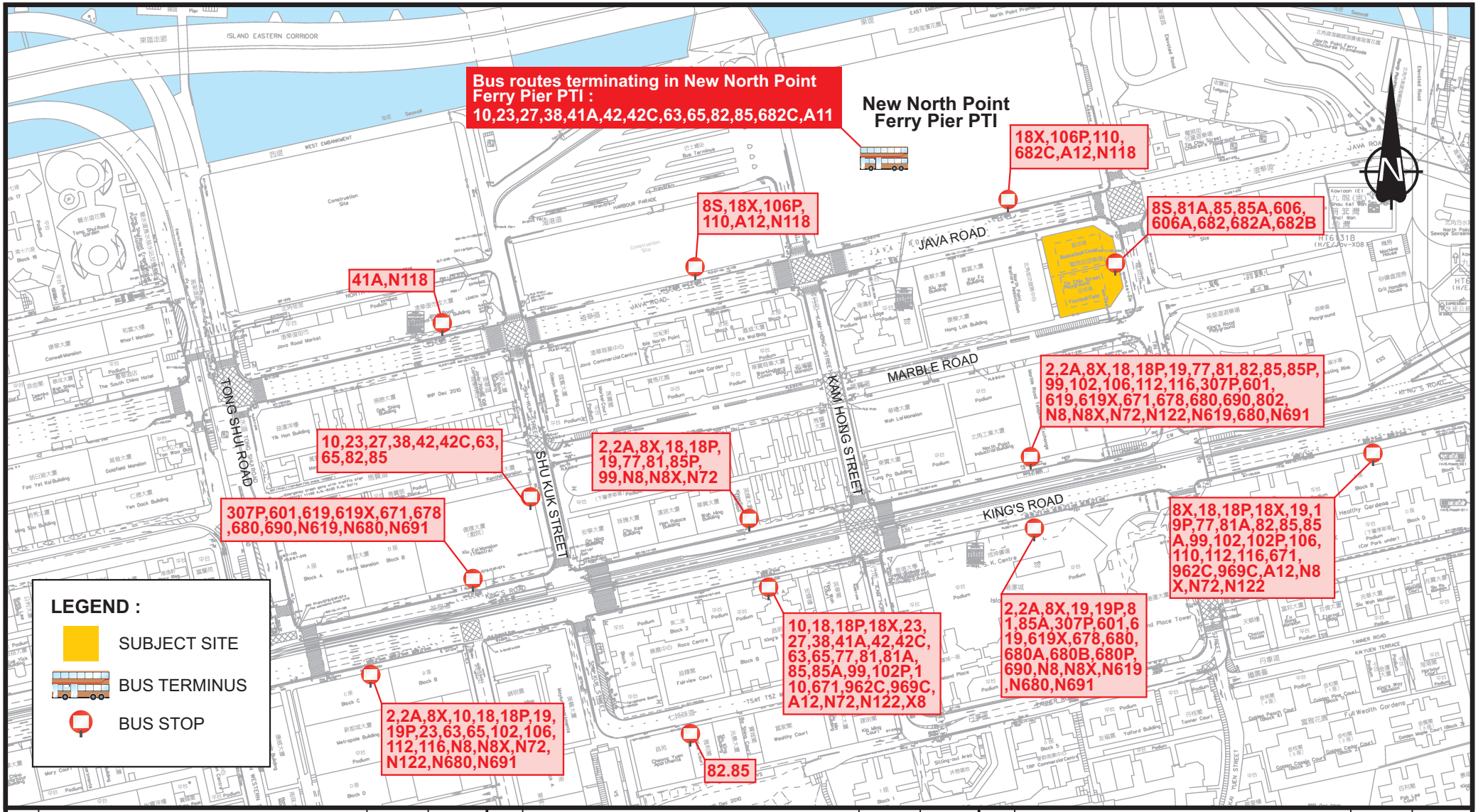
6.2.3 Based on the proposed SSF development and the surveyed trip rates given in **Table 6.2**, the total pedestrian trips generated by the proposed development under the updated development proposals are computed and shown in **Table 6.3**.

Table 6.3 Pedestrian Generations of Proposed Development

	Pedestrian Trip Rates (pedestrians/flat/hr)			
	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
264 SSF Flats	261	55	87	150

6.2.4 The existing footpath at Java Road, Tin Chiu Street and Marble Road are about 3 meter wide which could cater for about 4,000 ped/hour at Level of Service C based on an effective width of 2.0 meter. According to **Table 6.3**, the pedestrian generation due to the proposed SSF development is relatively low and it is considered that the impact on the adjacent footpaths is insignificant.

6.2.5 In view of the pedestrian facilities provision and the scale of the proposed development, it is not expected that there will be significant impact on the existing pedestrian facilities.



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Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

Drawing Title

EXISTING BUS SERVICES

Designed	Checked	Scale	Date	Drawing No.	Rev.
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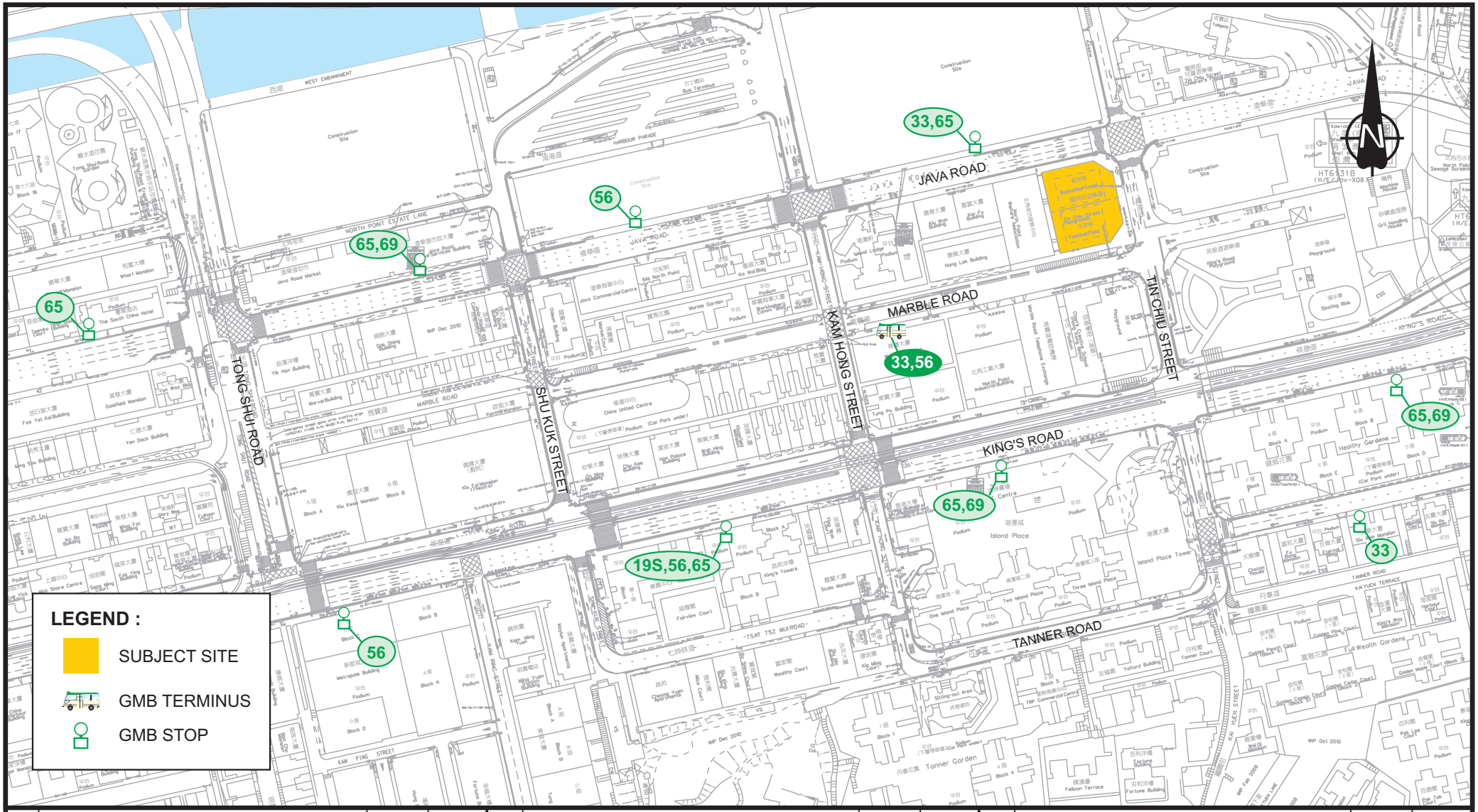

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Project Title

PROPOSED HOUSING DEVELOPMENT AT
JAVA ROAD, NORTH POINT -
TRAFFIC IMPACT ASSESSMENT

Drawing Title

EXISTING GMB SERVICES

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	NTS	MAY 2016	6.2	A

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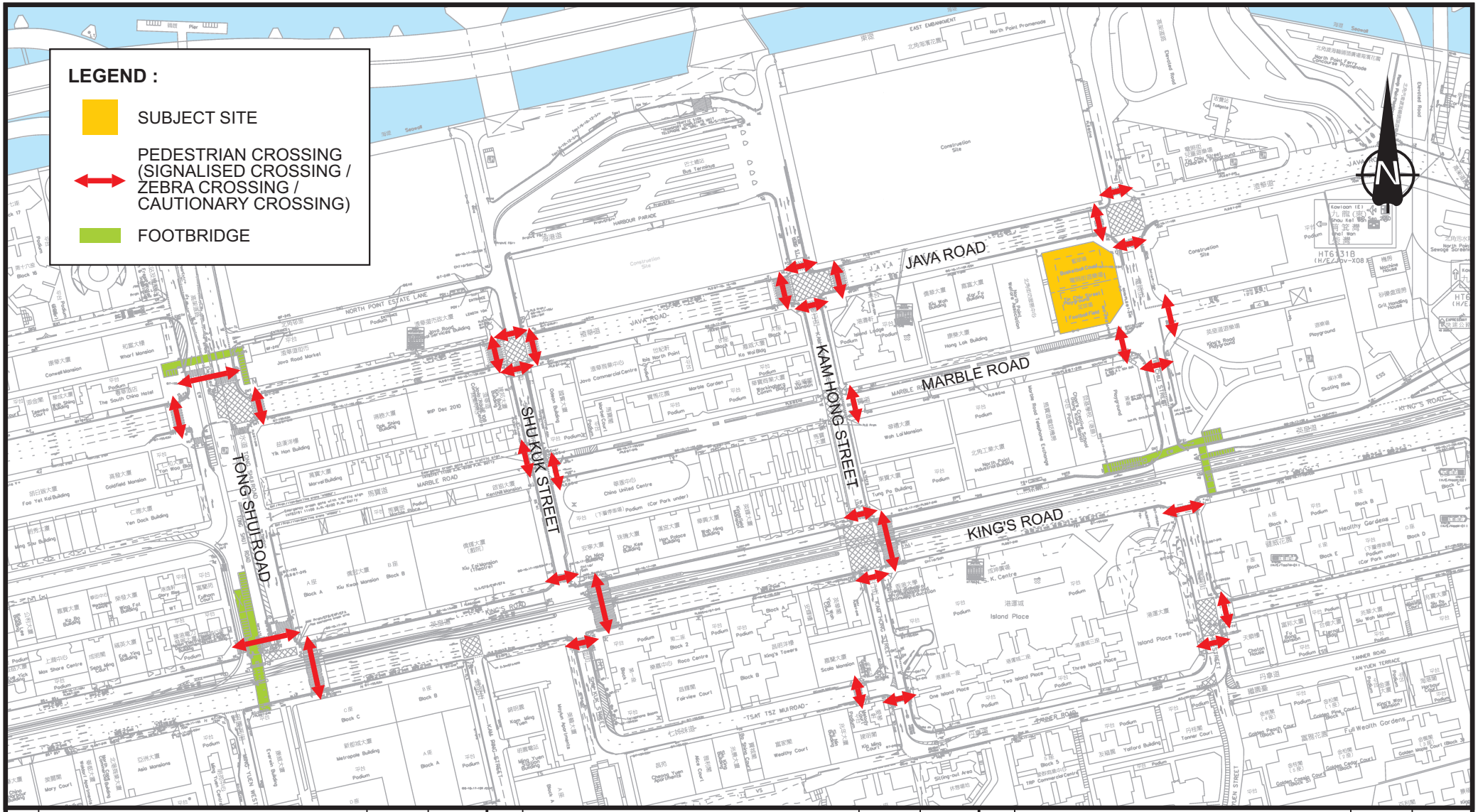

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A	MINOR AMENDMENT	GPH	22JUN16	-	-	-	-	-	-	-	-

Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

Drawing Title

EXISTING PEDESTRIAN FACILITIES

Designed	Checked	Scale	Date	Drawing No.	Rev.
SFL	GPH	NTS	MAY 2016	6.3	A

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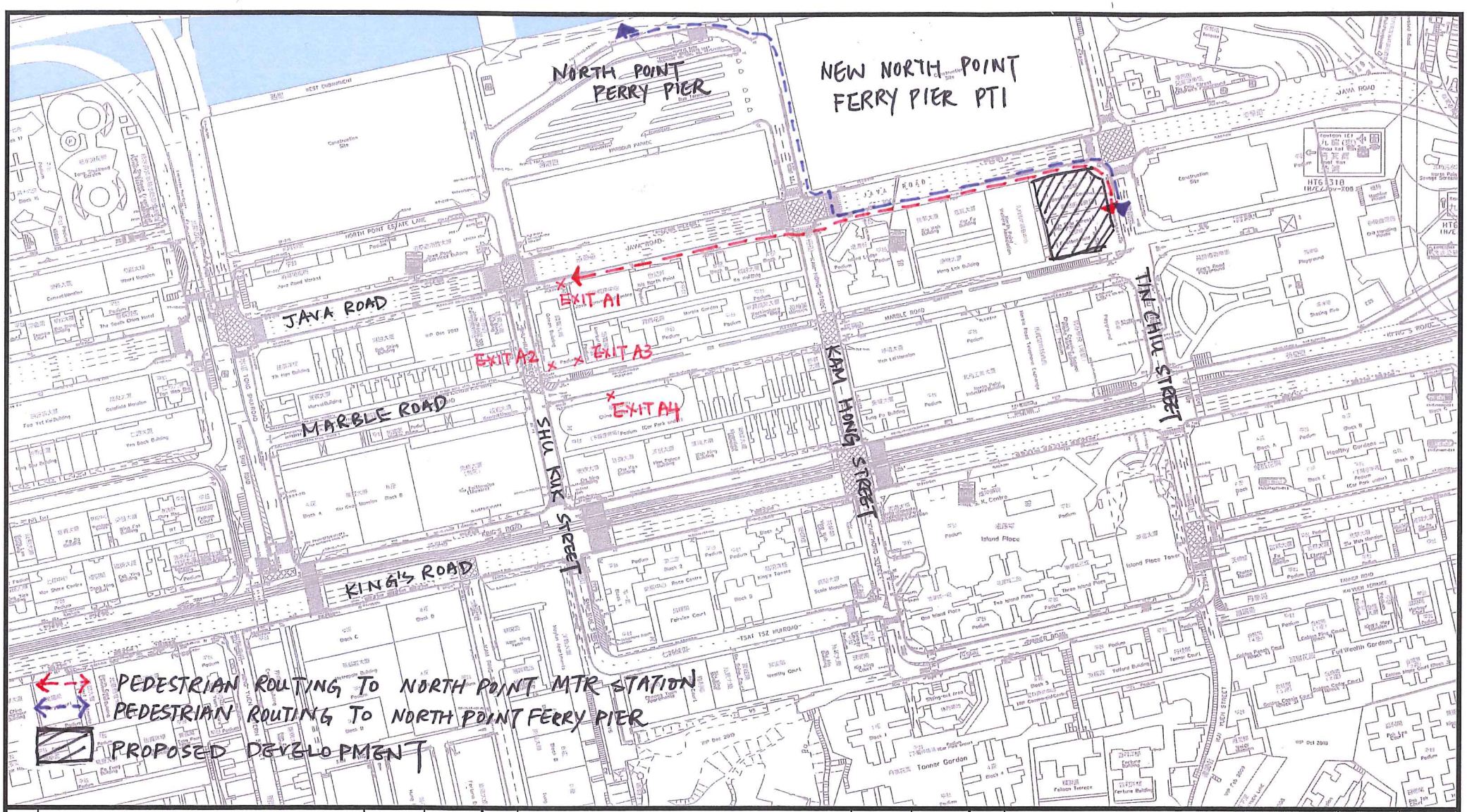

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Project Title

PROPOSED HOUSING DEVELOPMENT AT JAVA ROAD, NORTH POINT - TRAFFIC IMPACT ASSESSMENT

Drawing Title

PEDESTRIAN ROUTING TO NORTH POINT MTR STATION/ NORTH POINT FERRY PIER

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7. SUMMARY AND CONCLUSION

7.1 Summary

7.1.1 MVA Hong Kong Limited (MVA) was commissioned by the Hong Kong Housing Authority (HKHA) in 2016 to conduct a Traffic Impact Assessment (TIA) study for Public Housing Development at Java Road.

7.1.2 The public housing development comprise of about 240 Subsidized Sales Flats (SSF) which is anticipated to be completed by 2022. As a conservative approach, an additional 10% allowance had been allowed for the proposed development to cater for future design variation. The traffic impact assessment has been based on 264 SSF flats.

7.1.3 To appraise the existing traffic condition, traffic count surveys were conducted in the surrounding road network of the proposed development. Moreover, current operational performance of the critical junctions was assessed with the observed traffic flows. The operational assessment results revealed that all critical junctions are at present operating within capacities.

7.1.4 In order to assess the impact of the development related traffic on the local road network, it is necessary to forecast the traffic flows for 2025, the adopted design year, which is 3 years upon completion. The 2025 traffic flows have been projected with the basis on local area planning data published by government. The traffic generations due to the adjacent planned/committed developments have also been included in the future year traffic forecast.

7.1.5 Traffic generation and attraction from the proposed development has been assessed. It is estimated that the proposed development will generate and attract about 16pcu/hr and 11pcu/hr in the AM peak hour, and generate and attract about 8pcu/hr and 11pcu/hr in the PM peak hour respectively.

7.1.6 Assessment of operational performance of the critical junctions revealed that all critical junctions will still operate within their capacities in design year 2025.

7.1.7 In view of the comprehensive coverage of the public transport services and the available different choices on transport modes, the proposed development is considered to have good accessibility via the public transport. Taken into consideration of the pedestrian facilities provision and the scale of the proposed development, it is not expected that there will be significant impact on the existing pedestrian facilities.

7.2 Conclusion

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

2016 Observed Flows

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

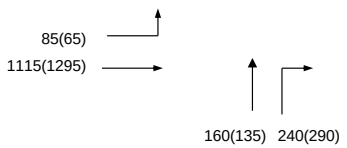
Junction: Java Road/ Shu Kuk Street (A) Design Year: 2016

Description: Observe Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road		A	1	3.000	10			22%	15%	1855	1875	382	0.206		436	0.233	
EB		A	1	3.000						2055	2055	423	0.206		478	0.233	
		A	1	3.000						1915	1915	395	0.206	0.206	446	0.233	0.233
Shu Kuk Street		B	2	3.750		15		28%	43%	1935	1910	223	0.115		236	0.124	0.124
NB		B	2	3.750		10				1530	1530	177	0.116	0.116	189	0.124	
LRT/Pedestrian		Cp	1,3	Min	5	+	7			=	12						
		Dp	2,3	Min	11	+	11			=	22						
		Ep	3	Min	5	+	7			=	12						
		Fp	3	Min	7	+	12			=	19			*			*

Notes:

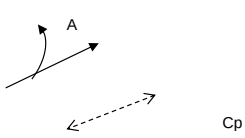
Traffic Flow (pcu/hr)



Group	ABEp	ABFp	Group	ABEp	ABFp
y	0.322	0.322	y	0.356	0.356
L (sec)	25	32	L (sec)	25	32
C (sec)	120	120	C (sec)	120	120
y pract.	0.713	0.660	y pract.	0.713	0.660
R.C. (%)	121%	105%	R.C. (%)	100%	85%

Stage / Phase Diagrams

1.



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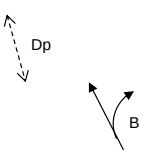

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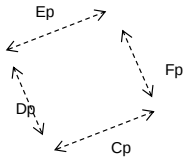


4.

5.

I/G= 14		I/G= 6		I/G= 7	7	I/G=		I/G=	
I/G= 14		I/G= 6		I/G= 7	7	I/G=		I/G=	

Date: Jun-16 **Junction:** A

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

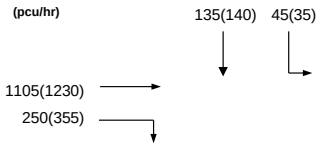
Junction: Java Road/ Kam Hong Street (B) Design Year: 2016

Description: Observe Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road		A	1	3.200						1935	1935	453	0.234		533	0.275	
EB		A	1	3.200						2075	2075	486	0.234		572	0.276	
		A	1	3.200		10		60%	74%	1775	1740	416	0.234	0.234	480	0.276	0.276
Shu Kuk Street		B	2	4.000	10			52%	41%	1870	1900	87	0.047	0.047	85	0.045	0.045
SB		B	2	4.000						2015	2015	93	0.046		90	0.045	
LRT/Pedestrian		Cp	1,3	Min	7	+	7			=	14						
		Dp	2,3	Min	9	+	11			=	20						
		Ep	3	Min	8	+	10			=	18			*			*
		Fp	3	Min	6	+	12			=	18						

Notes:

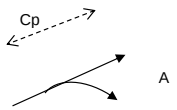
Traffic Flow (pcu/hr)



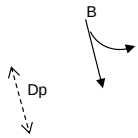
Group		ABEp	Group		ABEp
y		0.281	y		0.321
L (sec)		31	L (sec)		31
C (sec)		120	C (sec)		120
y pract.		0.668	y pract.		0.668
R.C. (%)		138%	R.C. (%)		108%

Stage / Phase Diagrams

1.



2.



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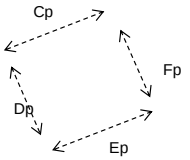


4.

5.

I/G= 12		I/G= 6		I/G= 7	8	I/G=		I/G=	
I/G= 12		I/G= 6		I/G= 7	8	I/G=		I/G=	

Date: Jun-16 **Junction:** B

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

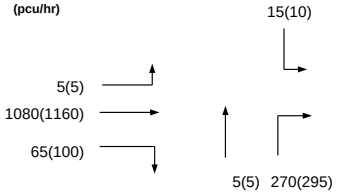
Junction: Java Road/ Tin Chiu Street (C) Design Year: 2016

Description: Observe Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road		A	1	3.000	8			1%	1%	1910	1910	376	0.197	0.197	414	0.217	
EB		A	1	3.000						2055	2055	404	0.197		446	0.217	0.217
		A	1	3.000		15		18%	25%	1880	1870	370	0.197		405	0.217	
Tin Chiu Street SB		B	3	3.500	15					1785	1785	15	0.008		10	0.006	
Tin Chiu Street		C	4	3.000		20		97%	97%	1785	1785	143	0.080	0.080	155	0.087	
NB		C	4	3.000		15				1660	1660	132	0.080		145	0.087	0.087
LRT/Pedestrian		Dp	2	Min	5	+	8			=	13			*			*
		Ep	2,3,4	Min	7	+	11			=	18						
		Fp	2,3	Min	6	+	12			=	18						

Notes:

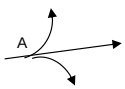
Traffic Flow (pcu/hr)



Group		ADpBC	Group		ADpBC
y		0.277	y		0.304
L (sec)		39	L (sec)		39
C (sec)		120	C (sec)		120
y pract.		0.608	y pract.		0.608
R.C. (%)		119%	R.C. (%)		100%

Stage / Phase Diagrams

1.



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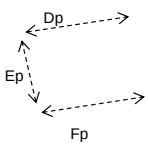

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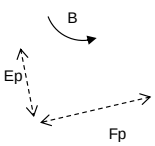

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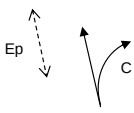


5.

I/G= 7		I/G= 7	5	I/G= 11	5	I/G= 6		I/G=			
I/G= 7		I/G= 7	5	I/G= 11	5	I/G= 6		I/G=			

Date: Jun-16 **Junction:** C

TRANSPORT RESEARCH LABORATORY

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

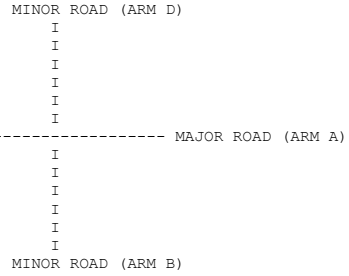
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\D AM 2016 OBS.vpi" at 10:41:13 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Shu Kuk Street AM (D) 2016 OBS

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Shu Kuk Street NB
ARM B IS Marble Road EB
ARM C IS Shu Kuk Street NB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.50 M.	(W) 7.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 15.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 15.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 5.00 M.	(WD-A) 2.20 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

.

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	3.25	4.88	3.25
ARM B	15.00	45.00	75.00	0.06	0.09	0.06
ARM C	15.00	45.00	75.00	0.00	0.00	0.00
ARM D	15.00	45.00	75.00	1.69	2.53	1.69

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.000	1.000	0.000
		0.0	0.0	260.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000	0.000
		0.0	0.0	5.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	135.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.06	11.78	0.005		0.0	0.0	0.1	
A-B	0.00							
A-C	3.25							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.47	0.000		0.0	0.0	0.0	
D-BC	1.69	9.40	0.179		0.0	0.2	3.1	
C-D	0.00							
C-A	0.00							
C-B	0.00	8.08	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.125	0.003	0.013	0.006	0.009
C-B	0.097	0.003		0.009	
D-AB	0.101	0.000	0.000	0.000	0.009
D-BC	0.078	0.003	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.07	11.60	0.006		0.0	0.0	0.1	
A-B	0.00							
A-C	3.88							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.39	0.000		0.0	0.0	0.0	
D-BC	2.02	9.30	0.217		0.2	0.3	4.0	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.96	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.122	0.003	0.013	0.006	0.009
C-B	0.095	0.004		0.009	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.078	0.003	0.022	0.006	0.009

A-D	0.104	0.000		0.010					

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.09	11.36	0.008		0.0	0.0	0.1	
A-B	0.00							
A-C	4.75							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.27	0.000		0.0	0.0	0.0	
D-BC	2.47	9.15	0.270		0.3	0.4	5.3	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.80	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.099	0.000	0.000	0.000	0.008
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.09	11.36	0.008		0.0	0.0	0.1	
A-B	0.00							
A-C	4.75							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.27	0.000		0.0	0.0	0.0	
D-BC	2.47	9.15	0.270		0.4	0.4	5.5	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.80	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.099	0.000	0.000	0.000	0.008
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.07	11.60	0.006		0.0	0.0	0.1	
A-B	0.00							
A-C	3.88							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.39	0.000		0.0	0.0	0.0	
D-BC	2.02	9.30	0.217		0.4	0.3	4.3	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.96	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.122	0.003	0.013	0.006	0.009
C-B	0.095	0.004		0.009	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.078	0.003	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.06	11.78	0.005		0.0	0.0	0.1	
A-B	0.00							
A-C	3.25							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.47	0.000		0.0	0.0	0.0	
D-BC	1.69	9.40	0.179		0.3	0.2	3.4	

C-D	0.00							
C-A	0.00							
C-B	0.00	8.08	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.125	0.003	0.013	0.006	0.009
C-B	0.097	0.003		0.009	
D-AB	0.101	0.000	0.000	0.000	0.009
D-BC	0.078	0.003	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.3
08.45	0.4
09.00	0.4
09.15	0.3
09.30	0.2

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	6.9	4.6	0.6	0.09	0.6	0.09
A-B	0.0	0.0				
A-C	356.5	237.7				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-AB	0.0	0.0	0.0	0.00	0.0	0.00
D-BC	185.1	123.4	25.6	0.14	25.6	0.14
C-D	0.0	0.0				
C-A	0.0	0.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00

I ALL	I 548.5	I 365.7	I 26.2	I 0.05	I 26.2	I 0.05	I

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

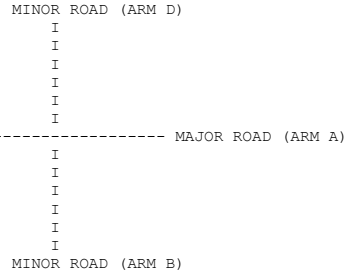
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\D PM 2016 OBS.vpi" at 10:41:24 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Shu Kuk Street PM (D) 2016 OBS

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Shu Kuk Street NB
ARM B IS Marble Road EB
ARM C IS Shu Kuk Street NB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.50 M.	(W) 7.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 15.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 15.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 5.00 M.	(WD-A) 2.20 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	3.19	4.78	3.19
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	0.00	0.00	0.00
ARM D	15.00	45.00	75.00	2.13	3.19	2.13

TIME	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.000	1.000	0.000
		0.0	0.0	255.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	170.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	9.12	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	3.19							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.37	0.000		0.0	0.0	0.0	
D-BC	2.13	9.43	0.225		0.0	0.3	4.1	
C-D	0.00							
C-A	0.00							
C-B	0.00	8.09	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.125	0.003	0.013	0.006	0.009
C-B	0.097	0.003		0.009	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.079	0.002	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	8.93	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	3.81							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.26	0.000		0.0	0.0	0.0	
D-BC	2.54	9.33	0.272		0.3	0.4	5.4	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.98	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.122	0.003	0.013	0.006	0.008
C-B	0.095	0.004		0.009	
D-AB	0.099	0.000	0.000	0.000	0.008
D-BC	0.078	0.003	0.022	0.006	0.009

	A-D	0.104	0.000		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	8.68	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	4.66							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.12	0.000		0.0	0.0	0.0	
D-BC	3.11	9.19	0.338		0.4	0.5	7.3	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.82	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.094	0.005		0.009	
D-AB	0.097	0.000	0.000	0.000	0.008
D-BC	0.077	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	8.68	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	4.66							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.11	0.000		0.0	0.0	0.0	
D-BC	3.11	9.19	0.338		0.5	0.5	7.6	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.82	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.094	0.005		0.009	
D-AB	0.097	0.000	0.000	0.000	0.008
D-BC	0.077	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	8.93	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	3.81							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.26	0.000		0.0	0.0	0.0	
D-BC	2.54	9.33	0.272		0.5	0.4	5.9	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.98	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.122	0.003	0.013	0.006	0.008
C-B	0.095	0.004		0.009	
D-AB	0.099	0.000	0.000	0.000	0.008
D-BC	0.078	0.003	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	9.12	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	3.19							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.37	0.000		0.0	0.0	0.0	
D-BC	2.13	9.43	0.225		0.4	0.3	4.5	

C-D	0.00							
C-A	0.00							
C-B	0.00	8.09	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.125	0.003	0.013	0.006	0.009
C-B	0.097	0.003		0.009	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.079	0.002	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.3	
18.00	0.4	
18.15	0.5	*
18.30	0.5	*
18.45	0.4	
19.00	0.3	

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	349.7	233.1				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-AB	0.0	0.0	0.0	0.00	0.0	0.00
D-BC	233.1	155.4	34.8	0.15	34.8	0.15
C-D	0.0	0.0				
C-A	0.0	0.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00

I ALL	I 582.8	I 388.5	I 34.8	I 0.06	I 34.8	I 0.06	I

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

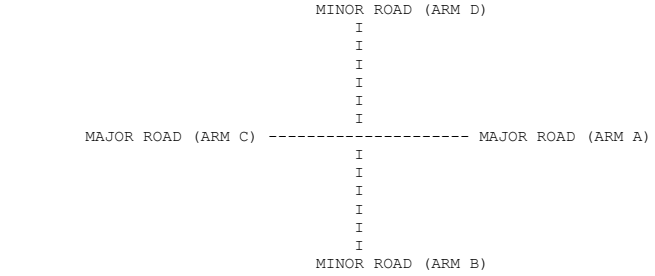
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\E AM 2016 OBS.vpi" at 10:41:43 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Kam Hong Street AM (E) 2016 OBS

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Kam Hong Street SB
ARM B IS Marble Road WB
ARM C IS Kam Hong Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.75 M.	(W) 7.75 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 4.00 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 100.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 15.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 0.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	4.81	7.22	4.81
ARM D	15.00	45.00	75.00	1.75	2.63	1.75

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.870	0.130	0.000	0.000
		335.0	50.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.393	0.607	0.000	0.000
		55.0	85.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.00	6.93	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.75	0.000		0.0	0.0	0.0	
D-ABC	1.75	9.60	0.182		0.0	0.2	3.2	
C-D	0.00							
C-A	4.19							
C-B	0.63	12.59	0.050		0.0	0.1	0.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.091	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.124	0.004	0.013	0.006	0.009
A-D	0.093	0.005		0.009	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.00	6.80	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.56	0.000		0.0	0.0	0.0	
D-ABC	2.09	9.36	0.223		0.2	0.3	4.2	
C-D	0.00							
C-A	5.00							
C-B	0.75	12.59	0.059		0.1	0.1	0.9	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.088	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.120	0.004	0.013	0.005	0.008
A-D	0.090	0.006		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.00	6.62	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.31	0.000		0.0	0.0	0.0	
D-ABC	2.56	9.03	0.283		0.3	0.4	5.7	
C-D	0.00							
C-A	6.12							
C-B	0.91	12.59	0.073		0.1	0.1	1.1	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.084	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.116	0.005	0.013	0.005	0.008
A-D	0.087	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.00	6.62	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.31	0.000		0.0	0.0	0.0	
D-ABC	2.56	9.03	0.283		0.4	0.4	5.9	
C-D	0.00							
C-A	6.12							
C-B	0.91	12.59	0.073		0.1	0.1	1.2	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.084	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.116	0.005	0.013	0.005	0.008
A-D	0.087	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.00	6.80	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.56	0.000		0.0	0.0	0.0	
D-ABC	2.09	9.36	0.223		0.4	0.3	4.5	
C-D	0.00							
C-A	5.00							
C-B	0.75	12.59	0.059		0.1	0.1	1.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.088	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.120	0.004	0.013	0.005	0.008
A-D	0.090	0.006		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.00	6.93	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.75	0.000		0.0	0.0	0.0	
D-ABC	1.75	9.60	0.182		0.3	0.2	3.5	
C-D	0.00							
C-A	4.19							
C-B	0.63	12.59	0.050		0.1	0.1	0.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.091	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	

I	D-ABC	0.124	0.004	0.013	0.006	0.009	I
I	A-D	0.093	0.005		0.009		I

.

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

.

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

.

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.3
08.45	0.4
09.00	0.4
09.15	0.3
09.30	0.2

.

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1
09.30	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	0.0	0.0				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-ABC	192.0	128.0	26.8	0.14	26.8	0.14
C-D	0.0	0.0				
C-A	459.4	306.2				
C-B	68.6	45.7	5.8	0.08	5.8	0.08
ALL	719.9	479.9	32.6	0.05	32.6	0.05

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

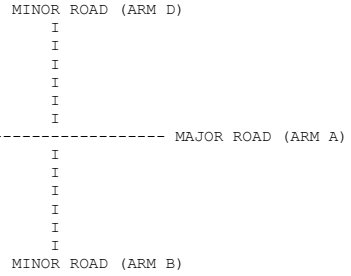
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\E PM 2016 OBS.vpi" at 10:41:59 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Kam Hong Street PM (E) 2016 OBS

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Kam Hong Street SB
ARM B IS Marble Road WB
ARM C IS Kam Hong Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.75 M.	(W) 7.75 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 4.00 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 100.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 15.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 0.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	6.19	9.28	6.19
ARM D	15.00	45.00	75.00	2.06	3.09	2.06

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.848	0.152	0.000	0.000
		420.0	75.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.424	0.576	0.000	0.000
		70.0	95.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	6.75	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.47	0.000		0.0	0.0	0.0	
D-ABC	2.06	9.35	0.221		0.0	0.3	4.0	
C-D	0.00							
C-A	5.25							
C-B	0.94	12.59	0.074		0.0	0.1	1.2	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.087	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.119	0.005	0.013	0.005	0.008
A-D	0.089	0.006		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	6.58	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.23	0.000		0.0	0.0	0.0	
D-ABC	2.46	9.04	0.272		0.3	0.4	5.4	
C-D	0.00							
C-A	6.27							
C-B	1.12	12.59	0.089		0.1	0.1	1.4	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.083	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.114	0.006	0.013	0.005	0.008
A-D	0.086	0.008		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	6.34	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	6.89	0.000		0.0	0.0	0.0	
D-ABC	3.02	8.63	0.350		0.4	0.5	7.6	
C-D	0.00							
C-A	7.68							
C-B	1.37	12.59	0.109		0.1	0.1	1.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.078	0.007	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.108	0.007	0.013	0.005	0.007
A-D	0.082	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	6.34	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	6.89	0.000		0.0	0.0	0.0	
D-ABC	3.02	8.63	0.350		0.5	0.5	8.0	
C-D	0.00							
C-A	7.68							
C-B	1.37	12.59	0.109		0.1	0.1	1.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.078	0.007	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.108	0.007	0.013	0.005	0.007
A-D	0.082	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	6.58	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.22	0.000		0.0	0.0	0.0	
D-ABC	2.46	9.04	0.272		0.5	0.4	5.9	
C-D	0.00							
C-A	6.27							
C-B	1.12	12.59	0.089		0.1	0.1	1.5	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.083	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.114	0.006	0.013	0.005	0.008
A-D	0.086	0.008		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	6.75	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.46	0.000		0.0	0.0	0.0	
D-ABC	2.06	9.35	0.221		0.4	0.3	4.4	
C-D	0.00							
C-A	5.25							
C-B	0.94	12.59	0.074		0.1	0.1	1.2	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.087	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	

I	D-ABC	0.119	0.005	0.013	0.005	0.008	I
I	A-D	0.089	0.006		0.008		I

.

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

.

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

.

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.3	
18.00	0.4	
18.15	0.5	*
18.30	0.5	*
18.45	0.4	
19.00	0.3	

.

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1
18.00	0.1
18.15	0.1
18.30	0.1
18.45	0.1
19.00	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	0.0	0.0				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-ABC	226.2	150.8	35.3	0.16	35.3	0.16
C-D	0.0	0.0				
C-A	575.9	383.9				
C-B	102.8	68.6	8.9	0.09	8.9	0.09
ALL	905.0	603.3	44.3	0.05	44.3	0.05

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

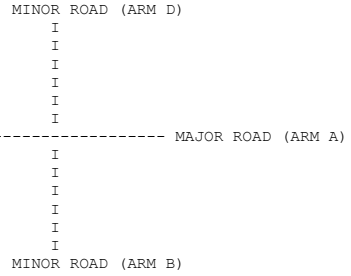
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\F AM 2016 OBS.vpi" at 10:42:15 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Tin Chiu Street AM (F) 2016 OBS

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tin Chiu Street NB
ARM B IS Marble Road WB
ARM C IS Tin Chiu Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 10.50 M.	(W) 10.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 5.00 M.	(WA-D) 3.30 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 100.0 M.
- BLOCKS TRAFFIC	YES	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 100.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 3.40 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 3.40 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	4.38	6.56	4.38
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	0.81	1.22	0.81
ARM D	15.00	45.00	75.00	0.38	0.56	0.38

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.229	0.743	0.029
		0.0	80.0	260.0	10.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.692	0.000	0.308
		0.0	45.0	0.0	20.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.500	0.500	0.000
		0.0	15.0	15.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.00	6.86	0.000		0.0	0.0	0.0	
A-B	1.00							
A-C	3.25							
A-D	0.13	11.56	0.011		0.0	0.0	0.2	
D-AB	0.10	8.50	0.011		0.0	0.0	0.2	
D-BC	0.28	8.66	0.032		0.0	0.0	0.5	
C-ABD	0.57	11.60	0.050		0.0	0.1	0.8	
C-D	0.24							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.00	6.72	0.000		0.0	0.0	0.0	
A-B	1.19							
A-C	3.88							
A-D	0.15	11.51	0.013		0.0	0.0	0.2	
D-AB	0.11	8.35	0.014		0.0	0.0	0.2	
D-BC	0.33	8.54	0.039		0.0	0.0	0.6	
C-ABD	0.69	11.43	0.060		0.1	0.1	1.0	
C-D	0.28							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.00	6.54	0.000		0.0	0.0	0.0	
A-B	1.46							
A-C	4.75							
A-D	0.18	11.45	0.016		0.0	0.0	0.2	
D-AB	0.14	8.14	0.017		0.0	0.0	0.3	
D-BC	0.41	8.36	0.049		0.0	0.1	0.7	
C-ABD	0.85	11.20	0.076		0.1	0.1	1.3	
C-D	0.34							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.00	6.54	0.000		0.0	0.0	0.0	
A-B	1.46							
A-C	4.75							
A-D	0.18	11.45	0.016		0.0	0.0	0.2	
D-AB	0.14	8.14	0.017		0.0	0.0	0.3	
D-BC	0.41	8.36	0.049		0.1	0.1	0.8	
C-ABD	0.85	11.20	0.076		0.1	0.1	1.3	
C-D	0.34							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.00	6.72	0.000		0.0	0.0	0.0	
A-B	1.19							
A-C	3.88							
A-D	0.15	11.51	0.013		0.0	0.0	0.2	
D-AB	0.11	8.35	0.014		0.0	0.0	0.2	
D-BC	0.33	8.53	0.039		0.1	0.0	0.6	
C-ABD	0.69	11.43	0.060		0.1	0.1	1.0	
C-D	0.28							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.00	6.86	0.000		0.0	0.0	0.0	
A-B	1.00							
A-C	3.25							
A-D	0.13	11.56	0.011		0.0	0.0	0.2	
D-AB	0.10	8.50	0.011		0.0	0.0	0.2	
D-BC	0.28	8.66	0.032		0.0	0.0	0.5	
C-ABD	0.57	11.60	0.050		0.1	0.1	0.8	
C-D	0.24							
C-A	0.00							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0

08.30	0.0
08.45	0.1
09.00	0.1
09.15	0.0
09.30	0.0

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QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1
09.30	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	109.7	73.1				
A-C	356.5	237.7				
A-D	13.7	9.1	1.2	0.09	1.2	0.09
D-AB	10.6	7.0	1.3	0.12	1.3	0.12
D-BC	30.6	20.4	3.7	0.12	3.7	0.12
C-ABD	63.5	42.3	6.2	0.10	6.2	0.10
C-D	25.7	17.1				
C-A	0.0	0.0				
ALL	610.2	406.8	12.4	0.02	12.4	0.02

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

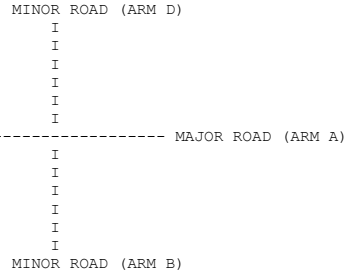
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\F PM 2016 OBS.vpi" at 10:42:35 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Tin Chiu Street PM (F) 2016 OBS

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tin Chiu Street NB
ARM B IS Marble Road WB
ARM C IS Tin Chiu Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 10.50 M.	(W) 10.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 5.00 M.	(WA-D) 3.30 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 100.0 M.
- BLOCKS TRAFFIC	YES	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 100.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 3.40 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 3.40 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	4.44	6.66	4.44
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	1.25	1.88	1.25
ARM D	15.00	45.00	75.00	0.69	1.03	0.69

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.197	0.761	0.042
		0.0	70.0	270.0	15.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.700	0.000	0.300
		0.0	70.0	0.0	30.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.455	0.545	0.000
		0.0	25.0	30.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	6.77	0.000		0.0	0.0	0.0	
A-B	0.88							
A-C	3.38							
A-D	0.19	11.43	0.016		0.0	0.0	0.2	
D-AB	0.16	8.35	0.020		0.0	0.0	0.3	
D-BC	0.52	8.56	0.061		0.0	0.1	0.9	
C-ABD	0.90	11.66	0.078		0.0	0.1	1.3	
C-D	0.35							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	6.62	0.000		0.0	0.0	0.0	
A-B	1.04							
A-C	4.03							
A-D	0.22	11.36	0.020		0.0	0.0	0.3	
D-AB	0.20	8.16	0.024		0.0	0.0	0.4	
D-BC	0.62	8.42	0.074		0.1	0.1	1.2	
C-ABD	1.09	11.50	0.095		0.1	0.1	1.6	
C-D	0.41							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	6.41	0.000		0.0	0.0	0.0	
A-B	1.28							
A-C	4.94							
A-D	0.27	11.27	0.024		0.0	0.0	0.4	
D-AB	0.24	7.91	0.031		0.0	0.0	0.5	
D-BC	0.76	8.22	0.093		0.1	0.1	1.5	
C-ABD	1.34	11.29	0.119		0.1	0.1	2.1	
C-D	0.48							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	6.41	0.000		0.0	0.0	0.0	
A-B	1.28							
A-C	4.94							
A-D	0.27	11.27	0.024		0.0	0.0	0.4	
D-AB	0.24	7.91	0.031		0.0	0.0	0.5	
D-BC	0.76	8.22	0.093		0.1	0.1	1.5	
C-ABD	1.34	11.29	0.119		0.1	0.1	2.1	
C-D	0.48							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	6.62	0.000		0.0	0.0	0.0	
A-B	1.04							
A-C	4.03							
A-D	0.22	11.36	0.020		0.0	0.0	0.3	
D-AB	0.20	8.16	0.024		0.0	0.0	0.4	
D-BC	0.62	8.42	0.074		0.1	0.1	1.2	
C-ABD	1.09	11.50	0.095		0.1	0.1	1.6	
C-D	0.41							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	6.77	0.000		0.0	0.0	0.0	
A-B	0.88							
A-C	3.38							
A-D	0.19	11.43	0.016		0.0	0.0	0.3	
D-AB	0.16	8.35	0.020		0.0	0.0	0.3	
D-BC	0.52	8.56	0.061		0.1	0.1	1.0	
C-ABD	0.90	11.66	0.078		0.1	0.1	1.3	
C-D	0.35							
C-A	0.00							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1

18.00	0.1
18.15	0.1
18.30	0.1
18.45	0.1
19.00	0.1

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QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1
18.00	0.1
18.15	0.1
18.30	0.1
18.45	0.1
19.00	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	96.0	64.0				
A-C	370.2	246.8				
A-D	20.6	13.7	1.8	0.09	1.8	0.09
D-AB	18.1	12.1	2.3	0.13	2.3	0.13
D-BC	57.3	38.2	7.4	0.13	7.4	0.13
C-ABD	100.1	66.7	10.1	0.10	10.1	0.10
C-D	37.0	24.7				
C-A	0.0	0.0				
ALL	699.3	466.2	21.6	0.03	21.6	0.03

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

END OF JOB

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

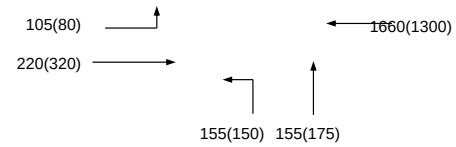
Junction: King's Road/ Shu Kuk Street (G) Design Year: 2016

Description: Observe Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road EB		A	1	5.500	10			32%	20%	2065	2100	325	0.157		400	0.190	0.190
		A	1	3.000						2055	2055	80	0.039		100	0.049	
King's Road WB		B	1,2	3.300						1945	1945	540	0.278		423	0.217	
		B	1,2	3.300						2085	2085	580	0.278	0.278	454	0.218	
		B	1,2	3.300						1945	1945	540	0.278		423	0.217	
		B	1,2	3.000						2055	2055	100	0.049		60	0.029	
Shu Kuk Street NB		C	3	3.250	10					1685	1685	145	0.086		150	0.089	
		C	3	3.250	15			6%	0%	1930	1940	165	0.085		175	0.090	0.090
LRT/Pedestrian		Dp	1,2	Min	10	+	9			=	19						
		Ep	3	Min	9	+	20			=	29			*			
		Fp	2	Min	7	+	8			=	15						*

Notes:

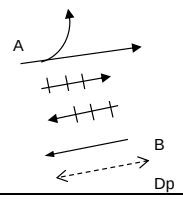
Traffic Flow (pcu/hr)



Group	BC	BEp	Group	BC	AFpC
y	0.364	0.278	y	0.308	0.281
L (sec)	9	37	L (sec)	9	29
C (sec)	120	120	C (sec)	120	120
y pract.	0.833	0.623	y pract.	0.833	0.683
R.C. (%)	129%	124%	R.C. (%)	170%	143%

Stage / Phase Diagrams

1.



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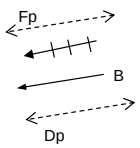

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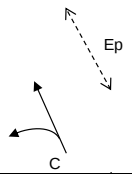


4.

5.

I/G= 24		I/G=		I/G= 5	9	I/G=		I/G=	
I/G= 7		I/G= 7	7	I/G= 10		I/G=		I/G=	

Date: Jun-16 **Junction:** G

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

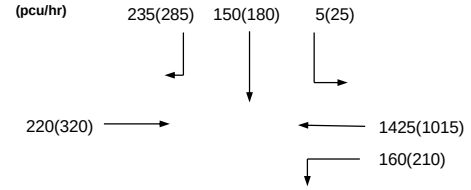
Junction: King's Road/ Kam Hong Street (H) Design Year: 2016

Description: Observe Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road		A	1	4.000						2015	2015	220	0.109		320	0.159	
EB			1	3.000						2055	2055	80	0.039		100	0.049	
King's Road		A	1	3.300	8			32%	56%	1835	1760	496	0.270		372	0.211	
WB		A	1	3.300						2085	2085	563	0.270		441	0.212	
		A	1	3.300						1945	1945	526	0.270	0.270	412	0.212	0.212
			1	3.000						2055	2055	100	0.049		60	0.029	
Kam Hong Street		B	2	3.750	8	20		2% / 23%	10% / 19%	1945	1925	202	0.104		253	0.131	0.131
SB		B	2	3.750		15				1810	1810	188	0.104	0.104	237	0.131	
LRT/Pedestrian		Cp	3	Min	10	+	18			=	28			*			*
		Dp	1,3	Min	10	+	7			=	17						
		Ep	3	Min	15	+	7			=	22						

Notes:

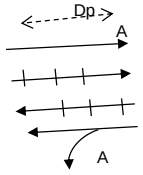
Traffic Flow (pcu/hr)



Group	ABEp	ABCp	Group	ABEp	ABCp
y	0.374	0.374	y	0.343	0.343
L (sec)	35	43	L (sec)	35	43
C (sec)	120	120	C (sec)	120	120
y pract.	0.638	0.578	y pract.	0.638	0.578
R.C. (%)	70%	54%	R.C. (%)	86%	68%

Stage / Phase Diagrams

1.



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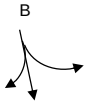

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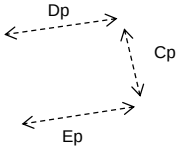


4.

5.

I/G= 22		I/G= 5		I/G= 8	10	I/G=		I/G=	
I/G= 22		I/G= 5		I/G= 8	10	I/G=		I/G=	

Date: Jun-16 **Junction:** H

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

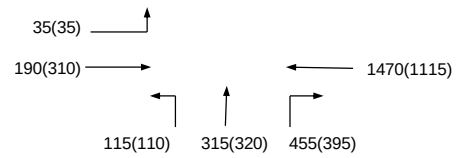
Junction: King's Road/ Tin Chiu Street (I) Design Year: 2016

Description: Observe Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road EB		A	1	3.000	10			16%	10%	1870	1885	225	0.120		345	0.183	0.183
			1	3.000						2055	2055	80	0.039		100	0.049	
King's Road WB		B	1	3.300						1945	1945	479	0.246	0.246	363	0.187	
		B	1	3.300						2085	2085	512	0.246		389	0.187	
		B	1	3.300						1945	1945	479	0.246		363	0.187	
			1	3.000						2055	2055	100	0.049		60	0.029	
Tin Chiu Street NB		C	2	3.300	10					1690	1690	115	0.068		110	0.065	
		C	2	3.300	15			0%	0%	2085	2085	315	0.151		320	0.153	
		C	2	3.300		15				1770	1770	455	0.257	0.257	395	0.223	0.223
LRT/Pedestrian		Dp	1	Min	8	+	12			=	20						

Notes:

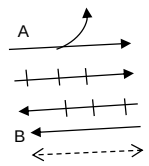
Traffic Flow (pcu/hr)



Group	AC	BC	Group	BC	AC
y	0.377	0.503	y	0.410	0.406
L (sec)	10	9	L (sec)	9	10
C (sec)	120	120	C (sec)	120	120
y pract.	0.825	0.833	y pract.	0.833	0.825
R.C. (%)	119%	65%	R.C. (%)	103%	103%

Stage / Phase Diagrams

1.



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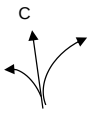


3.

4.

5.

I/G= 5		I/G= 6		I/G=		I/G=			I/G=		
I/G= 7		I/G= 5		I/G=		I/G=			I/G=		

Date: Jun-16 **Junction:** I

2025 Reference Flows

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

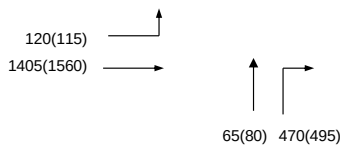
Junction: Java Road/ Shu Kuk Street (A) Design Year: 2025

Description: Reference Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road		A	1	3.000	10			25%	22%	1845	1855	484	0.262	0.262	533	0.287	
EB		A	1	3.000						2055	2055	539	0.262		591	0.288	
		A	1	3.000						1915	1915	502	0.262		551	0.288	0.288
Shu Kuk Street		B	2	3.750		15		78%	75%	1845	1850	293	0.159	0.159	315	0.170	0.170
NB		B	2	3.750		10				1530	1530	242	0.158		260	0.170	
LRT/Pedestrian		Cp	1,3	Min	5	+	7			=	12						
		Dp	2,3	Min	11	+	11			=	22						
		Ep	3	Min	5	+	7			=	12						
		Fp	3	Min	7	+	12			=	19			*			*

Notes:

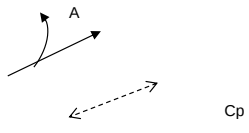
Traffic Flow (pcu/hr)



Group	ABEp	ABFp	Group	ABEp	ABFp
y	0.421	0.421	y	0.458	0.458
L (sec)	25	32	L (sec)	25	32
C (sec)	120	120	C (sec)	120	120
y pract.	0.713	0.660	y pract.	0.713	0.660
R.C. (%)	69%	57%	R.C. (%)	56%	44%

Stage / Phase Diagrams

1.



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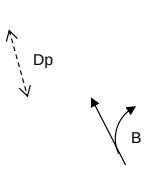

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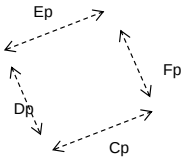


4.

5.

I/G= 14		I/G= 6		I/G= 7	7	I/G=		I/G=	
I/G= 14		I/G= 6		I/G= 7	7	I/G=		I/G=	

Date: Jun-16 **Junction:** A

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

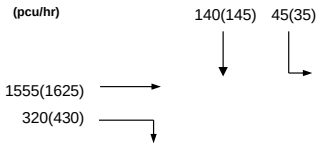
Junction: Java Road/ Kam Hong Street (B) Design Year: 2025

Description: Reference Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road		A	1	3.200						1935	1935	626	0.324		690	0.357	
EB		A	1	3.200						2075	2075	671	0.323		740	0.357	0.357
		A	1	3.200		10		55%	69%	1785	1755	578	0.324	0.324	625	0.356	
Shu Kuk Street		B	2	4.000	10			51%	40%	1875	1900	89	0.047		87	0.046	
SB		B	2	4.000						2015	2015	96	0.048	0.048	93	0.046	0.046
LRT/Pedestrian		Cp	1,3	Min	7	+	7			=	14						
		Dp	2,3	Min	9	+	11			=	20						
		Ep	3	Min	8	+	10			=	18			*			*
		Fp	3	Min	6	+	12			=	18						

Notes:

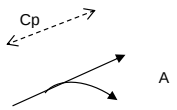
Traffic Flow (pcu/hr)



Group		ABEp	Group		ABEp
y		0.371	y		0.403
L (sec)		31	L (sec)		31
C (sec)		120	C (sec)		120
y pract.		0.668	y pract.		0.668
R.C. (%)		80%	R.C. (%)		66%

Stage / Phase Diagrams

1.



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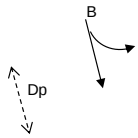

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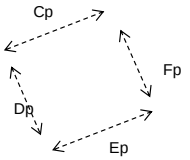


4.

5.

I/G= 12		I/G= 6		I/G= 7	8	I/G=		I/G=	
I/G= 12		I/G= 6		I/G= 7	8	I/G=		I/G=	

Date: Jun-16 **Junction:** B

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

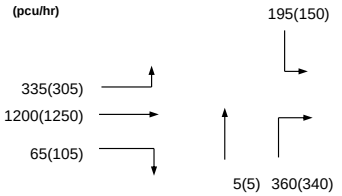
Junction: Java Road/ Tin Chiu Street (C) Design Year: 2025

Description: Reference Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road		A	1	3.000	8			70%	60%	1695	1720	480	0.283		505	0.294	
EB		A	1	3.000						2055	2055	583	0.284		603	0.293	
		A	1	3.000		15		12%	19%	1890	1880	537	0.284	0.284	552	0.294	0.294
Tin Chiu Street SB		B	3	3.500	15					1785	1785	195	0.109	0.109	150	0.084	0.084
Tin Chiu Street		C	4	3.000		20		97%	97%	1785	1785	189	0.106		179	0.100	0.100
NB		C	4	3.000		15				1660	1660	176	0.106	0.106	166	0.100	
LRT/Pedestrian		Dp	2	Min	5	+	8			=	13			*			*
		Ep	2,3,4	Min	7	+	11			=	18						
		Fp	2,3	Min	6	+	12			=	18						

Notes:

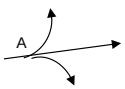
Traffic Flow (pcu/hr)



Group		ADpBC	Group		ADpBC
y		0.499	y		0.478
L (sec)		33	L (sec)		33
C (sec)		120	C (sec)		120
y pract.		0.653	y pract.		0.653
R.C. (%)		31%	R.C. (%)		37%

Stage / Phase Diagrams

1.



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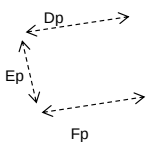

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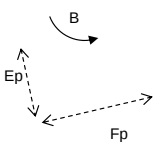

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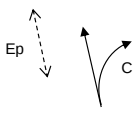

5.

I/G= 7		I/G= 7	5	I/G= 11		I/G= 6		I/G=	
I/G= 7		I/G= 7	5	I/G= 11		I/G= 6		I/G=	

Date: Jun-16 **Junction:** C

TRANSPORT RESEARCH LABORATORY

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

Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D AM 2025 REF.vpi" at 15:11:36 on Wednesday, 1 June 2016

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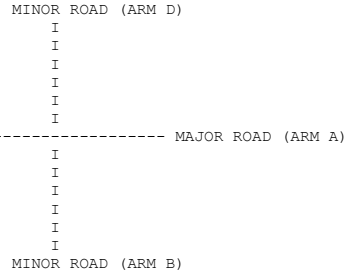
Marble Road / Shu Kuk Street AM (D) 2025 REF

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Shu Kuk Street NB
ARM B IS Marble Road EB
ARM C IS Shu Kuk Street NB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.50 M.	(W) 7.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 15.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 15.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 5.00 M.	(WD-A) 2.20 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	4.88	7.31	4.88
ARM B	15.00	45.00	75.00	0.06	0.09	0.06
ARM C	15.00	45.00	75.00	0.00	0.00	0.00
ARM D	15.00	45.00	75.00	1.75	2.63	1.75

TIME	FROM/TO	TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.000	1.000	0.000
		0.0	0.0	390.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000	0.000
		0.0	0.0	5.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	140.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.06	11.33	0.006		0.0	0.0	0.1	
A-B	0.00							
A-C	4.88							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.45	0.000		0.0	0.0	0.0	
D-BC	1.75	9.14	0.191		0.0	0.2	3.4	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.78	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.119	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.101	0.000	0.000	0.000	0.009
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.07	11.07	0.007		0.0	0.0	0.1	
A-B	0.00							
A-C	5.82							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.35	0.000		0.0	0.0	0.0	
D-BC	2.09	8.99	0.233		0.2	0.3	4.4	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.60	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.115	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.075	0.004	0.022	0.006	0.009

	A-D	0.104	0.000		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.09	10.71	0.009		0.0	0.0	0.1	
A-B	0.00							
A-C	7.13							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.22	0.000		0.0	0.0	0.0	
D-BC	2.56	8.77	0.292		0.3	0.4	5.9	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.35	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.110	0.006	0.013	0.005	0.008
C-B	0.088	0.007		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.073	0.005	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.09	10.71	0.009		0.0	0.0	0.1	
A-B	0.00							
A-C	7.13							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.22	0.000		0.0	0.0	0.0	
D-BC	2.56	8.77	0.292		0.4	0.4	6.1	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.35	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.110	0.006	0.013	0.005	0.008
C-B	0.088	0.007		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.073	0.005	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.07	11.07	0.007		0.0	0.0	0.1	
A-B	0.00							
A-C	5.82							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.35	0.000		0.0	0.0	0.0	
D-BC	2.09	8.99	0.233		0.4	0.3	4.7	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.60	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.115	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.075	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.06	11.33	0.006		0.0	0.0	0.1	
A-B	0.00							
A-C	4.88							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.44	0.000		0.0	0.0	0.0	
D-BC	1.75	9.14	0.191		0.3	0.2	3.7	

C-D	0.00							
C-A	0.00							
C-B	0.00	7.78	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.119	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.101	0.000	0.000	0.000	0.009
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.3
08.45	0.4
09.00	0.4
09.15	0.3
09.30	0.2

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	6.9	4.6	0.6	0.09	0.6	0.09
A-B	0.0	0.0				
A-C	534.8	356.5				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-AB	0.0	0.0	0.0	0.00	0.0	0.00
D-BC	192.0	128.0	28.2	0.15	28.2	0.15
C-D	0.0	0.0				
C-A	0.0	0.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00

I ALL	I 733.6	I 489.1	I 28.8	I 0.04	I 28.8	I 0.04	I

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

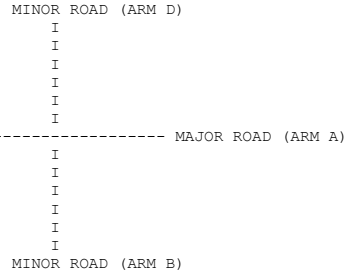
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D PM 2025 REF.vpi" at 15:11:43 on Wednesday, 1 June 2016

RUN TITLE
****
Marble Road / Shu Kuk Street PM (D) 2025 REF

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Shu Kuk Street NB
ARM B IS Marble Road EB
ARM C IS Shu Kuk Street NB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.50 M.	(W) 7.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 15.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 15.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 5.00 M.	(WD-A) 2.20 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	4.94	7.41	4.94
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	0.00	0.00	0.00
ARM D	15.00	45.00	75.00	2.25	3.38	2.25

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) TURNING COUNTS (VEH/HR) ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.000	1.000	0.000
		0.0	0.0	395.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	180.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	8.68	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	4.94							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.33	0.000		0.0	0.0	0.0	
D-BC	2.25	9.15	0.246		0.0	0.3	4.6	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.76	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.100	0.000	0.000	0.000	0.008
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	8.41	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	5.90							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.20	0.000		0.0	0.0	0.0	
D-BC	2.69	8.99	0.299		0.3	0.4	6.1	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.58	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.114	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.075	0.004	0.022	0.006	0.009

	A-D	0.104	0.000		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	8.04	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	7.22							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.03	0.000		0.0	0.0	0.0	
D-BC	3.29	8.78	0.375		0.4	0.6	8.5	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.33	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.108	0.006	0.013	0.005	0.008
C-B	0.088	0.007		0.008	
D-AB	0.096	0.000	0.000	0.000	0.008
D-BC	0.073	0.005	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	8.04	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	7.22							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.03	0.000		0.0	0.0	0.0	
D-BC	3.29	8.78	0.375		0.6	0.6	8.9	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.33	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.108	0.006	0.013	0.005	0.008
C-B	0.088	0.007		0.008	
D-AB	0.096	0.000	0.000	0.000	0.008
D-BC	0.073	0.005	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	8.41	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	5.90							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.20	0.000		0.0	0.0	0.0	
D-BC	2.69	8.99	0.299		0.6	0.4	6.7	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.58	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.114	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.075	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	8.68	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	4.94							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.32	0.000		0.0	0.0	0.0	
D-BC	2.25	9.15	0.246		0.4	0.3	5.1	

C-D	0.00							
C-A	0.00							
C-B	0.00	7.76	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.100	0.000	0.000	0.000	0.008
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM D-BC

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

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	541.6	361.1				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-AB	0.0	0.0	0.0	0.00	0.0	0.00
D-BC	246.8	164.5	39.9	0.16	39.9	0.16
C-D	0.0	0.0				
C-A	0.0	0.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00

I ALL	I 788.4	I 525.6	I 39.9	I 0.05	I 39.9	I 0.05	I

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

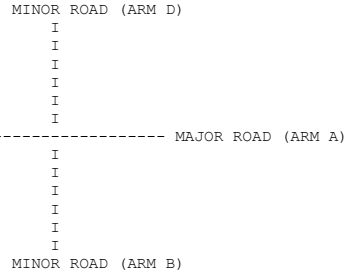
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\E AM 2025 REF.vpi" at 10:41:54 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Kam Hong Street AM (E) 2025 REF

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Kam Hong Street SB
ARM B IS Marble Road WB
ARM C IS Kam Hong Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.75 M.	(W) 7.75 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 4.00 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 100.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 15.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 0.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	5.75	8.63	5.75
ARM D	15.00	45.00	75.00	1.81	2.72	1.81

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.891	0.109	0.000	0.000
		410.0	50.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.379	0.621	0.000	0.000
		55.0	90.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.00	6.85	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.57	0.000		0.0	0.0	0.0	
D-ABC	1.81	9.32	0.195		0.0	0.2	3.4	
C-D	0.00							
C-A	5.13							
C-B	0.63	12.59	0.050		0.0	0.1	0.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.089	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.120	0.004	0.013	0.005	0.008
A-D	0.091	0.006		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.00	6.70	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.35	0.000		0.0	0.0	0.0	
D-ABC	2.16	9.03	0.240		0.2	0.3	4.5	
C-D	0.00							
C-A	6.12							
C-B	0.75	12.59	0.059		0.1	0.1	0.9	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.086	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.116	0.005	0.013	0.005	0.008
A-D	0.088	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.00	6.49	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.05	0.000		0.0	0.0	0.0	
D-ABC	2.65	8.64	0.307		0.3	0.4	6.3	
C-D	0.00							
C-A	7.50							
C-B	0.91	12.59	0.073		0.1	0.1	1.1	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.082	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.111	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.00	6.49	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.05	0.000		0.0	0.0	0.0	
D-ABC	2.65	8.64	0.307		0.4	0.4	6.6	
C-D	0.00							
C-A	7.50							
C-B	0.91	12.59	0.073		0.1	0.1	1.2	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.081	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.111	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.00	6.70	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.35	0.000		0.0	0.0	0.0	
D-ABC	2.16	9.03	0.240		0.4	0.3	4.9	
C-D	0.00							
C-A	6.12							
C-B	0.75	12.59	0.059		0.1	0.1	1.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.086	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.116	0.005	0.013	0.005	0.008
A-D	0.088	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.00	6.85	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.57	0.000		0.0	0.0	0.0	
D-ABC	1.81	9.32	0.195		0.3	0.2	3.8	
C-D	0.00							
C-A	5.13							
C-B	0.63	12.59	0.050		0.1	0.1	0.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.089	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	

I	D-ABC	0.120	0.004	0.013	0.005	0.008	I
I	A-D	0.091	0.006		0.008		I

.

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

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QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

.

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.3
08.45	0.4
09.00	0.4
09.15	0.3
09.30	0.2

.

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1
09.30	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	0.0	0.0				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-ABC	198.8	132.6	29.6	0.15	29.6	0.15
C-D	0.0	0.0				
C-A	562.2	374.8				
C-B	68.6	45.7	5.8	0.08	5.8	0.08
ALL	829.6	553.1	35.4	0.04	35.4	0.04

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

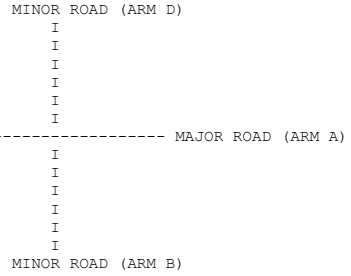
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\E PM 2025 REF.vpi" at 10:42:09 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Kam Hong Street PM (E) 2025 REF

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Kam Hong Street SB
ARM B IS Marble Road WB
ARM C IS Kam Hong Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.75 M.	(W) 7.75 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 4.00 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 100.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 15.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 0.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	7.19	10.78	7.19
ARM D	15.00	45.00	75.00	2.19	3.28	2.19

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.861	0.139	0.000	0.000
		495.0	80.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.429	0.571	0.000	0.000
		75.0	100.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	6.65	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.27	0.000		0.0	0.0	0.0	
D-ABC	2.19	9.10	0.240		0.0	0.3	4.5	
C-D	0.00							
C-A	6.19							
C-B	1.00	12.59	0.079		0.0	0.1	1.3	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.085	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.115	0.005	0.013	0.005	0.008
A-D	0.087	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	6.45	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.00	0.000		0.0	0.0	0.0	
D-ABC	2.61	8.75	0.299		0.3	0.4	6.1	
C-D	0.00							
C-A	7.39							
C-B	1.19	12.59	0.095		0.1	0.1	1.5	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.081	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.110	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	6.18	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	6.61	0.000		0.0	0.0	0.0	
D-ABC	3.20	8.26	0.387		0.4	0.6	8.9	
C-D	0.00							
C-A	9.05							
C-B	1.46	12.59	0.116		0.1	0.1	1.9	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.075	0.007	0.012	0.003	0.005
C-B	0.115	0.000		0.012	
D-ABC	0.103	0.008	0.013	0.005	0.007
A-D	0.079	0.011		0.007	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	6.17	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	6.61	0.000		0.0	0.0	0.0	
D-ABC	3.20	8.26	0.387		0.6	0.6	9.4	
C-D	0.00							
C-A	9.05							
C-B	1.46	12.59	0.116		0.1	0.1	2.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.075	0.007	0.012	0.003	0.005
C-B	0.115	0.000		0.012	
D-ABC	0.103	0.008	0.013	0.005	0.007
A-D	0.079	0.011		0.007	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	6.45	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.00	0.000		0.0	0.0	0.0	
D-ABC	2.61	8.75	0.299		0.6	0.4	6.7	
C-D	0.00							
C-A	7.39							
C-B	1.19	12.59	0.095		0.1	0.1	1.6	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.081	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.110	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	6.65	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.27	0.000		0.0	0.0	0.0	
D-ABC	2.19	9.10	0.240		0.4	0.3	5.0	
C-D	0.00							
C-A	6.19							
C-B	1.00	12.59	0.079		0.1	0.1	1.3	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.085	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	

I	D-ABC	0.115	0.005	0.013	0.005	0.008	I
I	A-D	0.087	0.007		0.008		I

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QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

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QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

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QUEUE FOR STREAM D-ABC

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

.

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1
18.00	0.1
18.15	0.1
18.30	0.1
18.45	0.1
19.00	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	0.0	0.0				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-ABC	240.0	160.0	40.5	0.17	40.5	0.17
C-D	0.0	0.0				
C-A	678.7	452.5				
C-B	109.7	73.1	9.6	0.09	9.6	0.09
ALL	1028.4	685.6	50.1	0.05	50.1	0.05

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

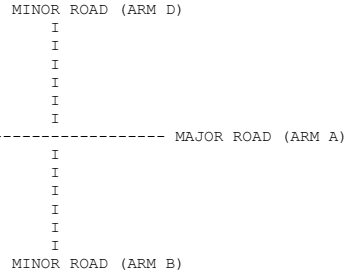
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D E F flow\F AM 2025 REF.vpi" at 10:42:28 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Tin Chiu Street AM (F) 2025 REF

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tin Chiu Street NB
ARM B IS Marble Road WB
ARM C IS Tin Chiu Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 10.50 M.	(W) 10.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 5.00 M.	(WA-D) 3.30 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 100.0 M.
- BLOCKS TRAFFIC	YES	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 100.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 3.40 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 3.40 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.56	8.34	5.56
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	0.81	1.22	0.81
ARM D	15.00	45.00	75.00	0.38	0.56	0.38

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.191	0.787	0.022
		0.0	85.0	350.0	10.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.692	0.000	0.308
		0.0	45.0	0.0	20.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.500	0.500	0.000
		0.0	15.0	15.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.00	6.68	0.000		0.0	0.0	0.0	
A-B	1.06							
A-C	4.38							
A-D	0.13	11.56	0.011		0.0	0.0	0.2	
D-AB	0.10	8.35	0.011		0.0	0.0	0.2	
D-BC	0.28	8.51	0.033		0.0	0.0	0.5	
C-ABD	0.58	11.33	0.051		0.0	0.1	0.8	
C-D	0.24							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.00	6.51	0.000		0.0	0.0	0.0	
A-B	1.27							
A-C	5.22							
A-D	0.15	11.51	0.013		0.0	0.0	0.2	
D-AB	0.11	8.16	0.014		0.0	0.0	0.2	
D-BC	0.33	8.36	0.040		0.0	0.0	0.6	
C-ABD	0.69	11.11	0.062		0.1	0.1	1.0	
C-D	0.28							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.00	6.27	0.000		0.0	0.0	0.0	
A-B	1.55							
A-C	6.40							
A-D	0.18	11.45	0.016		0.0	0.0	0.2	
D-AB	0.14	7.91	0.018		0.0	0.0	0.3	
D-BC	0.41	8.15	0.050		0.0	0.1	0.8	
C-ABD	0.85	10.80	0.079		0.1	0.1	1.3	
C-D	0.34							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.00	6.27	0.000		0.0	0.0	0.0	
A-B	1.55							
A-C	6.40							
A-D	0.18	11.45	0.016		0.0	0.0	0.2	
D-AB	0.14	7.91	0.018		0.0	0.0	0.3	
D-BC	0.41	8.15	0.050		0.1	0.1	0.8	
C-ABD	0.85	10.80	0.079		0.1	0.1	1.3	
C-D	0.34							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.00	6.51	0.000		0.0	0.0	0.0	
A-B	1.27							
A-C	5.22							
A-D	0.15	11.51	0.013		0.0	0.0	0.2	
D-AB	0.11	8.16	0.014		0.0	0.0	0.2	
D-BC	0.33	8.36	0.040		0.1	0.0	0.6	
C-ABD	0.69	11.11	0.062		0.1	0.1	1.0	
C-D	0.28							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.00	6.68	0.000		0.0	0.0	0.0	
A-B	1.06							
A-C	4.38							
A-D	0.13	11.56	0.011		0.0	0.0	0.2	
D-AB	0.10	8.35	0.011		0.0	0.0	0.2	
D-BC	0.28	8.51	0.033		0.0	0.0	0.5	
C-ABD	0.58	11.33	0.051		0.1	0.1	0.8	
C-D	0.24							
C-A	0.00							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0

08.30	0.0
08.45	0.1
09.00	0.1
09.15	0.0
09.30	0.0

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QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1
09.30	0.1

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QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	116.6	77.7				
A-C	479.9	319.9				
A-D	13.7	9.1	1.2	0.09	1.2	0.09
D-AB	10.6	7.0	1.3	0.12	1.3	0.12
D-BC	30.6	20.4	3.8	0.12	3.8	0.12
C-ABD	63.5	42.3	6.4	0.10	6.4	0.10
C-D	25.6	17.1				
C-A	0.0	0.0				
ALL	740.5	493.6	12.7	0.02	12.7	0.02

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

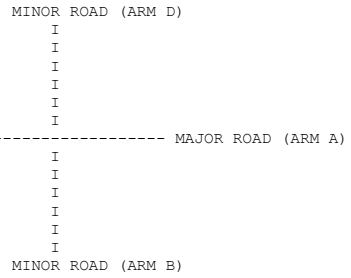
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\ayf\North point tia\F PM 2025 REF.vpi" at 14:45:46 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Tin Chiu Street PM (F) 2025 REF

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tin Chiu Street NB
ARM B IS Marble Road WB
ARM C IS Tin Chiu Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 10.50 M.	(W) 10.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 5.00 M.	(WA-D) 3.30 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 100.0 M.
- BLOCKS TRAFFIC	YES	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 100.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 3.40 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 3.40 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.06	7.59	5.06
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	1.31	1.97	1.31
ARM D	15.00	45.00	75.00	0.69	1.03	0.69

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.185	0.778	0.037
		0.0	75.0	315.0	15.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.714	0.000	0.286
		0.0	75.0	0.0	30.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.455	0.545	0.000
		0.0	25.0	30.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	6.67	0.000		0.0	0.0	0.0	
A-B	0.94							
A-C	3.94							
A-D	0.19	11.41	0.016		0.0	0.0	0.2	
D-AB	0.16	8.26	0.020		0.0	0.0	0.3	
D-BC	0.52	8.47	0.062		0.0	0.1	0.9	
C-ABD	0.97	11.52	0.084		0.0	0.1	1.4	
C-D	0.34							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	6.50	0.000		0.0	0.0	0.0	
A-B	1.12							
A-C	4.70							
A-D	0.22	11.34	0.020		0.0	0.0	0.3	
D-AB	0.20	8.05	0.024		0.0	0.0	0.4	
D-BC	0.62	8.31	0.075		0.1	0.1	1.2	
C-ABD	1.17	11.33	0.103		0.1	0.1	1.8	
C-D	0.40							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	6.26	0.000		0.0	0.0	0.0	
A-B	1.37							
A-C	5.76							
A-D	0.27	11.24	0.024		0.0	0.0	0.4	
D-AB	0.24	7.77	0.031		0.0	0.0	0.5	
D-BC	0.76	8.09	0.094		0.1	0.1	1.5	
C-ABD	1.44	11.08	0.130		0.1	0.2	2.4	
C-D	0.48							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	6.26	0.000		0.0	0.0	0.0	
A-B	1.37							
A-C	5.76							
A-D	0.27	11.24	0.024		0.0	0.0	0.4	
D-AB	0.24	7.77	0.031		0.0	0.0	0.5	
D-BC	0.76	8.09	0.094		0.1	0.1	1.5	
C-ABD	1.44	11.08	0.130		0.2	0.2	2.4	
C-D	0.48							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	6.50	0.000		0.0	0.0	0.0	
A-B	1.12							
A-C	4.70							
A-D	0.22	11.34	0.020		0.0	0.0	0.3	
D-AB	0.20	8.05	0.024		0.0	0.0	0.4	
D-BC	0.62	8.31	0.075		0.1	0.1	1.3	
C-ABD	1.17	11.33	0.103		0.2	0.1	1.8	
C-D	0.40							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	6.67	0.000		0.0	0.0	0.0	
A-B	0.94							
A-C	3.94							
A-D	0.19	11.41	0.016		0.0	0.0	0.3	
D-AB	0.16	8.25	0.020		0.0	0.0	0.3	
D-BC	0.52	8.47	0.062		0.1	0.1	1.0	
C-ABD	0.97	11.51	0.084		0.1	0.1	1.4	
C-D	0.34							
C-A	0.00							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1

18.00	0.1
18.15	0.1
18.30	0.1
18.45	0.1
19.00	0.1

.

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1
18.00	0.1
18.15	0.2
18.30	0.2
18.45	0.1
19.00	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	102.8	68.6				
A-C	431.9	288.0				
A-D	20.6	13.7	1.8	0.09	1.8	0.09
D-AB	18.1	12.1	2.3	0.13	2.3	0.13
D-BC	57.3	38.2	7.5	0.13	7.5	0.13
C-ABD	107.3	71.5	11.2	0.10	11.2	0.10
C-D	36.7	24.4				
C-A	0.0	0.0				
ALL	774.7	516.5	22.8	0.03	22.8	0.03

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

END OF JOB

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

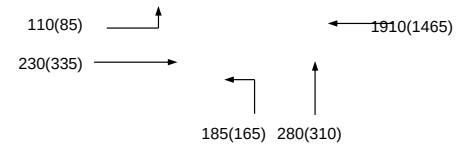
Junction: King's Road/ Shu Kuk Street (G) Design Year: 2025

Description: Reference Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road EB		A	1	5.500	10			32%	20%	2065	2100	340	0.165		420	0.200	0.200
		A	1	3.000						2055	2055	85	0.041		105	0.051	
King's Road WB		B	1,2	3.300						1945	1945	622	0.320	0.320	477	0.245	
		B	1,2	3.300						2085	2085	666	0.319		511	0.245	
		B	1,2	3.300						1945	1945	622	0.320		477	0.245	
		B	1,2	3.000						2055	2055	105	0.051		65	0.032	
Shu Kuk Street NB		C	3	3.250	10					1685	1685	185	0.110		165	0.098	
		C	3	3.250	15			0%	0%	1940	1940	280	0.144	0.144	310	0.160	0.160
LRT/Pedestrian		Dp	1,2	Min	10	+	9			=	19						
		Ep	3	Min	9	+	20			=	29						
		Fp	2	Min	7	+	8			=	15						*

Notes:

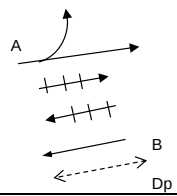
Traffic Flow (pcu/hr)



Group	BEp	BC	Group	BC	AFpC
y	0.320	0.464	y	0.405	0.360
L (sec)	37	9	L (sec)	9	29
C (sec)	120	120	C (sec)	120	120
y pract.	0.623	0.833	y pract.	0.833	0.683
R.C. (%)	95%	79%	R.C. (%)	106%	90%

Stage / Phase Diagrams

1.



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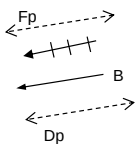

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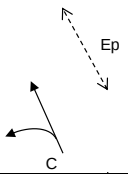


4.

5.

I/G= 5		I/G=		I/G= 6		I/G=	I/G=
I/G= 7		I/G= 7	7	I/G= 10		I/G=	I/G=

Date: Jun-16 **Junction:** G

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

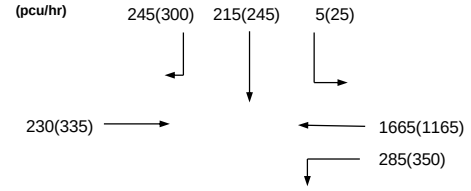
Junction: King's Road/ Kam Hong Street (H) Design Year: 2016

Description: Observe Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road		A	1	4.000						2015	2015	230	0.114		335	0.166	
EB			1	3.000						2055	2055	85	0.041		105	0.051	
King's Road		A	1	3.300	8			48%	78%	1785	1695	599	0.336	0.336	449	0.265	0.265
WB		A	1	3.300						2085	2085	699	0.335		552	0.265	
		A	1	3.300						1945	1945	652	0.335		514	0.264	
			1	3.000						2055	2055	105	0.051		65	0.032	
Kam Hong Street		B	2	3.750	8	20		2% / 9%	8% / 8%	1970	1945	242	0.123		295	0.152	
SB		B	2	3.750		15				1810	1810	223	0.123	0.123	275	0.152	0.152
LRT/Pedestrian		Cp	3	Min	10	+	18			=	28			*			*
		Dp	1,3	Min	10	+	7			=	17						
		Ep	3	Min	15	+	7			=	22						

Notes:

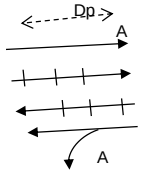
Traffic Flow (pcu/hr)



Group	ABEp	ABCp	Group	ABEp	ABCp
y	0.459	0.459	y	0.417	0.417
L (sec)	35	43	L (sec)	35	43
C (sec)	120	120	C (sec)	120	120
y pract.	0.638	0.578	y pract.	0.638	0.578
R.C. (%)	39%	26%	R.C. (%)	53%	39%

Stage / Phase Diagrams

1.



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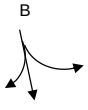

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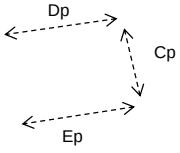


4.

5.

I/G= 22		I/G= 5		I/G= 8	10	I/G=		I/G=	
I/G= 22		I/G= 5		I/G= 8	10	I/G=		I/G=	

Date: Jun-16 **Junction:** H

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

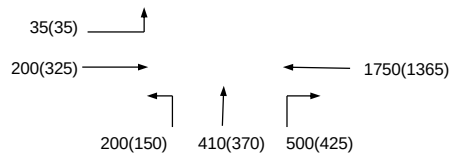
Junction: King's Road/ Tin Chiu Street (I) Design Year: 2025

Description: Reference Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road EB		A	1	3.000	10			15%	10%	1875	1885	235	0.125		360	0.191	
			1	3.000						2055	2055	85	0.041		105	0.051	
King's Road WB		B	1	3.300						1945	1945	570	0.293	0.293	444	0.228	
		B	1	3.300						2085	2085	610	0.293		477	0.229	0.229
		B	1	3.300						1945	1945	570	0.293		444	0.228	
			1	3.000						2055	2055	105	0.051		65	0.032	
Tin Chiu Street NB		C	2	3.300	10					1690	1690	200	0.118		150	0.089	
		C	2	3.300	15			0%	0%	2085	2085	410	0.197		370	0.177	
		C	2	3.300		15				1770	1770	500	0.282	0.282	425	0.240	0.240
LRT/Pedestrian		Dp	1	Min	8	+	12			=	20						

Notes:

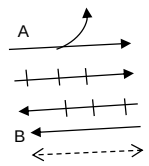
Traffic Flow (pcu/hr)



Group	AC	BC	Group	AC	BC
y	0.408	0.576	y	0.431	0.469
L (sec)	10	9	L (sec)	10	9
C (sec)	120	120	C (sec)	120	120
y pract.	0.825	0.833	y pract.	0.825	0.833
R.C. (%)	102%	45%	R.C. (%)	91%	78%

Stage / Phase Diagrams

1.



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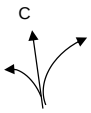


3.

4.

5.

I/G= 5		I/G= 6		I/G=		I/G=		I/G=	
I/G= 5		I/G= 6		I/G=		I/G=		I/G=	

Date: Jun-16 **Junction:** I

2025 Design Flows

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

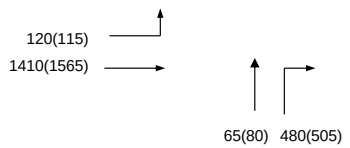
Junction: Java Road/ Shu Kuk Street (A) Design Year: 2025

Description: Design Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road		A	1	3.000	10			25%	21%	1845	1855	486	0.263	0.263	535	0.288	
EB		A	1	3.000						2055	2055	540	0.263		593	0.289	0.289
		A	1	3.000						1915	1915	504	0.263		552	0.288	
Shu Kuk Street		B	2	3.750		15		78%	75%	1845	1850	298	0.162	0.162	320	0.173	
NB		B	2	3.750		10				1530	1530	247	0.161		265	0.173	0.173
LRT/Pedestrian		Cp	1,3	Min	5	+	7			=	12						
		Dp	2,3	Min	11	+	11			=	22						
		Ep	3	Min	5	+	7			=	12						
		Fp	3	Min	7	+	12			=	19			*			*

Notes:

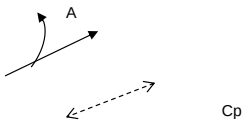
Traffic Flow (pcu/hr)



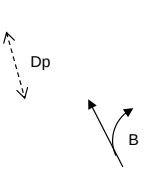
Group	ABEp	ABFp	Group	ABEp	ABFp
y	0.425	0.425	y	0.462	0.462
L (sec)	25	32	L (sec)	25	32
C (sec)	120	120	C (sec)	120	120
y pract.	0.713	0.660	y pract.	0.713	0.660
R.C. (%)	68%	55%	R.C. (%)	54%	43%

Stage / Phase Diagrams

1.



2.



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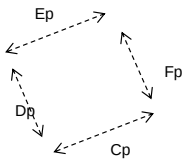


4.

5.

I/G= 14		I/G= 6		I/G= 7	7	I/G=	
I/G= 14		I/G= 6		I/G= 7	7	I/G=	

Date: Jun-16 **Junction:** A

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

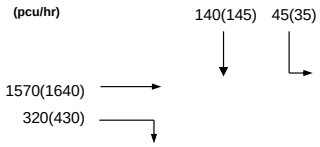
Junction: Java Road/ Kam Hong Street (B) Design Year: 2025

Description: Design Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road	→	A	1	3.200						1935	1935	631	0.326	0.326	695	0.359	0.359
EB	→	A	1	3.200						2075	2075	676	0.326		745	0.359	
	↓	A	1	3.200		10		55%	68%	1790	1755	583	0.326		630	0.359	
Shu Kuk Street	↓	B	2	4.000	10			51%	40%	1875	1900	89	0.047		87	0.046	
SB	↓	B	2	4.000						2015	2015	96	0.048	0.048	93	0.046	0.046
LRT/Pedestrian		Cp	1,3	Min	7	+	7			=	14						
		Dp	2,3	Min	9	+	11			=	20						
		Ep	3	Min	8	+	10			=	18			*			*
		Fp	3	Min	6	+	12			=	18						

Notes:

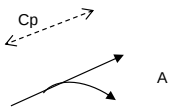
Traffic Flow (pcu/hr)



Group		ABEp	Group		ABEp
y		0.374	y		0.405
L (sec)		31	L (sec)		31
C (sec)		120	C (sec)		120
y pract.		0.668	y pract.		0.668
R.C. (%)		79%	R.C. (%)		65%

Stage / Phase Diagrams

1.



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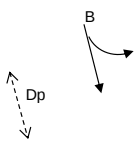

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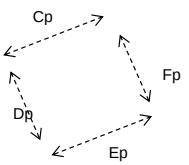


4.

5.

I/G= 12		I/G= 6		I/G= 7	8	I/G=		I/G=			
I/G= 12		I/G= 6		I/G= 7	8	I/G=		I/G=			

Date: Jun-16 **Junction:** B

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

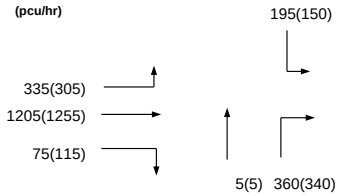
Junction: Java Road/ Tin Chiu Street (C) Design Year: 2025

Description: Design Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Java Road EB		A	1	3.000	8			69%	60%	1695	1720	486	0.287	0.287	510	0.297	
		A	1	3.000						2055	2055	588	0.286		609	0.296	
		A	1	3.000		15		14%	21%	1890	1875	541	0.286		556	0.297	0.297
Tin Chiu Street SB		B	3	3.500	15					1785	1785	195	0.109	0.109	150	0.084	0.084
Tin Chiu Street NB		C	4	3.000		20		97%	97%	1785	1785	189	0.106		179	0.100	0.100
		C	4	3.000		15				1660	1660	176	0.106	0.106	166	0.100	
LRT/Pedestrian		Dp	2	Min	5	+	8			=	13			*			*
		Ep	2,3,4	Min	7	+	11			=	18						
		Fp	2,3	Min	6	+	12			=	18						

Notes:

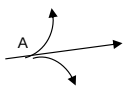
Traffic Flow (pcu/hr)



Group		ADpBC	Group		ADpBC
y		0.502	y		0.481
L (sec)		33	L (sec)		33
C (sec)		120	C (sec)		120
y pract.		0.653	y pract.		0.653
R.C. (%)		30%	R.C. (%)		36%

Stage / Phase Diagrams

1.



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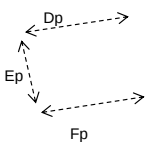

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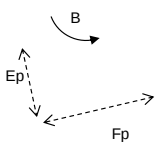

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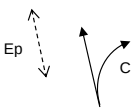


5.

I/G= 7		I/G= 7	5	I/G= 11		I/G= 6		I/G=	
I/G= 7		I/G= 7	5	I/G= 11		I/G= 6		I/G=	

Date: Jun-16 **Junction:** C

TRANSPORT RESEARCH LABORATORY

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

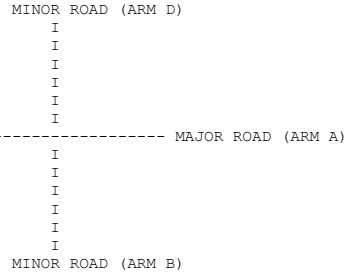
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D AM 2025 DES.vpi" at 15:11:28 on Wednesday, 1 June 2016

RUN TITLE
****
Marble Road / Shu Kuk Street AM (D) 2025 DES

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Shu Kuk Street NB
ARM B IS Marble Road EB
ARM C IS Shu Kuk Street NB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.50 M.	(W) 7.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 15.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 15.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 5.00 M.	(WD-A) 2.20 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	4.94	7.41	4.94
ARM B	15.00	45.00	75.00	0.06	0.09	0.06
ARM C	15.00	45.00	75.00	0.00	0.00	0.00
ARM D	15.00	45.00	75.00	1.81	2.72	1.81

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

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
08.00 - 09.30					
	ARM A	0.000	0.000	1.000	0.000
		0.0	0.0	395.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000	0.000
		0.0	0.0	5.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	145.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.06	11.31	0.006		0.0	0.0	0.1	
A-B	0.00							
A-C	4.94							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.43	0.000		0.0	0.0	0.0	
D-BC	1.81	9.13	0.198		0.0	0.2	3.5	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.76	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.119	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.101	0.000	0.000	0.000	0.009
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.07	11.05	0.007		0.0	0.0	0.1	
A-B	0.00							
A-C	5.90							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.33	0.000		0.0	0.0	0.0	
D-BC	2.16	8.97	0.241		0.2	0.3	4.6	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.58	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.115	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.075	0.005	0.022	0.006	0.009

	A-D	0.104	0.000		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.09	10.68	0.009		0.0	0.0	0.1	
A-B	0.00							
A-C	7.22							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.20	0.000		0.0	0.0	0.0	
D-BC	2.65	8.75	0.303		0.3	0.4	6.2	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.33	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.109	0.006	0.013	0.005	0.008
C-B	0.088	0.007		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.073	0.006	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.09	10.68	0.009		0.0	0.0	0.1	
A-B	0.00							
A-C	7.22							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.19	0.000		0.0	0.0	0.0	
D-BC	2.65	8.75	0.303		0.4	0.4	6.4	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.33	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.109	0.006	0.013	0.005	0.008
C-B	0.088	0.007		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.073	0.006	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.07	11.05	0.007		0.0	0.0	0.1	
A-B	0.00							
A-C	5.90							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.33	0.000		0.0	0.0	0.0	
D-BC	2.16	8.97	0.241		0.4	0.3	5.0	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.58	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.115	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.100	0.000	0.000	0.000	0.009
D-BC	0.075	0.005	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.06	11.31	0.006		0.0	0.0	0.1	
A-B	0.00							
A-C	4.94							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.43	0.000		0.0	0.0	0.0	
D-BC	1.81	9.13	0.199		0.3	0.3	3.9	

C-D	0.00							
C-A	0.00							
C-B	0.00	7.76	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.119	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.101	0.000	0.000	0.000	0.009
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.3
08.45	0.4
09.00	0.4
09.15	0.3
09.30	0.3

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	6.9	4.6	0.6	0.09	0.6	0.09
A-B	0.0	0.0				
A-C	541.6	361.1				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-AB	0.0	0.0	0.0	0.00	0.0	0.00
D-BC	198.8	132.6	29.6	0.15	29.6	0.15
C-D	0.0	0.0				
C-A	0.0	0.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00

I ALL	I 747.3	I 498.2	I 30.2	I 0.04	I 30.2	I 0.04	I

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

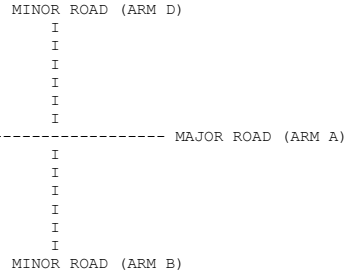
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\D PM 2025 DES.vpi" at 15:11:39 on Wednesday, 1 June 2016

RUN TITLE
****
Marble Road / Shu Kuk Street PM (D) 2025 DES

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Shu Kuk Street NB
ARM B IS Marble Road EB
ARM C IS Shu Kuk Street NB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.50 M.	(W) 7.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 15.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 15.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 5.00 M.	(WD-A) 2.20 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.00	7.50	5.00
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	0.00	0.00	0.00
ARM D	15.00	45.00	75.00	2.31	3.47	2.31

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TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.000	1.000	0.000
		0.0	0.0	400.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	185.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

.

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	8.66	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	5.00							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.31	0.000		0.0	0.0	0.0	
D-BC	2.31	9.14	0.253		0.0	0.3	4.8	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.75	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.099	0.000	0.000	0.000	0.008
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

.

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	8.39	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	5.97							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.18	0.000		0.0	0.0	0.0	
D-BC	2.76	8.98	0.307		0.3	0.4	6.4	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.57	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.114	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.075	0.004	0.022	0.006	0.009

	A-D	0.104	0.000		0.010				

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	8.01	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	7.31							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.01	0.000		0.0	0.0	0.0	
D-BC	3.38	8.76	0.386		0.4	0.6	8.9	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.31	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.108	0.006	0.013	0.005	0.007
C-B	0.088	0.007		0.008	
D-AB	0.096	0.000	0.000	0.000	0.008
D-BC	0.073	0.005	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	8.01	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	7.31							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.01	0.000		0.0	0.0	0.0	
D-BC	3.38	8.76	0.386		0.6	0.6	9.3	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.31	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.107	0.006	0.013	0.005	0.007
C-B	0.088	0.007		0.008	
D-AB	0.096	0.000	0.000	0.000	0.008
D-BC	0.073	0.005	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	8.39	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	5.97							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.18	0.000		0.0	0.0	0.0	
D-BC	2.76	8.98	0.307		0.6	0.5	7.0	
C-D	0.00							
C-A	0.00							
C-B	0.00	7.57	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.113	0.005	0.013	0.005	0.008
C-B	0.091	0.006		0.008	
D-AB	0.098	0.000	0.000	0.000	0.008
D-BC	0.075	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	8.66	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	5.00							
A-D	0.00	8.70	0.000		0.0	0.0	0.0	
D-AB	0.00	8.30	0.000		0.0	0.0	0.0	
D-BC	2.31	9.14	0.253		0.5	0.3	5.3	

C-D	0.00							
C-A	0.00							
C-B	0.00	7.75	0.000		0.0	0.0	0.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.118	0.004	0.013	0.005	0.008
C-B	0.093	0.005		0.009	
D-AB	0.099	0.000	0.000	0.000	0.008
D-BC	0.076	0.004	0.022	0.006	0.009
A-D	0.104	0.000		0.010	

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.3	
18.00	0.4	
18.15	0.6	*
18.30	0.6	*
18.45	0.5	
19.00	0.3	

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	548.5	365.7				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-AB	0.0	0.0	0.0	0.00	0.0	0.00
D-BC	253.7	169.1	41.7	0.16	41.7	0.16
C-D	0.0	0.0				
C-A	0.0	0.0				
C-B	0.0	0.0	0.0	0.00	0.0	0.00

I ALL	I 802.2	I 534.8	I 41.7	I 0.05	I 41.7	I 0.05	I

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

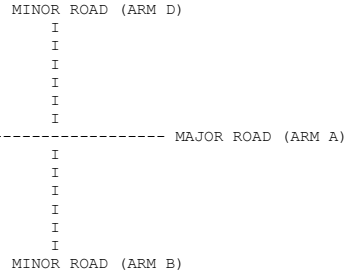
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\E AM 2025 DES.vpi" at 11:37:48 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Kam Hong Street AM (E) 2025 DES

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Kam Hong Street SB
ARM B IS Marble Road WB
ARM C IS Kam Hong Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.75 M.	(W) 7.75 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 4.00 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 100.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 15.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 0.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	5.75	8.63	5.75
ARM D	15.00	45.00	75.00	2.00	3.00	2.00

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) TURNING COUNTS (VEH/HR) ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.891	0.109	0.000	0.000
		410.0	50.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.406	0.594	0.000	0.000
		65.0	95.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.00	6.83	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.57	0.000		0.0	0.0	0.0	
D-ABC	2.00	9.39	0.213		0.0	0.3	3.9	
C-D	0.00							
C-A	5.13							
C-B	0.63	12.59	0.050		0.0	0.1	0.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.088	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.120	0.004	0.013	0.005	0.008
A-D	0.091	0.006		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.00	6.67	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.35	0.000		0.0	0.0	0.0	
D-ABC	2.39	9.10	0.262		0.3	0.4	5.1	
C-D	0.00							
C-A	6.12							
C-B	0.75	12.59	0.059		0.1	0.1	0.9	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.085	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.116	0.005	0.013	0.005	0.008
A-D	0.088	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.00	6.46	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.05	0.000		0.0	0.0	0.0	
D-ABC	2.92	8.71	0.336		0.4	0.5	7.2	
C-D	0.00							
C-A	7.50							
C-B	0.91	12.59	0.073		0.1	0.1	1.1	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.081	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.111	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.00	6.46	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.05	0.000		0.0	0.0	0.0	
D-ABC	2.92	8.71	0.336		0.5	0.5	7.5	
C-D	0.00							
C-A	7.50							
C-B	0.91	12.59	0.073		0.1	0.1	1.2	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.081	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.111	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.00	6.67	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.35	0.000		0.0	0.0	0.0	
D-ABC	2.39	9.10	0.262		0.5	0.4	5.6	
C-D	0.00							
C-A	6.12							
C-B	0.75	12.59	0.059		0.1	0.1	1.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.085	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.116	0.005	0.013	0.005	0.008
A-D	0.088	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.00	6.82	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.57	0.000		0.0	0.0	0.0	
D-ABC	2.00	9.39	0.213		0.4	0.3	4.2	
C-D	0.00							
C-A	5.13							
C-B	0.63	12.59	0.050		0.1	0.1	0.8	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.088	0.004	0.012	0.004	0.006
C-B	0.115	0.000		0.012	

I	D-ABC	0.120	0.004	0.013	0.005	0.008	I
I	A-D	0.091	0.006		0.008		I

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QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

.

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

.

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.3	
08.30	0.4	
08.45	0.5	
09.00	0.5	*
09.15	0.4	
09.30	0.3	

.

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1
09.30	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	0.0	0.0				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-ABC	219.4	146.3	33.5	0.15	33.5	0.15
C-D	0.0	0.0				
C-A	562.2	374.8				
C-B	68.6	45.7	5.8	0.08	5.8	0.08
ALL	850.2	566.8	39.2	0.05	39.2	0.05

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

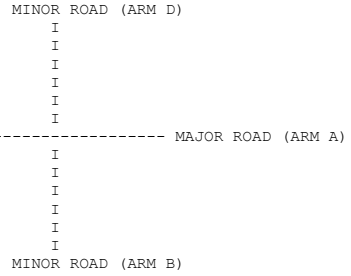
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\E PM 2025 DES.vpi" at 11:37:51 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Kam Hong Street PM (E) 2025 DES

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Kam Hong Street SB
ARM B IS Marble Road WB
ARM C IS Kam Hong Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.75 M.	(W) 7.75 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 4.00 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 100.0 M.	(VA-D) 0.0 M.
- BLOCKS TRAFFIC	NO	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 15.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 0.00 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	7.19	10.78	7.19
ARM D	15.00	45.00	75.00	2.31	3.47	2.31

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.861	0.139	0.000	0.000
		495.0	80.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.432	0.568	0.000	0.000
		80.0	105.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	6.63	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.27	0.000		0.0	0.0	0.0	
D-ABC	2.31	9.11	0.254		0.0	0.3	4.8	
C-D	0.00							
C-A	6.19							
C-B	1.00	12.59	0.079		0.0	0.1	1.3	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.084	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.115	0.005	0.013	0.005	0.008
A-D	0.087	0.007		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	6.43	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.00	0.000		0.0	0.0	0.0	
D-ABC	2.76	8.76	0.315		0.3	0.5	6.6	
C-D	0.00							
C-A	7.39							
C-B	1.19	12.59	0.095		0.1	0.1	1.5	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.080	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.110	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	6.15	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	6.61	0.000		0.0	0.0	0.0	
D-ABC	3.38	8.27	0.409		0.5	0.7	9.7	
C-D	0.00							
C-A	9.05							
C-B	1.46	12.59	0.116		0.1	0.1	1.9	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.075	0.008	0.012	0.003	0.005
C-B	0.115	0.000		0.012	
D-ABC	0.103	0.008	0.013	0.005	0.007
A-D	0.079	0.011		0.007	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	6.15	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	6.61	0.000		0.0	0.0	0.0	
D-ABC	3.38	8.27	0.409		0.7	0.7	10.2	
C-D	0.00							
C-A	9.05							
C-B	1.46	12.59	0.116		0.1	0.1	2.0	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.075	0.008	0.012	0.003	0.005
C-B	0.115	0.000		0.012	
D-ABC	0.103	0.008	0.013	0.005	0.007
A-D	0.079	0.011		0.007	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	6.43	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.00	0.000		0.0	0.0	0.0	
D-ABC	2.76	8.76	0.315		0.7	0.5	7.3	
C-D	0.00							
C-A	7.39							
C-B	1.19	12.59	0.095		0.1	0.1	1.6	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.080	0.006	0.012	0.004	0.006
C-B	0.115	0.000		0.012	
D-ABC	0.110	0.006	0.013	0.005	0.008
A-D	0.084	0.009		0.008	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	6.63	0.000		0.0	0.0	0.0	
A-B	0.00							
A-C	0.00							
A-D	0.00	7.27	0.000		0.0	0.0	0.0	
D-ABC	2.31	9.11	0.254		0.5	0.3	5.3	
C-D	0.00							
C-A	6.19							
C-B	1.00	12.59	0.079		0.1	0.1	1.3	

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-ACD	0.084	0.005	0.012	0.004	0.006
C-B	0.115	0.000		0.012	

I	D-ABC	0.115	0.005	0.013	0.005	0.008	I
I	A-D	0.087	0.007		0.008		I

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QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

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QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.45	0.0	
18.00	0.0	
18.15	0.0	
18.30	0.0	
18.45	0.0	
19.00	0.0	

.

QUEUE FOR STREAM D-ABC

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

.

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1
18.00	0.1
18.15	0.1
18.30	0.1
18.45	0.1
19.00	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	0.0	0.0				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-ABC	253.7	169.1	44.0	0.17	44.0	0.17
C-D	0.0	0.0				
C-A	678.7	452.5				
C-B	109.7	73.1	9.6	0.09	9.6	0.09
ALL	1042.1	694.7	53.6	0.05	53.6	0.05

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

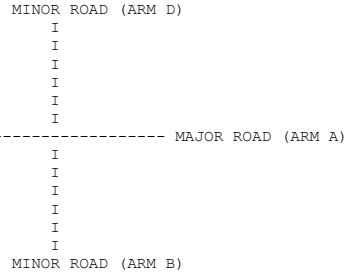
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\F AM 2025 DES.vpi" at 11:37:56 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Tin Chiu Street AM (F) 2025 DES

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tin Chiu Street NB
ARM B IS Marble Road WB
ARM C IS Tin Chiu Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 10.50 M.	(W) 10.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 5.00 M.	(WA-D) 3.30 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 100.0 M.
- BLOCKS TRAFFIC	YES	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 100.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 3.40 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 3.40 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.56	8.34	5.56
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	0.94	1.41	0.94
ARM D	15.00	45.00	75.00	0.38	0.56	0.38

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

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
08.00 - 09.30	ARM A	0.000	0.191	0.787	0.022
		0.0	85.0	350.0	10.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.733	0.000	0.267
		0.0	55.0	0.0	20.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.500	0.500	0.000
		0.0	15.0	15.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-ACD	0.00	6.66	0.000		0.0	0.0	0.0	
A-B	1.06							
A-C	4.38							
A-D	0.13	11.52	0.011		0.0	0.0	0.2	
D-AB	0.10	8.32	0.012		0.0	0.0	0.2	
D-BC	0.28	8.49	0.033		0.0	0.0	0.5	
C-ABD	0.70	11.33	0.062		0.0	0.1	1.0	
C-D	0.23							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-ACD	0.00	6.48	0.000		0.0	0.0	0.0	
A-B	1.27							
A-C	5.22							
A-D	0.15	11.47	0.013		0.0	0.0	0.2	
D-AB	0.11	8.13	0.014		0.0	0.0	0.2	
D-BC	0.33	8.33	0.040		0.0	0.0	0.6	
C-ABD	0.84	11.11	0.076		0.1	0.1	1.3	
C-D	0.28							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-ACD	0.00	6.24	0.000		0.0	0.0	0.0	
A-B	1.55							
A-C	6.40							
A-D	0.18	11.39	0.016		0.0	0.0	0.2	
D-AB	0.14	7.87	0.018		0.0	0.0	0.3	
D-BC	0.41	8.11	0.050		0.0	0.1	0.8	
C-ABD	1.04	10.80	0.096		0.1	0.1	1.7	
C-D	0.33							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-ACD	0.00	6.24	0.000		0.0	0.0	0.0	
A-B	1.55							
A-C	6.40							
A-D	0.18	11.39	0.016		0.0	0.0	0.2	
D-AB	0.14	7.87	0.018		0.0	0.0	0.3	
D-BC	0.41	8.11	0.050		0.1	0.1	0.8	
C-ABD	1.04	10.80	0.096		0.1	0.1	1.7	
C-D	0.33							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-ACD	0.00	6.48	0.000		0.0	0.0	0.0	
A-B	1.27							
A-C	5.22							
A-D	0.15	11.47	0.013		0.0	0.0	0.2	
D-AB	0.11	8.13	0.014		0.0	0.0	0.2	
D-BC	0.33	8.33	0.040		0.1	0.0	0.6	
C-ABD	0.84	11.11	0.076		0.1	0.1	1.3	
C-D	0.28							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.15-09.30								
B-ACD	0.00	6.66	0.000		0.0	0.0	0.0	
A-B	1.06							
A-C	4.38							
A-D	0.13	11.52	0.011		0.0	0.0	0.2	
D-AB	0.10	8.32	0.012		0.0	0.0	0.2	
D-BC	0.28	8.48	0.033		0.0	0.0	0.5	
C-ABD	0.70	11.33	0.062		0.1	0.1	1.0	
C-D	0.23							
C-A	0.00							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0

08.30	0.0
08.45	0.1
09.00	0.1
09.15	0.0
09.30	0.0

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QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1
09.30	0.1

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QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	116.6	77.7				
A-C	479.9	319.9				
A-D	13.7	9.1	1.2	0.09	1.2	0.09
D-AB	10.6	7.1	1.3	0.12	1.3	0.12
D-BC	30.6	20.4	3.8	0.13	3.8	0.13
C-ABD	77.6	51.7	7.9	0.10	7.9	0.10
C-D	25.2	16.8				
C-A	0.0	0.0				
ALL	754.2	502.8	14.2	0.02	14.2	0.02

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

END OF JOB

TRANSPORT RESEARCH LABORATORY

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

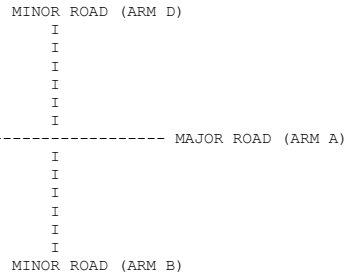
Visual PICADY 4 ANALYSIS PROGRAM
RELEASE 2.1 (DEC 1998)

Run with file:- "O:\hkh\F PM 2025 DES.vpi" at 11:38:00 on Monday, 30 May 2016

RUN TITLE
****
Marble Road / Tin Chiu Street PM (F) 2025 DES

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA



ARM A IS Tin Chiu Street NB
ARM B IS Marble Road WB
ARM C IS Tin Chiu Street SB
ARM D IS Marble Road WB

STREAM LABELLING CONVENTION

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

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

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 10.50 M.	(W) 10.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 5.00 M.	(WA-D) 3.30 M.
- VISIBILITY	(VC-B) 0.0 M.	(VA-D) 100.0 M.
- BLOCKS TRAFFIC	YES	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 30.0 M.
- VISIBILITY TO RIGHT	(VB-A) 0.0 M.	(VD-C) 100.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 3.40 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 3.40 M.

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.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.30 AND ENDS 19.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.06	7.59	5.06
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	1.44	2.16	1.44
ARM D	15.00	45.00	75.00	0.69	1.03	0.69

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

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
17.30 - 19.00	ARM A	0.000	0.185	0.778	0.037
		0.0	75.0	315.0	15.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	0.000
		???????	???????	???????	???????
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.739	0.000	0.261
		0.0	85.0	0.0	30.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.455	0.545	0.000
		0.0	25.0	30.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-ACD	0.00	6.65	0.000		0.0	0.0	0.0	
A-B	0.94							
A-C	3.94							
A-D	0.19	11.37	0.016		0.0	0.0	0.2	
D-AB	0.16	8.23	0.020		0.0	0.0	0.3	
D-BC	0.52	8.45	0.062		0.0	0.1	1.0	
C-ABD	1.10	11.52	0.095		0.0	0.1	1.6	
C-D	0.34							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-ACD	0.00	6.48	0.000		0.0	0.0	0.0	
A-B	1.12							
A-C	4.70							
A-D	0.22	11.29	0.020		0.0	0.0	0.3	
D-AB	0.20	8.02	0.025		0.0	0.0	0.4	
D-BC	0.62	8.28	0.075		0.1	0.1	1.2	
C-ABD	1.32	11.33	0.117		0.1	0.1	2.1	
C-D	0.40							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-ACD	0.00	6.23	0.000		0.0	0.0	0.0	
A-B	1.37							
A-C	5.76							
A-D	0.27	11.18	0.025		0.0	0.0	0.4	
D-AB	0.24	7.74	0.032		0.0	0.0	0.5	
D-BC	0.76	8.05	0.095		0.1	0.1	1.5	
C-ABD	1.63	11.08	0.148		0.1	0.2	2.7	
C-D	0.47							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.15-18.30								
B-ACD	0.00	6.23	0.000		0.0	0.0	0.0	
A-B	1.37							
A-C	5.76							
A-D	0.27	11.18	0.025		0.0	0.0	0.4	
D-AB	0.24	7.73	0.032		0.0	0.0	0.5	
D-BC	0.76	8.05	0.095		0.1	0.1	1.6	
C-ABD	1.63	11.08	0.148		0.2	0.2	2.7	
C-D	0.47							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.30-18.45								
B-ACD	0.00	6.48	0.000		0.0	0.0	0.0	
A-B	1.12							
A-C	4.70							
A-D	0.22	11.29	0.020		0.0	0.0	0.3	
D-AB	0.20	8.02	0.025		0.0	0.0	0.4	
D-BC	0.62	8.28	0.075		0.1	0.1	1.3	
C-ABD	1.32	11.33	0.117		0.2	0.1	2.1	
C-D	0.40							
C-A	0.00							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.45-19.00								
B-ACD	0.00	6.65	0.000		0.0	0.0	0.0	
A-B	0.94							
A-C	3.94							
A-D	0.19	11.37	0.016		0.0	0.0	0.3	
D-AB	0.16	8.23	0.020		0.0	0.0	0.3	
D-BC	0.52	8.44	0.062		0.1	0.1	1.0	
C-ABD	1.10	11.51	0.095		0.1	0.1	1.6	
C-D	0.34							
C-A	0.00							

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0
18.45	0.0
19.00	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1

18.00	0.1
18.15	0.1
18.30	0.1
18.45	0.1
19.00	0.1

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QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.45	0.1
18.00	0.1
18.15	0.2
18.30	0.2
18.45	0.1
19.00	0.1

.

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	0.0	0.0	0.0	0.00	0.0	0.00
A-B	102.8	68.6				
A-C	431.9	288.0				
A-D	20.6	13.7	1.9	0.09	1.9	0.09
D-AB	18.1	12.1	2.3	0.13	2.3	0.13
D-BC	57.3	38.2	7.5	0.13	7.5	0.13
C-ABD	121.6	81.1	12.8	0.11	12.8	0.11
C-D	36.1	24.0				
C-A	0.0	0.0				
ALL	788.4	525.6	24.5	0.03	24.5	0.03

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

END OF JOB

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

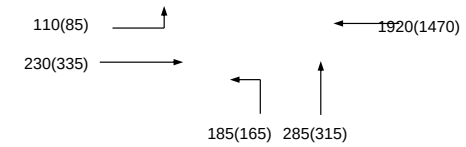
Junction: King's Road/ Shu Kuk Street (G) Design Year: 2025

Description: Design Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road EB		A	1	5.500	10			32%	20%	2065	2100	340	0.165		420	0.200	0.200
		A	1	3.000						2055	2055	85	0.041		105	0.051	
King's Road WB		B	1,2	3.300						1945	1945	625	0.321		479	0.246	
		B	1,2	3.300						2085	2085	670	0.321	0.321	512	0.246	
		B	1,2	3.300						1945	1945	625	0.321		479	0.246	
		B	1,2	3.000						2055	2055	105	0.051		65	0.032	
Shu Kuk Street NB		C	3	3.250	10					1685	1685	185	0.110		165	0.098	
		C	3	3.250	15			0%	0%	1940	1940	285	0.147	0.147	315	0.162	0.162
LRT/Pedestrian		Dp	1,2	Min	10	+	9			=	19						
		Ep	3	Min	9	+	20			=	29						
		Fp	2	Min	7	+	8			=	15						*

Notes:

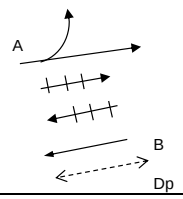
Traffic Flow (pcu/hr)



Group	BEp	BC	Group	BC	AFpC
y	0.321	0.468	y	0.409	0.362
L (sec)	37	9	L (sec)	9	29
C (sec)	120	120	C (sec)	120	120
y pract.	0.623	0.833	y pract.	0.833	0.683
R.C. (%)	94%	78%	R.C. (%)	104%	88%

Stage / Phase Diagrams

1.



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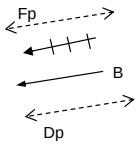

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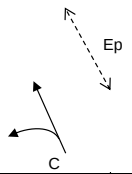


4.

5.

I/G= 5		I/G=		I/G= 6		I/G=	I/G=
I/G= 7		I/G= 7	7	I/G= 10		I/G=	I/G=

Date: Jun-16 **Junction:** G

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

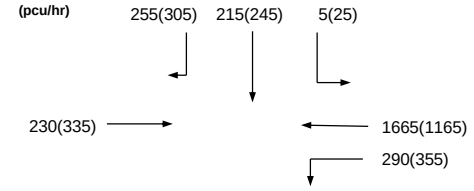
Junction: King's Road/ Kam Hong Street (H) Design Year: 2025

Description: Design Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road		A	1	4.000						2015	2015	230	0.114		335	0.166	
EB			1	3.000						2055	2055	85	0.041		105	0.051	
King's Road		A	1	3.300	8			48%	79%	1785	1695	600	0.336		450	0.265	
WB		A	1	3.300						2085	2085	701	0.336		554	0.266	0.266
		A	1	3.300						1945	1945	654	0.336	0.336	516	0.265	
			1	3.000						2055	2055	105	0.051		65	0.032	
Kam Hong Street		B	2	3.750	8	20		2% / 11%	8% / 9%	1965	1945	247	0.126		298	0.153	0.153
SB		B	2	3.750		15				1810	1810	228	0.126	0.126	277	0.153	
LRT/Pedestrian		Cp	3	Min	10	+	18			=	28			*			*
		Dp	1,3	Min	10	+	7			=	17						
		Ep	3	Min	15	+	7			=	22						

Notes:

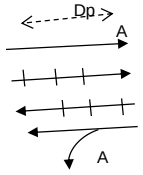
Traffic Flow (pcu/hr)



Group	ABEp	ABCp	Group	ABEp	ABCp
y	0.462	0.462	y	0.419	0.419
L (sec)	35	43	L (sec)	35	43
C (sec)	120	120	C (sec)	120	120
y pract.	0.638	0.578	y pract.	0.638	0.578
R.C. (%)	38%	25%	R.C. (%)	52%	38%

Stage / Phase Diagrams

1.



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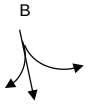

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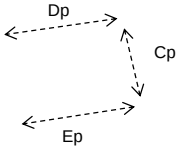


4.

5.

I/G= 22		I/G= 5		I/G= 8	10	I/G=		I/G=	
I/G= 22		I/G= 5		I/G= 8	10	I/G=		I/G=	

Date: Jun-16 **Junction:** H

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50019645 **MVA ASIA LIMITED**

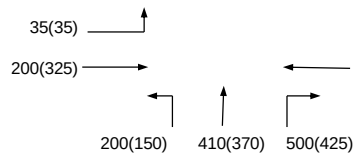
Junction: King's Road/ Tin Chiu Street (I) Design Year: 2025

Description: Design Flows Designed By: HKH Checked By: GPH

Approach	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	(%) uphill Gradient	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
King's Road EB		A	1	3.000	10			15%	10%	1875	1885	235	0.125		360	0.191	
			1	3.000						2055	2055	85	0.041		105	0.051	
King's Road WB		B	1	3.300						1945	1945	571	0.294		446	0.229	0.229
		B	1	3.300						2085	2085	613	0.294	0.294	478	0.229	
		B	1	3.300						1945	1945	571	0.294		446	0.229	
			1	3.000						2055	2055	105	0.051		65	0.032	
Tin Chiu Street NB		C	2	3.300	10					1690	1690	200	0.118		150	0.089	
		C	2	3.300	15			0%	0%	2085	2085	410	0.197		370	0.177	
		C	2	3.300		15				1770	1770	500	0.282	0.282	425	0.240	0.240
LRT/Pedestrian		Dp	1	Min	8	+	12			=	20						

Notes:

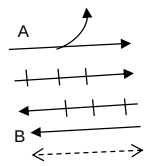
Traffic Flow (pcu/hr)



Group	AC	BC	Group	AC	BC
y	0.408	0.576	y	0.431	0.469
L (sec)	10	9	L (sec)	10	9
C (sec)	120	120	C (sec)	120	120
y pract.	0.825	0.833	y pract.	0.825	0.833
R.C. (%)	102%	44%	R.C. (%)	91%	77%

Stage / Phase Diagrams

1.



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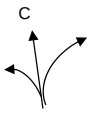

3.

4.

5.

I/G= 5		I/G= 6		I/G=		I/G=		I/G=	
I/G= 5		I/G= 6		I/G=		I/G=		I/G=	

Date: Jun-16 **Junction:** I

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Abu Dhabi
AS Business Centre, First Floor, Suites 201-213,
Al Ain Road, Umm al Nar, P.O. Box 129865,
Abu Dhabi, UAE
T: +971 2 558 3809 F: +971 2 558 9961

Birmingham
Second Floor, 37a Waterloo Street
Birmingham B2 5TJ United Kingdom
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

Dublin
1st Floor, 12/13 Exchange Place,
Custom House Docks, IFSC, Dublin 1 Ireland
T: +353 (0)1 542 6000 F: +353 (0)1 542 6001

Edinburgh
Prospect House, 5 Thistle Street, Edinburgh EH2 1DF
United Kingdom
T: +44 (0)131 220 6966

Glasgow
Seventh Floor, 78 St Vincent Street
Glasgow G2 5UB United Kingdom
T: +44 (0)141 225 4400

Lille
86 Boulevard Carnot, 59000 Lille, France
T: +33 (0)3 74 07 00 F: +33 (0)1 53 17 36 01

London
Seventh Floor, 15 Old Bailey
London EC4M 7EF United Kingdom
T: +44 (0)20 7529 6500 F: +44 (0)20 3427 6274

Lyon
11, rue de la République, 69001 Lyon, France
T: +33 (0)4 72 10 29 29 F: +33 (0)4 72 10 29 28

Manchester
25th Floor, City Tower, Piccadilly Plaza
Manchester M1 4BT United Kingdom
T: +44 (0)161 236 0282 F: +44 (0)161 236 0095

Marseille
76, rue de la République, 13002 Marseille, France
T: +33 (0)4 91 37 35 15 F: +33 (0)4 91 91 90 14

Newcastle
PO Box 438, Newcastle upon Tyne, NE3 9BT
United Kingdom
T: +44 (0)191 2136157

Paris
72 rue Henry Farman, 75015 Paris, France
T: +33 (0)1 53 17 36 00 F: +33 (0)1 53 17 36 01

Woking
Dukes Court, Duke Street
Woking, Surrey GU21 5BH United Kingdom
T: +44 (0)1483 728051 F: +44 (0)1483 755207

Hong Kong
14th Floor West, Warwick House, TaiKoo Place,
979 King's Road, Island East, Hong Kong
T: +852 2529 7037 F: +852 2527 8490

Shenzhen
Room 905, Excellence Mansion, No.98, No.1 Fuhua Road,
Futian Central Zone, Shenzhen, PRC, Post Code：518048
T：+86 755 3336 1898 F：+86 755 3336 2060

Shenzhen - Beijing Branch Office
Room 1503, Block C, He Qiao Mansion, No. 8 Guanghua Road,
Chaoyang District, Beijing, PRC, Post Code：100026
T：+86 10 8557 0116 F：+86 10 8557 0126

Beijing Joint Venture
No. 60, Nan Li Shi Road, Xi Cheng District, Beijing, PRC,
Post Code：100045
T：+86 10 8807 6320 F：+86 10 6804 3744

Singapore
25 Seah Street #04-01 Singapore 188381
T：+65 6227 3252 F：+65 6423 0178

Thailand
37th Floor, Unit F, Payatai Plaza Building,128/404-405 Payathai
Road, Rajthewee, Bangkok 10400, Thailand
T：+662 216 6652 F：+662 216 6651

Vietnam
5/F Perfect Building, Le Thi Hong Gam St, District 1,
Ho Chi Minh City, Vietnam
T：+84 8 3821 7183 F：+84 8 3821 6967

MVA
SYSTRA GROUP

Preliminary Tree Survey Report

Proposed Public Housing Development
at Java Road, North Point

Content

1.0 Introduction

1.1 This Preliminary tree survey report is prepared to facilitate the public housing development at Java Road, North Point (the Subject Site).

1.2 The Subject Site is located at the junction of Java Road and Tin Chiu Street (see Annex 1 Site Location). It is currently occupied by Tin Chiu Street Playground on government land.

1.3 The Subject Site is required to rezone from "Government, Institution or Community" zone to "Residential (Group A)" zone for public housing development.

2.0 Assessment of Existing Trees

2.1 Preliminary tree survey was carried out in March 2016.

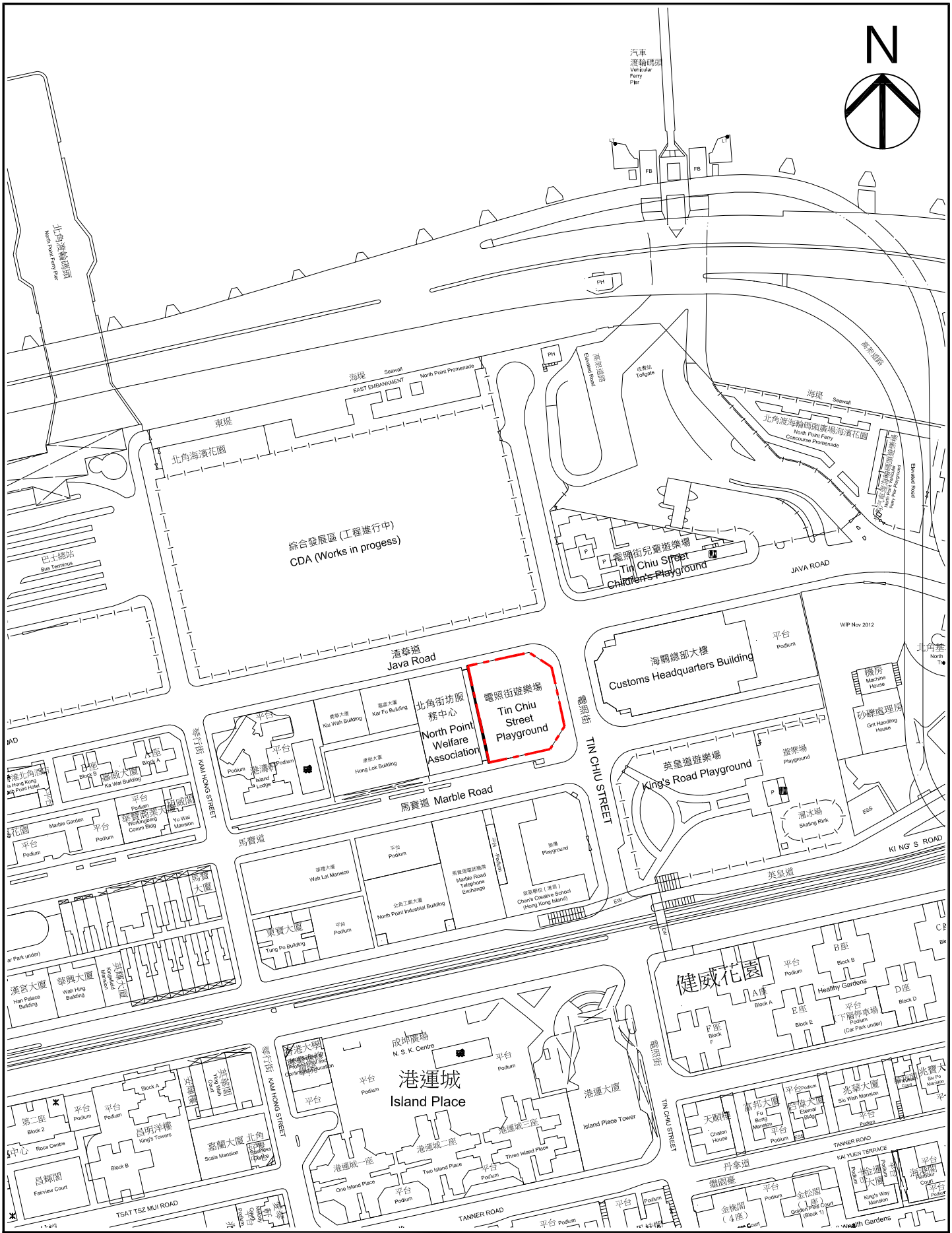
2.2 **No** existing tree has been identified **within** the Subject Site.

2.3 **Outside the site boundary,** there are 12 nos. roadside trees on Java Road, Tin Chiu Street and Marble Road. Locations of the trees refer to Tree Survey Plan (Dwg. 47059/LG (Rev. A)). These trees will be retained as far as practicable subject to detailed investigation of underground utilities, detailed building design and construction method, which is yet to be confirmed at this stage.

2.4 No Champion trees, registered Old and Valuable Trees (OVTs), or potentially registration is recorded. The existing trees are ALL common species.

2.5 Upon possession of site, tree inventory survey will be carried out again by the HD to update and verify the accuracy of the preliminary tree survey.

HOUSING DEPARTMENT
May 2016



擬建公營房屋地盤界線
PROPOSED PUBLIC HOUSING SITE BOUNDARY

METERS 40 0 40 80 160 METERS 米

SCALE 1:2000 (A4)

渣華道公營房屋發展計劃 - 位置圖

PROPOSED PUBLIC HOUSING DEVELOPMENT AT JAVA ROAD - SITE LOCATION PLAN

房屋署
HOUSING DEPARTMENT

附件一 ANNEX 1

日期 DATE 04/2016

838880 E
838900 E
838920 E
838940 E
838960 E
838980 E
839000 E
817120 N
817100 N
817080 N
817060 N
817040 N
817020 N

N

JAVA ROAD
TIN CHIU STREET
MARBLE ROAD
222
210
196-202
82
Customs Headquarters Building
Basketball Court
Tin Chiu Street Playground
Football Field
Kar Fu Building
North Point Welfare Association
Hong Lok Building
King's Road Playground
Podium

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12

TREE TABLE

TREE	DBH.(m)	HEIGHT(m)	CROWN SPREAD(m)	GROUND LEVEL(m)
T1	0.21	5.0	6.0	4.34
T2	0.22	8.0	6.0	4.38
T3	0.14	5.0	4.0	4.33
T4	0.21	8.0	6.0	4.35
T5	0.14	5.0	4.0	4.32
T6	0.16	5.0	3.0	4.30
T7	0.13	4.0	3.0	4.30
T8	0.33	8.0	10.0	4.34
T9	0.38	8.0	8.0	4.35
T10	0.32	12.0	10.0	4.23
T11	0.51	18.0	10.0	4.27
T12	0.51	18.0	9.0	4.25

NOTES :

1. ALL LEVELS ARE IN METRES ABOVE H.K.P.D.
2. CO-ORDINATES ARE OF HONG KONG 1980 GRID SYSTEM.
3. ALL LEVELS ALONG KERB ARE KERB BOTTOM LEVEL.
4. CO-ORDINATES OF LOWER LEFT SHEET CORNER: N: 817012; E: 838865; ROT. ANGLE : 0
5. JOB NO. : 49508VT

LEGEND:

- E ELECTRIC POLE
- H FIRE HYDRANT
- L LAMP POST
- S SIGN POLE
- T TELEPHONE POLE
- TL TRAFFIC LIGHT
- BENCH
- BOLLARD AT ROAD
- CATCH PIT
- GATE
- GRATING
- GULLY
- MANHOLE (FOUL WATER)
- MANHOLE (STORM WATER)
- MANHOLE (TELEPHONE)
- MANHOLE (WATERWORKS)
- SIGN BOARD
- TREE
- VALVE (UNCLASSIFIED)
- VALVE (FIRE) F
- VALVE (GAS) G
- Draw Pit
- ARTIFICIAL SLOPE
- CHANNEL
- FENCE/RAILING
- FREE STANDING WALL
- HOARDING
- STEPPED CHANNEL
- VERTICAL CUTTING/RETAINING WALL

REVISIONS

NO	DESCRIPTION AND DATE	INITIAL AND DESIGNATION DWN	CKD	CKD
A	1. Additional survey details was added 2. One tree was deleted as it was removed on site (Survey date MAR 2016)			

	NAME AND DESIGNATION	INITIAL	DATE
CHECKED	K.C.HO (LS/C6)		MAR,16
	F.L.NG (SSO/6)		MAR,16
DRAWN	T.L.CHAN (SO/16)		MAR,16

PROJECT

JAVA ROAD, NORTH POINT

DRAWING TITLE

TREE SURVEY PLAN

SCALE 1:200

SKETCH NO.

47059/LG (Rev.A)

SOURCE

ICU NO.

LAND SURVEYING UNIT
DEVELOPMENT AND CONSTRUCTION DIVISION
HOUSING DEPARTMENT