**Form No. S12A**
**表格第 S12A 號**

Team 1
S/N : 2002415
By Hand : 16/10

# APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP.131)

# 根據《城市規劃條例》(第131章)第12A條遞交的修訂圖則申請

Applicant who would like to publish the notice of application in local newspapers to meet one of the Town Planning Board's requirements of taking reasonable steps to obtain consent of or give notification to the current land owner, please refer to the following link regarding publishing the notice in the designated newspapers: https://www.info.gov.hk/tpb/en/plan_application/apply.html

申請人如欲在本地報章刊登申請通知，以採取城市規劃委員會就取得現行土地擁有人的同意或通知現行土地擁有人所指定的其中一項合理步驟，請瀏覽以下網址有關在指定的報章刊登通知：https://www.info.gov.hk/tpb/tc/plan_application/apply.html

2020年 11月 23日
此文件在_____收到。城市規劃委員會只會在收到所有必要的資料及文件後才正式確認收到申請的日期。

This document is received on 23 NOV 2020
The Town Planning Board will formally acknowledge the date of receipt of the application only upon receipt of all the required information and documents.

**General Note and Annotation for the Form**
**填寫表格的一般指引及註解**

\# "Current land owner" means any person whose name is registered in the Land Registry as that of an owner of the land to which the application relates, as at 6 weeks before the application is made
「現行土地擁有人」指在提出申請前六星期，其姓名或名稱已在土地註冊處註冊為該申請所關乎的土地的擁有人的人

& Please attach documentary proof 請夾附證明文件

^ Please insert number where appropriate 請在適當地方註明編號

Please fill "NA" for inapplicable item 請在不適用的項目填寫「不適用」

Please use separate sheets if the space provided is insufficient 如所提供的空間不足，請另頁說明

Please insert a「✓」at the appropriate box 請在適當的方格內上加上「✓」號

| For Official Use Only 請勿填寫此欄 | Application No. 申請編號 | Y/ST/47 |
|---|---|---|
| | Date Received 收到日期 | 23 NOV 2020 |

1. The completed form and supporting documents (if any) should be sent to the Secretary, Town Planning Board (the Board), 15/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong.
申請人須把填妥的申請表格及其他支持申請的文件（倘有），送交香港北角渣華道 333 號北角政府合署 15 樓城市規劃委員會(下稱「委員會」)秘書收。

2. Please read the "Guidance Notes" carefully before you fill in this form. The document can be downloaded from the Board's website at http://www.info.gov.hk/tpb/. It can also be obtained from the Secretariat of the Board at 15/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong (Tel: 2231 4810 or 2231 4835), and the Planning Enquiry Counters of the Planning Department (Hotline: 2231 5000) (17/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong and 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin, New Territories).
請先細閱《申請須知》的資料單張，然後填寫此表格。該份文件可從委員會的網頁下載（網址：http://www.info.gov.hk/tpb/），亦可向委員會秘書處（香港北角渣華道 333 號北角政府合署 15 樓 – 電話：2231 4810 或 2231 4835)及規劃署的規劃資料查詢處(熱線：2231 5000) (香港北角渣華道 333 號北角政府合署 17 樓及新界沙田上禾輋路 1 號沙田政府合署 14 樓)索取。

3. This form can be downloaded from the Board's website, and obtained from the Secretariat of the Board and the Planning Enquiry Counters of the Planning Department. The form should be typed or completed in block letters. The processing of the application may be refused if the required information or the required copies are incomplete.
此表格可從委員會的網頁下載，亦可向委員會秘書處及規劃署的規劃資料查詢處索取。申請人須以打印方式或以正楷填寫表格。如果申請人所提交的資料或文件副本不齊全，委員會可拒絕處理有關申請。

**1. Name of Applicant 申請人姓名/名稱**

(☐Mr. 先生 /☐Mrs. 夫人 /☐Miss 小姐 /☐Ms. 女士 /☑Company 公司 /☐Organisation 機構)

Memorial Park Hong Kong Limited

**2. Name of Authorised Agent (if applicable) 獲授權代理人姓名/名稱（如適用）**

(☐Mr. 先生 /☐Mrs. 夫人 /☐Miss 小姐 /☐Ms. 女士 /☑Company 公司 /☐Organisation 機構)

Knight Frank Petty Limited

**3. Application Site 申請地點**

| | |
|---|---|
| (a) Whether the application directly relates to any specific site? 申請是否直接與某地點有關？ | Yes 是 ☑<br>No 否 ☐ (Please proceed to Part 6 請繼續填寫第 6 部分) |
| (b) Full address/ location/ demarcation district and lot number (if applicable) 詳細地址／地點／丈量約份及地段號碼（如適用） | Lot Nos. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B and 644 RP in D.D.176 and adjoining Government land |
| (c) Site Area 申請地點面積 | 520.4 sq.m 平方米 ☑About 約 |

| | |
|---|---|
| (d) Area of Government land included (if any) 所包括的政府土地面積 (倘有) | 63.7 sq.m 平方米 ☑ About 約 |
| (e) Current use(s) 現時用途 | 'Columbarium'<br><br>(If there are any Government, institution or community facilities, please illustrate on plan and specify the use and gross floor area)<br>(如有任何政府、機構或社區設施，請在圖則上顯示，並註明用途及總樓面面積) |

## 4. "Current Land Owner" of Application Site 申請地點的「現行土地擁有人」

The applicant 申請人 –

☑ is the sole "current land owner"#& (please proceed to Part 6 and attach documentary proof of ownership).
是唯一的「現行土地擁有人」#&(請繼續填寫第 6 部分，並夾附業權證明文件)。

☐ is one of the "current land owners"#& (please attach documentary proof of ownership).
是其中一名「現行土地擁有人」#&(請夾附業權證明文件)。

☐ is not a "current land owner"#.
並不是「現行土地擁有人」#。

☐ The application site is entirely on Government land (please proceed to Part 6).
申請地點完全位於政府土地上（請繼續填寫第 6 部分）。

## 5. Statement on Owner's Consent/Notification 就土地擁有人的同意/通知土地擁有人的陳述

(a) According to the record(s) of the Land Registry as at ..... (DD/MM/YYYY), this application involves a total of ..... "current land owner(s) "#.
根據土地註冊處截至 ..... 年 ..... 月 ..... 日的記錄，這宗申請共牽涉 ..... 名「現行土地擁有人」#。

(b) The applicant 申請人 –

☐ has obtained consent(s) of ..... "current land owner(s)"#.
已取得 ..... 名「現行土地擁有人」#的同意。

| Details of consent of "current land owner(s)"# obtained 取得「現行土地擁有人」#同意的詳情 | | |
|---|---|---|
| No. of 'Current Land Owner(s)' 「現行土地擁有人」數目 | Lot number/address of premises as shown in the record of the Land Registry where consent(s) has/have been obtained 根據土地註冊處記錄已獲得同意的地段號碼／處所地址 | Date of consent obtained (DD/MM/YYYY) 取得同意的日期 (日/月/年) |
| | | |
| | | |
| | | |

(Please use separate sheets if the space of any box above is insufficient. 如上列任何方格的空間不足，請另頁說明)

☐ has notified ..... "current land owner(s)"#
已通知 ..... 名「現行土地擁有人」#。

| Details of the "current land owner(s)"# notified 已獲通知「現行土地擁有人」#的詳細資料 | | |
|---|---|---|
| No. of 'Current Land Owner(s)' 「現行土地擁有人」數目 | Lot number/address of premises as shown in the record of the Land Registry where notification(s) has/have been given 根據土地註冊處記錄已發出通知的地段號碼／處所地址 | Date of notification given (DD/MM/YYYY) 通知日期(日/月/年) |
| | | |
| | | |
| | | |

(Please use separate sheets if the space of any box above is insufficient. 如上列任何方格的空間不足，請另頁說明)

☐ has taken reasonable steps to obtain consent of or give notification to owner(s):
已採取合理步驟以取得土地擁有人的同意或向該人發給通知，詳情如下：

Reasonable Steps to Obtain Consent of Owner(s) 取得土地擁有人的同意所採取的合理步驟

☐ sent request for consent to the "current land owner(s)"# & on _____ (DD/MM/YYYY)
於_____(日/月/年)向每一名「現行土地擁有人」#郵遞要求同意書&

Reasonable Steps to Give Notification to Owner(s) 向土地擁有人發出通知所採取的合理步驟

☐ published notices in local newspapers& on _____ (DD/MM/YYYY)
於_____(日/月/年)在指定報章就申請刊登一次通知&

☐ posted notice in a prominent position on or near application site/premises& on _____ (DD/MM/YYYY)
於_____(日/月/年)在申請地點／申請處所或附近的顯明位置貼出關於該申請的通知&

☐ sent notice to relevant owners' corporation(s)/owners' committee(s)/mutual aid committee(s)/management office(s) or rural committee& on _____ (DD/MM/YYYY)
於_____(日/月/年)把通知寄往相關的業主立案法團/業主委員會/互助委員會或管理處，或有關的鄉事委員會&

Others 其他

☐ others (please specify)
其他（請指明）

_____
_____
_____
_____

Note: May insert more than one「✓」.
Information should be provided on the basis of each and every lot (if applicable) and premises (if any) in respect of the application.
註: 可在多於一個方格內加上「✓」號
申請人須就申請涉及的每一地段（倘適用）及處所（倘有）分別提供資料

| 6. Plan Proposed to be Amended 擬議修訂的圖則 | |
|---|---|
| (a) Name and number of the related statutory plan(s)<br>有關法定圖則的名稱及編號 | Approved Sha Tin Outline Zoning Plan No. S/ST/34 |
| (b) Land use zone(s) involved (if applicable)<br>涉及的土地用途地帶(如適用) | "Village Type Development" and "Green Belt" |

## 7. Proposed Amendments 擬議修訂

(a) Propose to rezone the application site to the following zone(s)/use(s)
(May insert more than one 「✓」) (Please illustrate the details on plan)
建議將申請地點的用途地帶改劃作下列地帶 / 用途
(可在多於一個方格內加上「✓」號) (請在圖則顯示詳情)

- ☐ Comprehensive Development Area [ ]
  綜合發展區 [ ]
- ☐ Residential (Group ☐A/☐B/☐C/☐D/☐E) [ ]
  住宅 (☐甲類 / ☐乙類 / ☐丙類 / ☐丁類 / ☐戊類) [ ]
- ☐ Agriculture [ ] 農業 [ ]
- ☐ Industrial (Group D) [ ] 工業 (丁類) [ ]
- ☐ Government, Institution or Community [ ]
  政府、機構或社區 [ ]
- ☐ Recreation [ ] 康樂 [ ]
- ☐ Country Park [ ] 郊野公園 [ ]
- ☐ Conservation Area [ ] 自然保育區 [ ]
- ☐ Commercial [ ] 商業 [ ]
- ☐ Village Type Development [ ]
  鄉村式發展 [ ]
- ☐ Industrial [ ] 工業 [ ]
- ☐ Open Storage [ ] 露天貯物 [ ]
- ☐ Open Space [ ] 休憩用地 [ ]
- ☐ Green Belt [ ] 綠化地帶 [ ]
- ☐ Coastal Protection Area [ ]
  海岸保護區 [ ]
- ☐ Site of Special Scientific Interest [ ]
  具特殊科學價值地點 [ ]

- ☑ Other Specified Uses (☐Business/☐Industrial Estate/☐Mixed Use/☐Rural Use/☐Petrol Filling Station/
  ☑Others (please specify **Columbarium (1)**)) [ ]
  其他指定用途 (☐商貿 / ☐工業邨 / ☐混合用途 / ☐鄉郊用途 / ☐加油站 /
  ☐ 其他 (請註明：_____)) [ ]

- ☐ Road 道路
- ☐ Others (please specify_____)
  其他 (請註明：_____)

Please insert subzone in [ ] as appropriate.
請於[ ]內註明支區，如適用。

☑ Proposed Notes of Schedule of Uses of the zone attached
已夾附對土地用途地帶的《註釋》的擬議修訂

(b) Propose to amend the Notes of the Plan(s) 建議修訂圖則的《註釋》

☐ Covering Notes 《註釋》說明頁

☐ Notes of the zone applicable to the Site 適用於申請地點土地用途地帶的《註釋》

Details of the proposed amendment(s) to the Notes of the Plan, where appropriate, are as follows:
(Please use separate sheets if the space below is insufficient)
建議修訂圖則的《註釋》的詳情，如適用：
(如下列空間不足，請另頁說明)

## 8. Details of Proposed Amendment (if any) 擬議修訂詳情 (倘有)

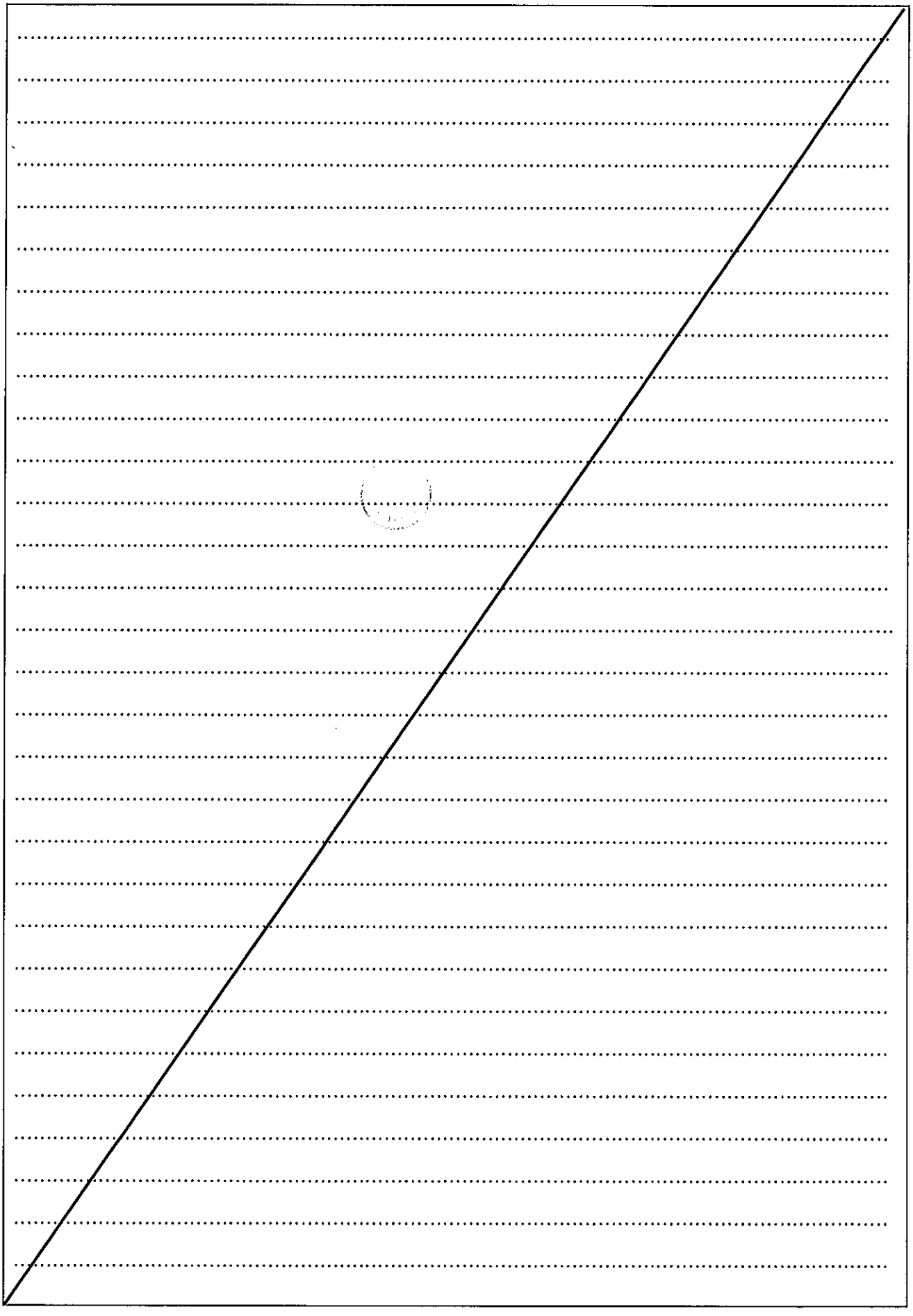
☑ Particulars of development are included in the **Appendix**.
附錄包括一個擬議發展的細節。

☐ No specific development proposal is included in this application.
這宗申請並不包括任何指定的擬議發展計劃。

## 9. Justifications 理由

The applicant is invited to provide justifications in support of the application. Use separate sheets if necessary.
現請申請人提供申請理由及支持其申請的資料。如有需要請另頁說明。

Please refer to the Supporting Planning Statement P.24 – P.28



## 10. Declaration 聲明

I hereby declare that the particulars given in this application are correct and true to the best of my knowledge and belief.
本人謹此聲明，本人就這宗申請提交的資料，據本人所知及所信，均屬真實無誤。

I hereby grant a permission to the Board to copy all the materials submitted in an application to the Board and/or to upload such materials to the Board's website for browsing and downloading by the public free-of-charge at the Board's discretion.
本人現准許委員會酌情將本人就此申請所提交的所有資料複製及/或上載至委員會網站，供公眾免費瀏覽或下載。

Signature 簽署 ..... ☐ Applicant 申請人 / ☑ Authorised Agent 獲授權代理人

Calvin Kan — Name in Block Letters 姓名（請以正楷填寫）

Senior Manager, Planning and Development — Position (if applicable) 職位 （如適用）

Professional Qualification(s) 專業資格
☑ Member 會員 / ☐ Fellow of 資深會員
☑ HKIP 香港規劃師學會 / ☐ HKIA 香港建築師學會 /
☐ HKIS 香港測量師學會 / ☐ HKIE 香港工程師學會 /
☐ HKILA 香港園境師學會/ ☐ HKIUD 香港城市設計學會
Others 其他 RPP

on behalf of 代表 Knight Frank Petty Limited

☑ Company 公司 / ☐ Organisation Name and Chop (if applicable) 機構名稱及蓋章（如適用）

Date 日期 15 /10/2020 (DD/MM/YYYY 日/月/年)

### Remark 備註

The materials submitted in an application to the Board and the Board's decision on the application would be disclosed to the public. Such materials would also be uploaded to the Board's website for browsing and free downloading by the public where the Board considers appropriate.
委員會會向公眾披露申請人所遞交的申請資料和委員會對申請所作的決定。在委員會認為合適的情況下，有關申請資料亦會上載至委員會網頁供公眾免費瀏覽及下載。

### Warning 警告

Any person who knowingly or wilfully makes any statement or furnish any information in connection with this application, which is false in any material particular, shall be liable to an offence under the Crimes Ordinance.
任何人在明知或故意的情況下，就這宗申請提出在任何要項上是虛假的陳述或資料，即屬違反《刑事罪行條例》。

### Statement on Personal Data 個人資料的聲明

1. The personal data submitted to the Board in this application will be used by the Secretary of the Board and Government departments for the following purposes:
委員會就這宗申請所收到的個人資料會交給委員會秘書及政府部門，以根據《城市規劃條例》及相關的城市規劃委員會規劃指引的規定作以下用途：

   (a) the processing of this application which includes making available the name of the applicant for public inspection when making available this application for public inspection; and
   處理這宗申請，包括公布這宗申請供公眾查閱，同時公布申請人的姓名供公眾查閱；以及
   (b) facilitating communication between the applicant and the Secretary of the Board/Government departments.
   方便申請人與委員會秘書及政府部門之間進行聯絡。

2. The personal data provided by the applicant in this application may also be disclosed to other persons for the purposes mentioned in paragraph 1 above.
申請人就這宗申請提供的個人資料，或亦會向其他人士披露，以作上述第 1 段提及的用途。

3. An applicant has a right of access and correction with respect to his/her personal data as provided under the Personal Data (Privacy) Ordinance (Cap. 486). Request for personal data access and correction should be addressed to the Secretary of the Board at 15/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong.
根據《個人資料(私隱)條例》(第 486 章)的規定，申請人有權查閱及更正其個人資料。如欲查閱及更正個人資料，應向委員會秘書提出有關要求，其地址為香港北角渣華道 333 號北角政府合署 15 樓。

# APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP. 131)
# 根據城市規劃條例(第 131 章)第 12A 條遞交的修訂圖則申請

Development Proposal (only for indicative purpose)
擬議發展的發展計劃（只作指示用途）

## 1. Development Proposal 擬議發展計劃

| | |
|---|---|
| ☑ Proposed Gross floor area (GFA) 擬議總樓面面積 | 292.674 sq.m. 平方米 ☑ About 約 |
| ☑ Proposed plot ratio 擬議地積比率 | 0.562 ☑ About 約 |
| ☑ Proposed site coverage 擬議上蓋面積 | 39.073 % ☑ About 約 |
| ☑ Proposed number of blocks 擬議座數 | 5 |
| ☑ Proposed number of storeys of each block 每座建築物的擬議層數 | Maximum 2 storeys 層<br>☐ include 包括 ..... storeys of basements 層地庫<br>☐ exclude 不包括 ..... storeys of basements 層地庫 |
| ☑ Proposed building height of each block 每座建築物的擬議高度 | Maximum 6.19 m 米 ☑ About 約<br>..... mPD 米(主水平基準上) ☐ About 約 |
| ☐ Domestic part 住用部分 | |
| GFA 總樓面面積 | ..... sq.m. 平方米 ☐ About 約 |
| number of units 單位數目 | ..... |
| average unit size 單位平均面積 | ..... sq.m. 平方米 ☐ About 約 |
| estimated number of residents 估計住客數目 | ..... |
| | GFA 總樓面面積 |
| ☑ Non-domestic part 非住用部分 | ..... sq.m.平方米 ☐ About 約 |
| ☐ hotel 酒店 | ..... sq.m.平方米 ☐ About 約<br>(please specify the number of rooms 請註明房間數目: .....) |
| ☐ office 辦公室 | ..... sq.m.平方米 ☐ About 約 |
| ☐ shop and services/eating place 商店及服務行業/食肆 | ..... sq.m.平方米 ☐ About 約 |
| ☐ Government, institution or community facilities 政府、機構或社區設施 | (please specify the use(s) and concerned land area(s)/GFA(s))<br>(請註明用途及有關的地面面積/總樓面面積)<br>.....<br>.....<br>..... |
| ☑ other(s)其他 | (please specify the use(s) and concerned land area(s)/GFA(s))<br>(請註明用途及有關的地面面積/總樓面面積)<br>Please refer to the Supporting Planning Statement P.21<br>..... |
| ☐ Open space 休憩用地 | (please specify land area(s)) (請註明面積) |
| ☐ private open space 私人休憩用地 | ..... sq.m.平方米 ☐ Not less than 不少於 |
| ☐ public open space 公共休憩用地 | ..... sq.m.平方米 ☐ Not less than 不少於 |

☐ Transport-related facilities 與運輸有關的設施

☐ parking spaces 停車位 (please specify type(s) and number(s)) (請註明種類及數目)

Private Car Parking Spaces 私家車車位 .....
Motorcycle Parking Spaces 電單車車位 .....
Light Goods Vehicle Parking Spaces 輕型貨車泊車位 .....
Medium Goods Vehicle Parking Spaces 中型貨車泊車位 .....
Heavy Goods Vehicle Parking Spaces 重型貨車泊車位 .....
Others (Please Specify) 其他 (請列明) .....
.....

☐ loading/unloading spaces 上落客貨車位 (please specify type(s) and number(s)) (請註明種類及數目)

Taxi Spaces 的士車位 .....
Coach Spaces 旅遊巴車位 .....
Light Goods Vehicle Spaces 輕型貨車車位 .....
Medium Goods Vehicle Spaces 中型貨車車位 .....
Heavy Goods Vehicle Spaces 重型貨車車位 .....
Others (Please Specify) 其他 (請列明) .....
.....

☐ other transport-related facilities 其他與運輸有關的設施 (please specify type(s) and number(s)) (請註明種類及數目) .....
.....

Use(s) of different floors (if applicable) 各樓層的用途(如適用)

| [Block number] [座數] | [Floor(s)] [層數] | [Proposed use(s)] [擬議用途] |
|---|---|---|
| Please refer to the Supporting Planning Statement | | |
| | | |
| | | |
| | | |
| | | |

Proposed use(s) of uncovered area (if any) 露天地方(倘有)的擬議用途
.....
.....
.....

Any vehicular access to the site? 是否有車路通往地盤?

Yes 是 ☐ There is an existing access. (please indicate the street name, where appropriate) 有一條現有車路。(請註明道路名稱(如適用))
.....

☐ There is a proposed access. (please illustrate on plan and specify the width) 有一條擬議車路。(請在圖則顯示，並註明車路的闊度)
.....
.....

No 否 ☑

**For Development involving columbarium use, please complete the table in the Annex to this Appendix.**
如發展涉及靈灰安置所用途，請填妥於此附件後附錄的表格。

## 2. Impacts of Development Proposal 擬議發展計劃的影響

If necessary, please use separate sheets to indicate the proposed measures to minimise possible adverse impacts or give justifications/reasons for not providing such measures
如需要的話，請另頁表示可盡量減少可能出現不良影響的措施，否則請提供理據/理由。

| | | |
|---|---|---|
| Does the development proposal involve alteration of existing building?<br>擬議發展計劃是否包括現有建築物的改動? | Yes 是 | ☐ Please provide details 請提供詳情<br>.....<br>.....<br>..... |
| | No 否 | ☑ |
| Does the development proposal involve the operation on the right?<br>擬議發展是否涉及右列的工程? | Yes 是 | ☐ (Please indicate on site plan the boundary of concerned land/pond(s), and particulars of stream diversion, the extent of filling of land/pond(s) and/or excavation of land)<br>(請用地盤平面圖顯示有關土地／池塘界線，以及河道改道、填塘、填土及／或挖土的細節及/或範圍)<br>☐ Diversion of stream 河道改道<br>☐ Filling of pond 填塘<br>Area of filling 填塘面積 ..... sq.m 平方米 ☐About 約<br>Depth of filling 填塘深度 ..... m 米 ☐About 約<br>☐ Filling of land 填土<br>Area of filling 填土面積 ..... sq.m 平方米 ☐About 約<br>Depth of filling 填土厚度 ..... m 米 ☐About 約<br>☐ Excavation of land 挖土<br>Area of excavation 挖土面積..... sq.m 平方米 ☐About 約<br>Depth of excavation 挖土深度 .....m 米 ☐About 約 |
| | No 否 | ☑ |

Would the development proposal cause any adverse impacts?
擬議發展計劃會否造成不良影響？

| | | |
|---|---|---|
| On environment 對環境 | Yes 會 ☐ | No 不會 ☑ |
| On traffic 對交通 | Yes 會 ☐ | No 不會 ☑ |
| On water supply 對供水 | Yes 會 ☐ | No 不會 ☑ |
| On drainage 對排水 | Yes 會 ☐ | No 不會 ☑ |
| On slopes 對斜坡 | Yes 會 ☐ | No 不會 ☑ |
| Affected by slopes 受斜坡影響 | Yes 會 ☐ | No 不會 ☑ |
| Landscape Impact 構成景觀影響 | Yes 會 ☐ | No 不會 ☑ |
| Tree Felling 砍伐樹木 | Yes 會 ☐ | No 不會 ☑ |
| Visual Impact 構成視覺影響 | Yes 會 ☐ | No 不會 ☑ |
| Others (Please Specify) 其他 (請列明) | Yes 會 ☐ | No 不會 ☑ |

_____
_____

Please state measure(s) to minimise the impact(s). For tree felling, please state the number, diameter at breast height and species of the affected trees (if possible)
請註明盡量減少影響的措施。如涉及砍伐樹木，請說明受影響樹木的數目、及胸高度的樹幹直徑及品種(倘可)

Please refer to the Supporting Planning Statement
.....
.....
.....
.....
.....
.....

**For Developments involving Columbarium Use, please also complete the following:**
**如發展涉及靈灰安置所用途，請另外填妥以下資料**

Ash interment capacity 骨灰安放容量[@]

| | |
|---|---|
| Maximum number of sets of ashes that may be interred in the niches<br>在龕位內最多可安放骨灰的數量 | 3,948 |
| Maximum number of sets of ashes that may be interred other than in niches<br>在非龕位的範圍內最多可安放骨灰的數量 | N/A |
| Total number of niches 龕位總數 | 3,499 |
| Total number of single niches<br>單人龕位總數 | 3,050 |
| Number of single niches (sold and occupied)<br>單人龕位數目 (已售並佔用) | 682 |
| Number of single niches (sold but unoccupied)<br>單人龕位數目 (已售但未佔用) | 921 |
| Number of single niches (residual for sale)<br>單人龕位數目 (待售) | 1,447 |
| Total number of double niches<br>雙人龕位總數 | 449 |
| Number of double niches (sold and fully occupied)<br>雙人龕位數目 (已售並全部佔用) | 45 |
| Number of double niches (sold and partially occupied)<br>雙人龕位數目 (已售並部分佔用) | 74 |
| Number of double niches (sold but unoccupied)<br>雙人龕位數目 (已售但未佔用) | 127 |
| Number of double niches (residual for sale)<br>雙人龕位數目 (待售) | 203 |
| Total no. of niches other than single or double niches (please specify type)<br>除單人及雙人龕位外的其他龕位總數 (請列明類別) | N/A |
| Number. of niches (sold and fully occupied)<br>龕位數目 (已售並全部佔用) | N/A |
| Number of niches (sold and partially occupied)<br>龕位數目 (已售並部分佔用) | N/A |
| Number of niches (sold but unoccupied)<br>龕位數目 (已售但未佔用) | N/A |
| Number of niches (residual for sale)<br>龕位數目 (待售) | N/A |
| Proposed operating hours 擬議營運時間 | Mondays to Sundays: 09:00 – 18:00<br>For Lunar Chinese New Year season: 10:00 – 14:00 |

@ Ash interment capacity in relation to a columbarium means –
就靈灰安置所而言，骨灰安放容量指：
- the maximum number of containers of ashes that may be interred in each niche in the columbarium;
每個龕位內可安放的骨灰容器的最高數目；
- the maximum number of sets of ashes that may be interred other than in niches in any area in the columbarium; and
在該靈灰安置所並非龕位的範圍內，總共最多可安放多少份骨灰；以及
- the total number of sets of ashes that may be interred in the columbarium.
在該骨灰安置所內，總共最多可安放多少份骨灰。

## Gist of Application 申請摘要

(Please provide details in both English and Chinese as far as possible. This part will be circulated to relevant consultees, uploaded to the Town Planning Board's Website for browsing and free downloading by the public and deposited at the Planning Enquiry Counters of the Planning Department for general information. )
(請盡量以英文及中文填寫。此部分將會發送予相關諮詢人士、上載至城市規劃委員會網頁供公眾免費瀏覽及下載及存放於規劃署規劃資料查詢處以供一般參閱。)

| | |
|---|---|
| Application No.<br>申請編號 | (For Official Use Only) (請勿填寫此欄) |
| Location/address<br>位置／地址 | 丈量約份第176約地段第551號A分段、第551號餘段部分、第640號、第644號A分、第644號B分段、第644號餘段部分及毗鄰的政府土地<br>Lot Nos. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP in D.D.176 and adjoining Government land |
| Site area<br>地盤面積 | 520.4 sq. m 平方米 ☐ About 約<br>(includes Government land of 包括政府土地 63.7 sq. m 平方米 ☐ About 約) |
| Plan<br>圖則 | 沙田分區計劃大綱核准圖編號<br>Approved Sha Tin Outline Zoning Plan No. S/ST/34 |
| Zoning<br>地帶 | 「鄉村式發展」及「綠化」<br>"Village Type Development" and "Green Belt" |
| Proposed Amendment(s)<br>擬議修訂 | ☐ Amend the Covering Notes of the Plan<br>修訂圖則《註釋》的說明頁<br>☐ Amend the Notes of the zone applicable to the site<br>修訂適用於申請地點土地用途地帶的《註釋》<br>☑ Rezone the application site from "V" and "GB" to "Other Specified Uses" annotated "Columbarium (1)"<br>把申請地點由_____地帶改劃為_____ |

**Development Parameters (for indicative purpose only) 發展參數(只作指示用途)**

| | | sq.m 平方米 | Plot Ratio 地積比率 |
|---|---|---|---|
| (i) Gross floor area and/or plot ratio 總樓面面積及／或地積比率 | Domestic 住用 | ☐ About 約<br>☐ Not more than 不多於 | ☐ About 約<br>☐ Not more than 不多於 |
| | Non-domestic 非住用 | 292.674 ☐ About 約<br>☑ Not more than 不多於 | 0.562 ☐ About 約<br>☑ Not more than 不多於 |
| (ii) No. of block 幢數 | Domestic 住用 | | |
| | Non-domestic 非住用 | | |
| | Composite 綜合用途 | | |

| | | | |
|---|---|---|---|
| (iii) | Building height/No. of storeys<br>建築物高度／層數 | Domestic<br>住用 | m 米<br>☐ (Not more than 不多於) |
| | | | mPD 米(主水平基準上)<br>☐ (Not more than 不多於) |
| | | | Storeys(s) 層<br>☐ (Not more than 不多於)<br>*(☐Include 包括/☐ Exclude 不包括*<br>☐ *Carport 停車間*<br>☐ *Basement 地庫*<br>☐ *Refuge Floor 防火層*<br>☐ *Podium 平台)* |
| | | Non-domestic<br>非住用 | 6.19 m 米<br>☑ (Not more than 不多於) |
| | | | mPD 米(主水平基準上)<br>☐ (Not more than 不多於) |
| | | | 2 Storeys(s) 層<br>☑ (Not more than 不多於)<br>*(☐Include 包括/☐ Exclude 不包括*<br>☐ *Carport 停車間*<br>☐ *Basement 地庫*<br>☐ *Refuge Floor 防火層*<br>☐ *Podium 平台)* |
| | | Composite<br>綜合用途 | m 米<br>☐ (Not more than 不多於) |
| | | | mPD 米(主水平基準上)<br>☐ (Not more than 不多於) |
| | | | Storeys(s) 層<br>☐ (Not more than 不多於)<br>*(☐Include 包括/☐ Exclude 不包括*<br>☐ *Carport 停車間*<br>☐ *Basement 地庫*<br>☐ *Refuge Floor 防火層*<br>☐ *Podium 平台)* |
| (iv) | Site coverage<br>上蓋面積 | 39.073 % ☑ About 約 | |
| (v) | No. of units<br>單位數目 | | |
| (vi) | Open space<br>休憩用地 | Private 私人 | sq.m 平方米 ☐ Not less than 不少於 |
| | | Public 公眾 | sq.m 平方米 ☐ Not less than 不少於 |

| | | |
|---|---|---|
| (vii) No. of parking spaces and loading / unloading spaces 停車位及上落客貨車位數目 | Total no. of vehicle parking spaces 停車位總數<br><br>Private Car Parking Spaces 私家車車位<br>Motorcycle Parking Spaces 電單車車位<br>Light Goods Vehicle Parking Spaces 輕型貨車泊車位<br>Medium Goods Vehicle Parking Spaces 中型貨車泊車位<br>Heavy Goods Vehicle Parking Spaces 重型貨車泊車位<br>Others (Please Specify) 其他 (請列明)<br>_____<br>_____ | |
| | Total no. of vehicle loading/unloading bays/lay-bys 上落客貨車位／停車處總數<br><br>Taxi Spaces 的士車位<br>Coach Spaces 旅遊巴車位<br>Light Goods Vehicle Spaces 輕型貨車車位<br>Medium Goods Vehicle Spaces 中型貨車位<br>Heavy Goods Vehicle Spaces 重型貨車車位<br>Others (Please Specify) 其他 (請列明)<br>_____<br>_____ | |

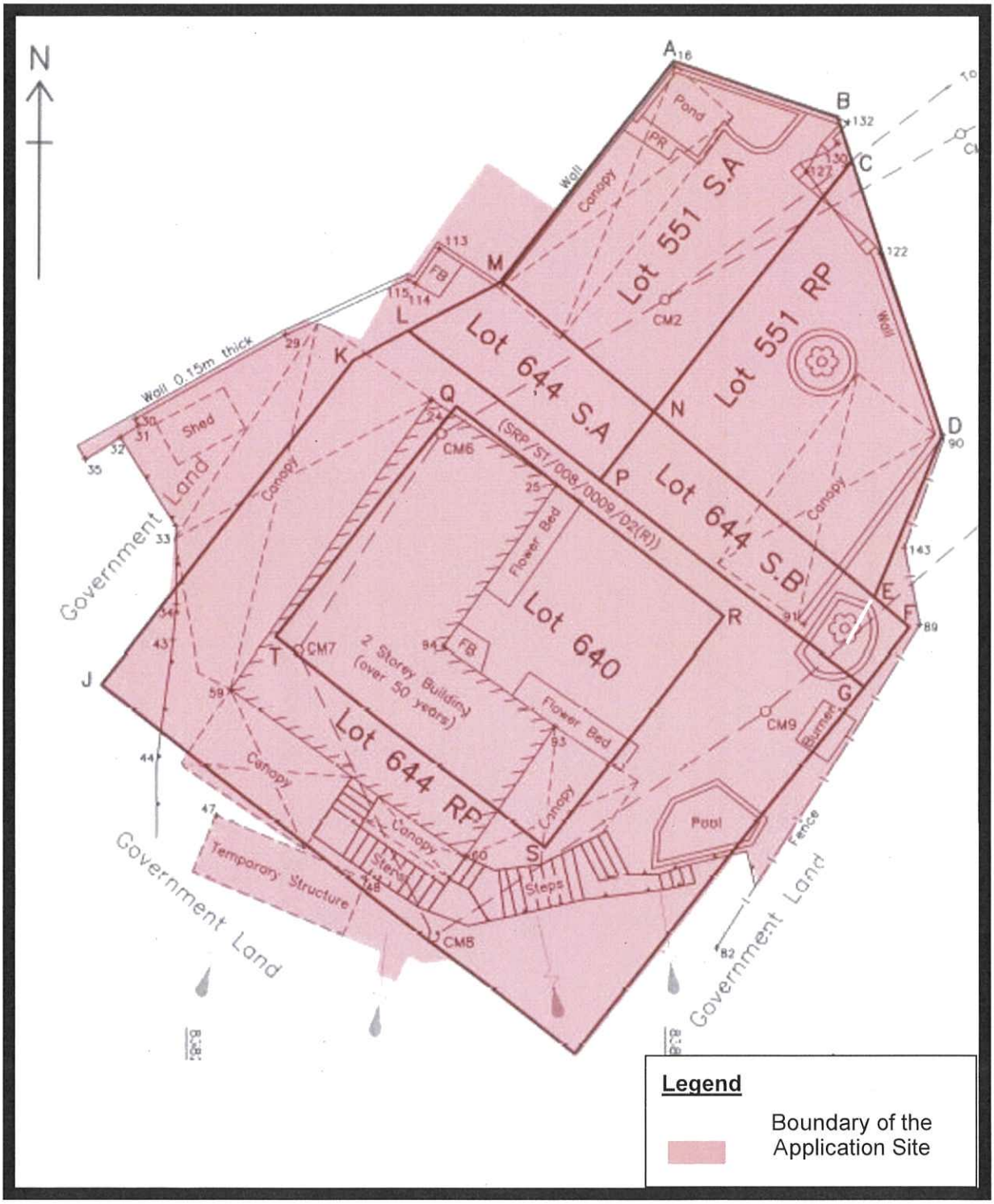
**Submitted Plans, Drawings and Documents 提交的圖則、繪圖及文件**

| | Chinese 中文 | English 英文 |
|---|---|---|
| **Plans and Drawings 圖則及繪圖** | | |
| Master layout plan(s)/Layout plan(s) 總綱發展藍圖／布局設計圖 | ☐ | ☑ |
| Block plan(s) 樓宇位置圖 | ☐ | ☑ |
| Floor plan(s) 樓宇平面圖 | ☐ | ☑ |
| Sectional plan(s) 截視圖 | ☐ | ☑ |
| Elevation(s) 立視圖 | ☐ | ☐ |
| Photomontage(s) showing the proposed development 顯示擬議發展的合成照片 | ☐ | ☐ |
| Master landscape plan(s)/Landscape plan(s) 園境設計總圖／園境設計圖 | ☐ | ☐ |
| Others (please specify) 其他（請註明） | ☐ | ☐ |
| _____ | | |
| _____ | | |
| **Reports 報告書** | | |
| Planning Statement/Justifications 規劃綱領/理據 | ☐ | ☑ |
| Environmental assessment (noise, air and/or water pollutions) 環境評估（噪音、空氣及／或水的污染） | ☐ | ☑ |
| Traffic impact assessment (on vehicles) 就車輛的交通影響評估 | ☐ | ☑ |
| Traffic impact assessment (on pedestrians) 就行人的交通影響評估 | ☐ | ☑ |
| Visual impact assessment 視覺影響評估 | ☐ | ☐ |
| Landscape impact assessment 景觀影響評估 | ☐ | ☐ |
| Tree Survey 樹木調查 | ☐ | ☐ |
| Geotechnical impact assessment 土力影響評估 | ☐ | ☐ |
| Drainage impact assessment 排水影響評估 | ☐ | ☐ |
| Sewerage impact assessment 排污影響評估 | ☐ | ☐ |
| Risk Assessment 風險評估 | ☐ | ☐ |
| Others (please specify) 其他（請註明） | ☑ | ☐ |
| Management Plan and Fire Safety Arrangement | | |
| _____ | | |

Note: May insert more than one「✓」. 註：可在多於一個方格內加上「✓」號

Note: The information in the Gist of Application above is provided by the applicant for easy reference of the general public. Under no circumstances will the Town Planning Board accept any liabilities for the use of the information nor any inaccuracies or discrepancies of the information provided. In case of doubt, reference should always be made to the submission of the applicant.

註： 上述申請摘要的資料是由申請人提供以方便市民大眾參考。對於所載資料在使用上的問題及文義上的歧異，城市規劃委員會概不負責。若有任何疑問，應查閱申請人提交的文件。




# Application Site

For Identification Purposes Only

**APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A**
**OF THE TOWN PLANNING ORDINANCE (CAP. 131)**

# REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" FOR MEMORIAL PARK HONG KONG AT 93 FO TAN VILLAGE, FO TAN, SHATIN, NEW TERRITORIES (LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND) ON APPROVED SHA TIN OUTLINE ZONING PLAN NO. S/ST/34

**SUPPORTING PLANNING STATEMENT**

**OCTOBER 2020**

**Executive Summary**

This planning application is submitted to the Town Planning Board ("TPB") under Section 12A of the Town Planning Ordinance to rezone Lot Nos. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B and 644 RP in D.D.176 and adjoining Government land ("the Application Site") from "Village Type Development" ("V") and "Green Belt" ("GB") zones to "Other Specified Uses" annotated "Columbarium (1)" ("OU(Columbarium (1))") ("the Proposed Amendment").

The Application Site is currently zoned "V" with a minor part falling within the "GB" zone on the approved Sha Tin Outline Zoning Plan No. S/ST/34 ("the OZP"). The Proposed Amendment aims to regularize the current columbarium use and is submitted to fulfill the statutory planning requirements under the Private Columbaria Ordinance ("PCO") in order to obtain a temporary suspension of liability ("TSOL") and a private columbarium licence ("PCL") for the continuous operation of the current columbarium known as Memorial Park Hong Kong ("MPHK").

The Proposed Amendment is substantiated by this Planning Statement and the salient points are as follows: -

(a) The Application Site has building and garden land status. The existing 2-storey L-shaped building was in-situ long before the first Sha Tin OZP of 1961. In about 1990, the Government resumed the land around the Application Site for the development of Fo Tan Village Expansion Area. However, the Application Site was excluded from the resumption.

(b) The disposition of the Application Site is self-contained and separated from Fo Tan Village, which is on the northern side of MPHK. MPHK has its independent path leading to the footpath along the southern bank of branch Shing Mun River (also known as Fo Tan Nullah), which is within 5 minutes' walk from the MTR Fo Tan East Line Station and 3 minutes' walk from the bus stops at Fo Tan Road. Visitors to MPHK will not intrude into the village area. Most of the visitors come to MPHK by public transport. There is an Emergency Vehicular Access built by the Government at Shan Mei Street via the side of Fo Tan Village Expansion Area for emergency vehicles to reach the Application Site.

(c) MPHK is now effectively implementing a Crowd Control Management Plan including visitor booking arrangement. Yan Hau Ancestral Hall (仁孝宗祠) ("YHAH") is another private columbarium in Fo Tan. The visitors of the MPHK and YHAH use different accesses.

(d) Before MPHK took over the Application Site in 2006, it was being used as a Buddhist worship hall known as Hing Lung Buddhist Hall (興隆佛堂) ("HLBH"). MPHK was brought into operation in 2008, when MPHK has inherited the merit of HLBH to host pray to buddha and chanting sutra sessions twice a month and distribute rice and provisions to the elderly after the sessions.

(e) The Application Site has the capacity to accommodate 3,499 number of niches (single niches: 3,050; double niches: 449), of which 1,849 niches (single niches: 1,603; double niches: 246) have been sold. The Application Site can increase the supply for the community, i.e. the remaining 1,650 niche spaces, which has a minimal impact on the surrounding area.

(f) After coming into force of the PCO on 30 June 2017, MPHK had on 2 January 2018 applied for the TSOL and PCL. This planning application will create no adverse impact in terms of drainage, sewage, environmental and traffic aspects on the surrounding area as proven in the Technical Assessments.

(g) The Proposed Amendment can help increase the supply of niches and rectify the land use zoning. This Application also allows relevant Government departments to have better control on the current columbarium operation.

(h) With reference to Legislative Council Brief prepared by the Food and Health Bureau dated 22 November 2017, the Government recognizes that in processing PCL matters, a pragmatic and sensitive approach towards the consumers, who have purchased the niches, will be adopted by the Government in order to minimize their losses and any social disruption arising from massive displacement of interred ashes. The purpose of this Application is to allow the continuous operation of MPHK within the statutory planning framework and to regularize the current columbarium use.

(i) The site profile and its characteristics have shown that the Application Site is suitable for columbarium development. This Application will not set an undesirable precedent for similar applications as each site is to be considered on its own merits which will include the current background history, scale, site compatibility with the surrounding environment, the current PCO and policy initiatives.

In view of the above and the detailed planning justifications put forward in the Supporting Planning Statement, we sincerely seek TPB's favorable consideration to agree to this Application.

## 內容摘要

申請人根據《城市規劃條例》第 12A 條向城市規劃委員會（「城規會」）遞交是次修訂規劃地帶的規劃申請。是次規劃申請擬議已劃作「鄉村式發展」和「綠化地帶」的丈量約份第 176 約的地段第 551 號 A 分段，第 551 號剩餘部分，第 640 號，第 644 號 A 分段，第 644 號 B 分段，第 644 號剩餘部分和毗鄰的政府土地（「申請地點」）改劃為「其他指定用途」註明「靈灰安置所(1)」地帶（「擬議修訂」）。

是次規劃申請地點於《沙田分區計劃大綱核准圖編號 S/ST/34》（「分區計劃大綱圖」）已劃作「鄉村式發展」用途和一小部分「綠化地帶」用途。擬議修訂旨在將現在的骨灰安置所用途規範化，並符合法定規劃條件，得以根據《私營骨灰安置所條例》去申請「暫免法律責任書」及「私營骨灰安置所牌照」，讓申請人可以繼續營運現時稱作孝思園的骨灰安置所（「孝思園」）。

規劃綱領內提供的支持理據如下：

(a) 申請地點具備屋地和花園地的土地用途。早在 1961 年沙田第一張分區計劃大綱圖公佈前，現時的兩層樓高的 L 形建築物就已存在。約在 1990 年，爲擴建火炭村，政府開始在申請地點周邊收地。不過，申請地點並不在收地範圍之內。

(b) 申請地點的位置是獨立自成一角的，並和位於孝思園北面的火炭村分開。孝思園門前有獨立小路連接沿城門支流（又稱火炭渠）南岸，距離火炭站步行 5 分鐘，距離火炭路巴士站步行 3 分鐘。孝思園的拜訪者不會闖入屋村範圍。大多數拜訪者乘坐公共交通前來孝思園。政府在山尾街經火炭村擴展區旁，已興建了緊急車輛通道，緊急車輛可以直達申請地點。。

(c) 孝思園現已實施的人群控制管理方案，包括訪客預約安排，而方案行之有效。仁孝宗祠是另一個在火炭的私營骨灰安置所，該祠和孝思園的拜訪者使用不同方向的路徑。

(d) 申請地點在 2006 年被孝思園承接之前, 一直以《興隆佛堂》名稱用作禮佛場所。2008 年，孝思園開始在申請地點營運，承繼了興隆佛堂的功德繼續舉行每月兩次的佛教祈禱和誦經會，並向與會長者派發平安米及生活物資。

(e) 申請地點可容納 3,499 個龕位(單龕位 3,050 個;雙龕位 449 個)，其中已售出 1,849 個龕位(單龕位 1,603 個;雙龕位 246 個)。該申請可為社區供應餘下的 1,650 個龕位，同時對周圍環境的影響有限。

(f) 2017 年 6 月 30 日私營骨灰安置所條例生效後，孝思園於 2018 年 1 月 2 日率先申請「暫免法律責任書」和「私營骨灰安置所牌照」。如技術評估所證實，是次申請不會對周邊地區的排水、排污、環境及交通等方面造成不利影響。

(g) 擬議修訂可協助增加龕位的供應，並規範土地用途。是次申請亦有助相關政府部門更好地規管現行的靈灰安置所的運作。

(h) 依據 2017 年 11 月 22 日食物及衛生局給立法會的參考資料摘要，政府認爲有需要以務實和體恤的方式去處理發出私人骨灰安置所牌照事宜及去面對已購置骨灰位的消費者，因而減免他們的損失及減少因遷移大量已安放骨灰而引致的社會困擾和不安。是次申請旨在讓孝思園在法定規劃框架內持續運作，以達規範化的目的。

(i) 申請地點的概況及其特點表明該申請地點適合骨灰安置所的發展。這項申請不會爲類似申請設立不良的先例，因為每個申請地點都是根據其自身的優點來考慮的，考慮的因素包括孝思園現時的歷史背景、規模、與周圍環境的相容性、現時申牌法例及政策措施等等。

基於上述情況，以及規劃綱領內的詳細規劃理據，申請人懇請城規會給予考慮批准是次規劃申請。

註: 內容如有差異，應以英文版本為準。

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# 1 Introduction

## 1.1 Background

This Application is submitted for the permission from the Town Planning Board ("TPB") to amend the zoning of the Lot Nos. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B and 644 RP in D.D.176 and adjoining Government land ("the Application Site") on the approved Sha Tin Outline Zoning Plan No. S/ST/34 ("the OZP") from "Village Type Development" ("V") and "Green Belt" ("GB") zones to "Other Specified Uses" annotated "Columbarium(1)" ("OU (Columbarium (1))") zone ("the Proposed Amendment").

The Application Site is currently occupied by a columbarium, namely Memorial Park Hong Kong ("MPHK"). The application for a temporary suspension of liability ("TSOL") in respect of the pre-cut-off columbarium (in operation with ashes interred in niches before 8am on 18 June 2014) and private columbarium licence ("PCL") under the Private Columbaria Ordinance ("PCO") was submitted by MPHK and is currently being processed by the Private Columbaria Affairs Office ("PCAO") of Food and Environmental Hygiene Department ("FEHD"). This Application aims to regularize the land use zoning in accordance with the current use, as well as to comply with the planning-related requirements under PCO.

## 1.2 Statement Structure

This Supporting Planning Statement comprises six sections. Following the introduction, descriptions on the Application Site and its surrounding context are discussed in **Section 2**. **Section 3** will cover the policy background regarding PCO and the statutory planning context. The Proposed Amendment will be detailed in **Section 4**, which is to be followed by the justifications as presented in **Section 5**. The Supporting Planning Statement will be concluded in **Section 6**. The following technical and supplementary materials are attached along with the Statement in supporting this Application: -

- Schematic Architectural Drawings (**Appendix I**);
- Photos of Hing Lung Buddhist Hall (興隆佛堂) before 2006 (**Appendix II**)
- Traffic Impact Assessment ("TIA") Report (**Appendix III**);
- Environmental Assessment ("EA") Report (**Appendix IV**);
- Management Plan (**Appendix V**);
- Fire Safety Arrangement (**Appendix VI**); and
- Photos of Landscaping in Memorial Park Hong Kong (**Appendix VII**)

## 2 Application Site and Its Surrounding

### 2.1 The Application Site

The Application Site with an area of about 522.2m$^2$ (including 65.5m$^2$ of Government land) is located at 93 Fo Tan Village, Fo Tan, New Territories. At present, the Application Site mainly falls within an area zoned "V" with a minor part falling within "GB" zone on the OZP (**Figure 1**). It is bounded by a small house to its west, a footpath to its north, Fo Tan Road flyover to its east and a slope covered by vegetations to its south.

As of today, the Application Site is occupied by a columbarium, namely, MPHK (**Figure 2 and 3**). The Application Site mainly consists of a 2-storey Main Building, 1 office block and 3 storage rooms. The Main Building is currently used for columbarium use with other ancillary uses such as toilets. A joss paper furnace with dry-type air pollution control equipment ("APCE"), statues, shrines and columbarium spaces are located outdoor. Both indoor and outdoor columbaria together, the number of niches provided at the Application Site is 3,499. Breakdown of the niche information will be provided in **Section 4** below.

There is no vehicular access to the Application Site. Pedestrian access is available via the footpath along the southern bank of branch Shing Mun River (also known as Fo Tan Nullah) linking to MTR Fo Tan East Line Station ("Fo Tan Station)" and from the bus stops at Fo Tan Road northbound and southbound via the staircases to the footpath.

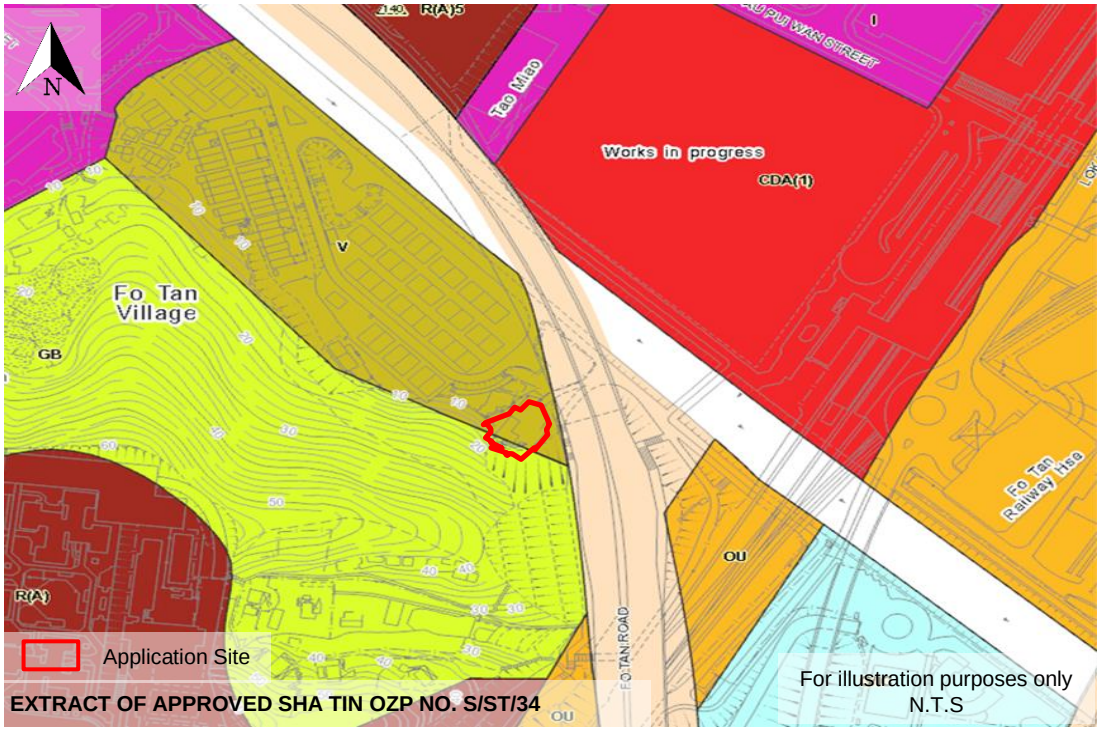



**Figure 1. Location Plan of the Application Site**

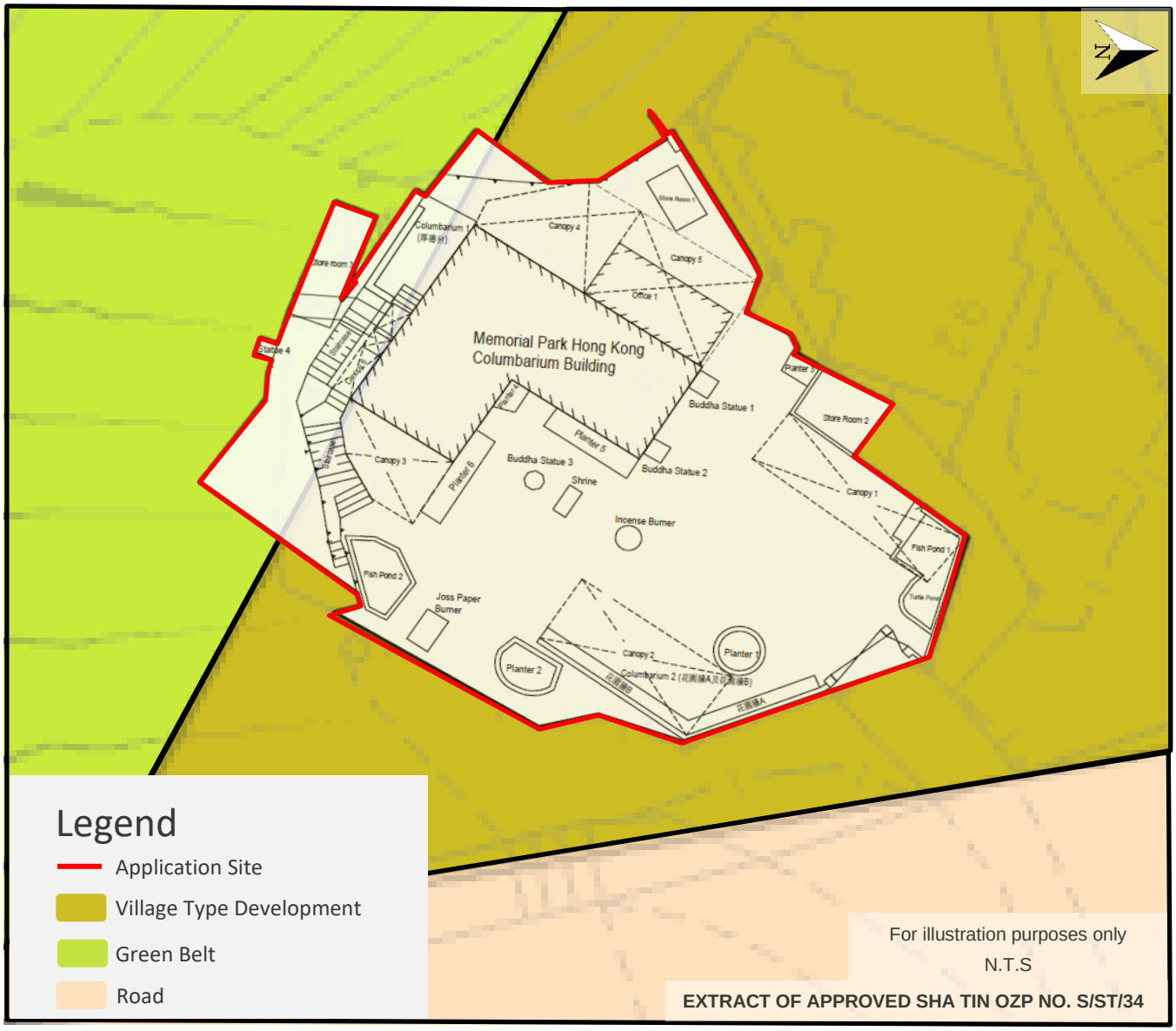
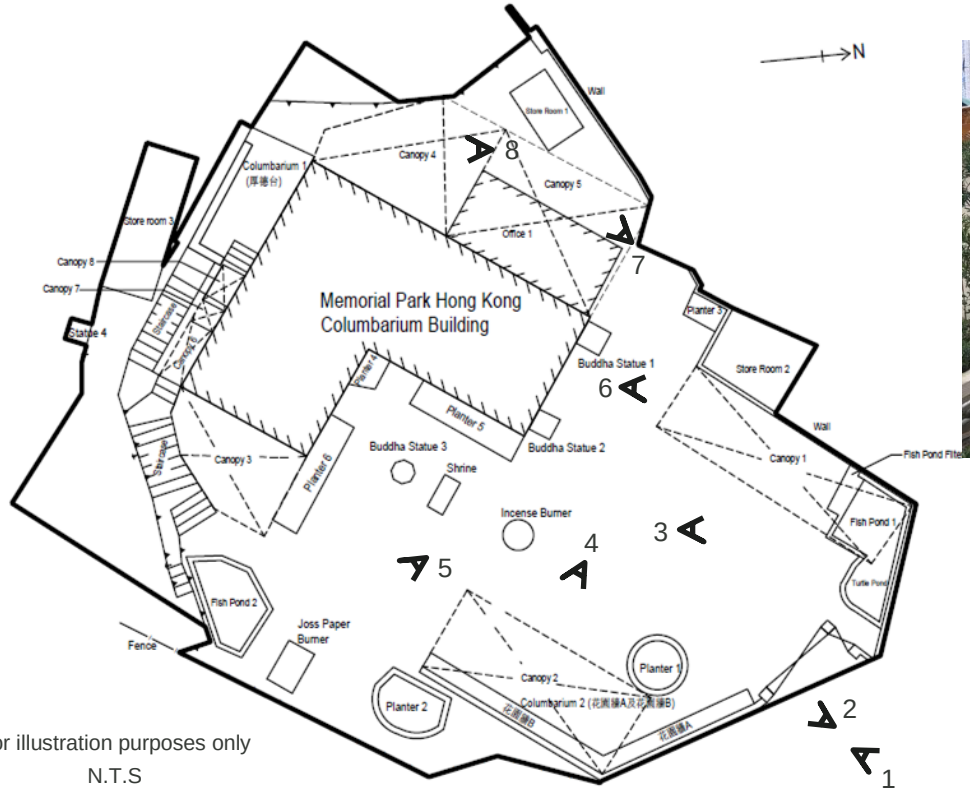



**Figure 2. Site Plan of the Application Site**

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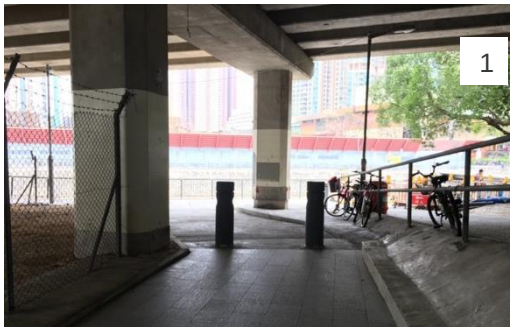

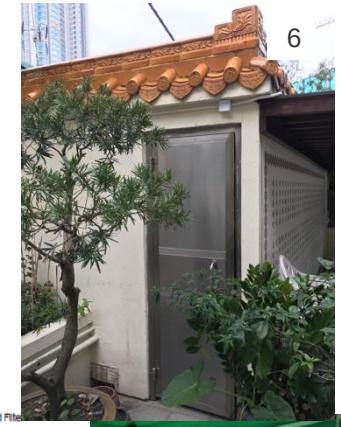


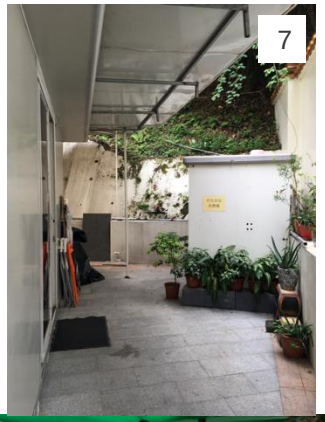


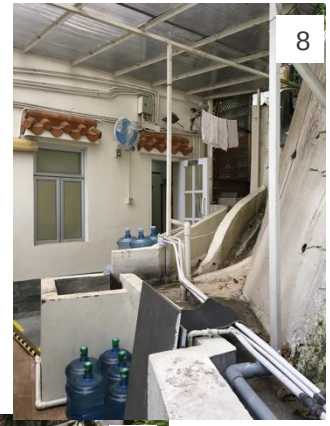


**Figure 3. Current Condition of the Application Site**

### 2.2 Land Status

The Application Site straddles over Lot Nos. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B and 644 RP in D.D.176 and adjoining Government land (**Figure 4**). Lot No. 640 held under a Pre-war New Grant No. 7632 was sold by the Government as a building lot in 1941. According to the Post-war New Grant No. 7816 of 1949, Lot No. 644, which was subsequently divided into Lot Nos. 644 S.A, 644 S.B and 644 RP, is restricted to garden use whereas Lot Nos. 551 S.A and 551 RP are recorded as dry cultivation under Block Government Lease.

Upon TPB's acceptance of the Proposed Amendment, the Applicant will apply for the grant of a Short Term Tenancy ("STT") through Lands Department to regularize the occupation of the Government land.

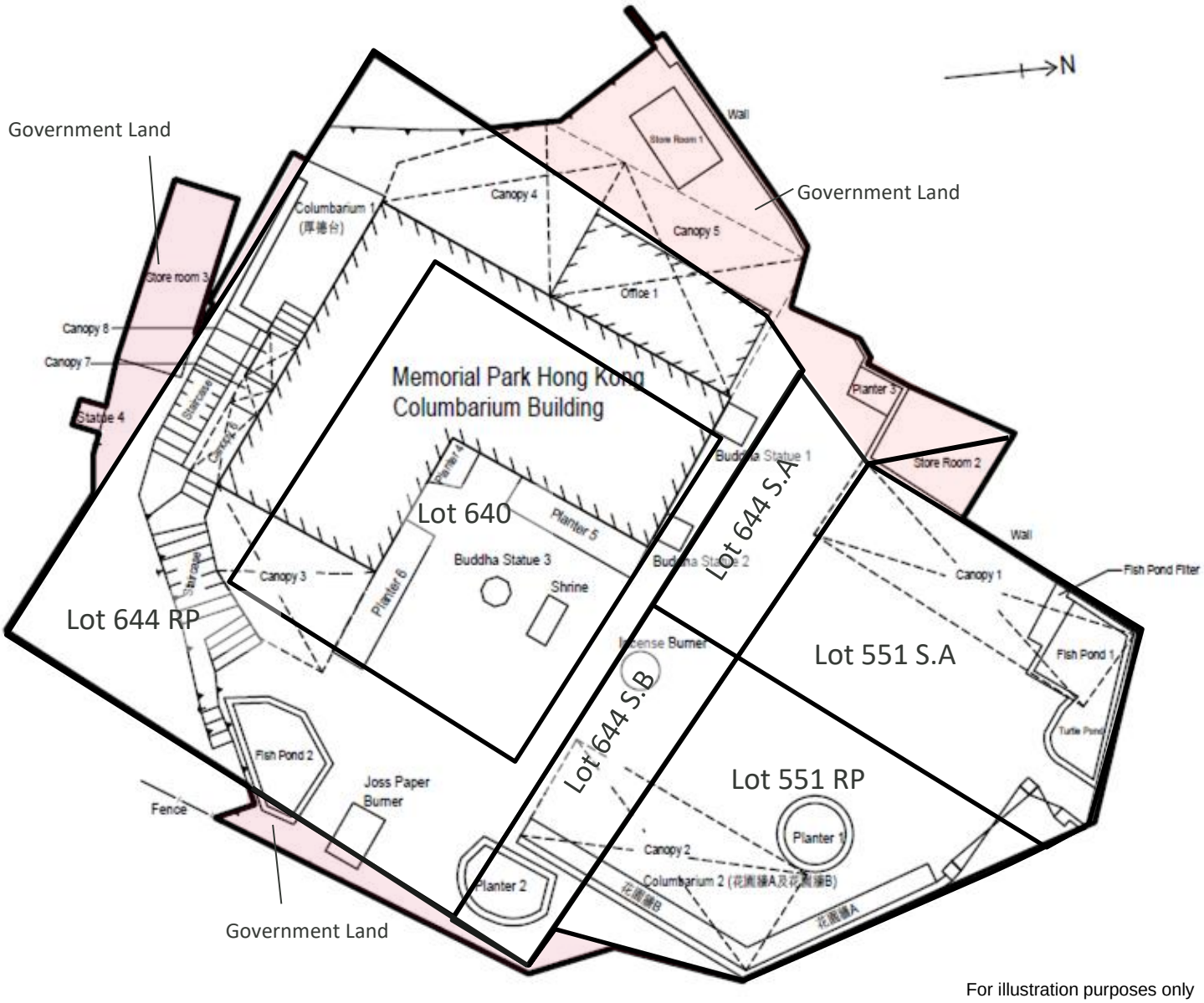


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**Figure 4. Lot Index Plan of the Application Site**

## 2.3 Surrounding Environment

The surrounding areas have the following characteristics: -

a) to the immediate northwest is a village house. To the further northwest and north is the cluster of small houses at Fo Tan Village;

b) To the northeast across Shing Mun River is a construction site for a comprehensive development under approved planning application No. A/ST/927;

c) to the immediate east are staircases connecting Fo Tan Road flyover. To the further east across Shing Mun River are Fo Tan Station and a high-rise residential development, namely The Palazzo, consisting of 10 buildings;

d) to the southeast across Fo Tan Road and Lok King Street is Jockey Club Ti-I College; and

e) to the south and west is an area largely covered by dense vegetations with scattered village houses at Shek Shui Wan Village. To the further southwest are Po Leung Kuk Siu Hon Sum Primary School and Sui Wo Court.

In general, the Application Site is located in an area occupied by village houses and vegetated land in the vicinity. It is segregated from the high-rise residential developments by Fo Tan Road and Shing Mun River.

## 2.4 The Existing 2-storey L-shaped Building on the Application Site and Fo Tan Village Expansion Area

Lot No. 640 ('the Lot") within the Application Site is a Pre-war New Grant Lot and classified as "Building". The existing 2-storey L-shaped building on the Application Site ("the Building") was depicted on the Survey Sheet No. 129-SW-C (1957 edition) (Figure 5). Therefore, the Building could have been constructed on the Lot between 1941 and 1957, i.e. before or during the New Territories Administration era (from 1949 to 1981). The early existence of the Building is further supported by an Aerial Photo No. 3101 taken on 16 December 1964 (Figure 6) confirming that the Building was not a new construction.

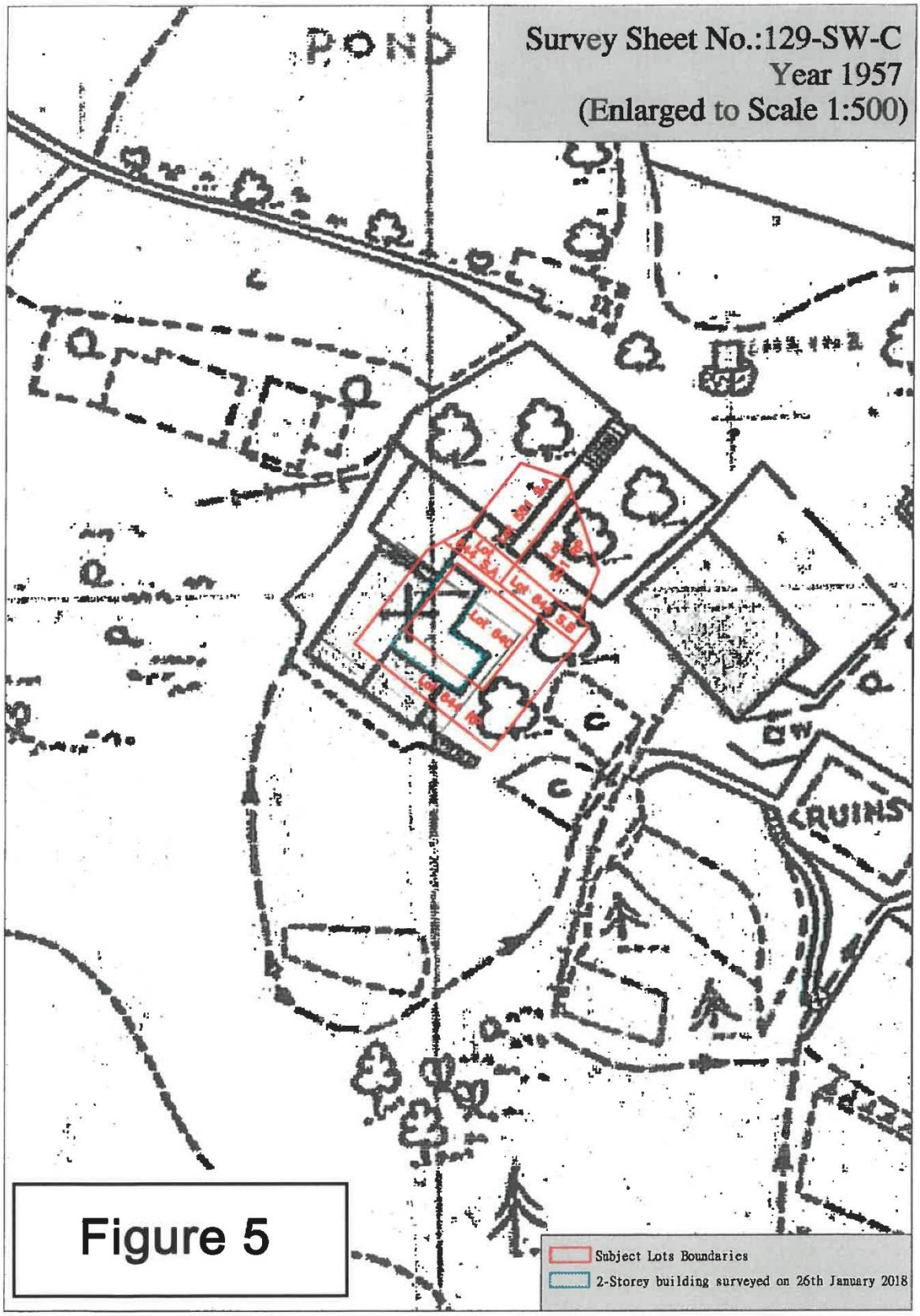



**Figure 5. Survey Sheet in 1957**

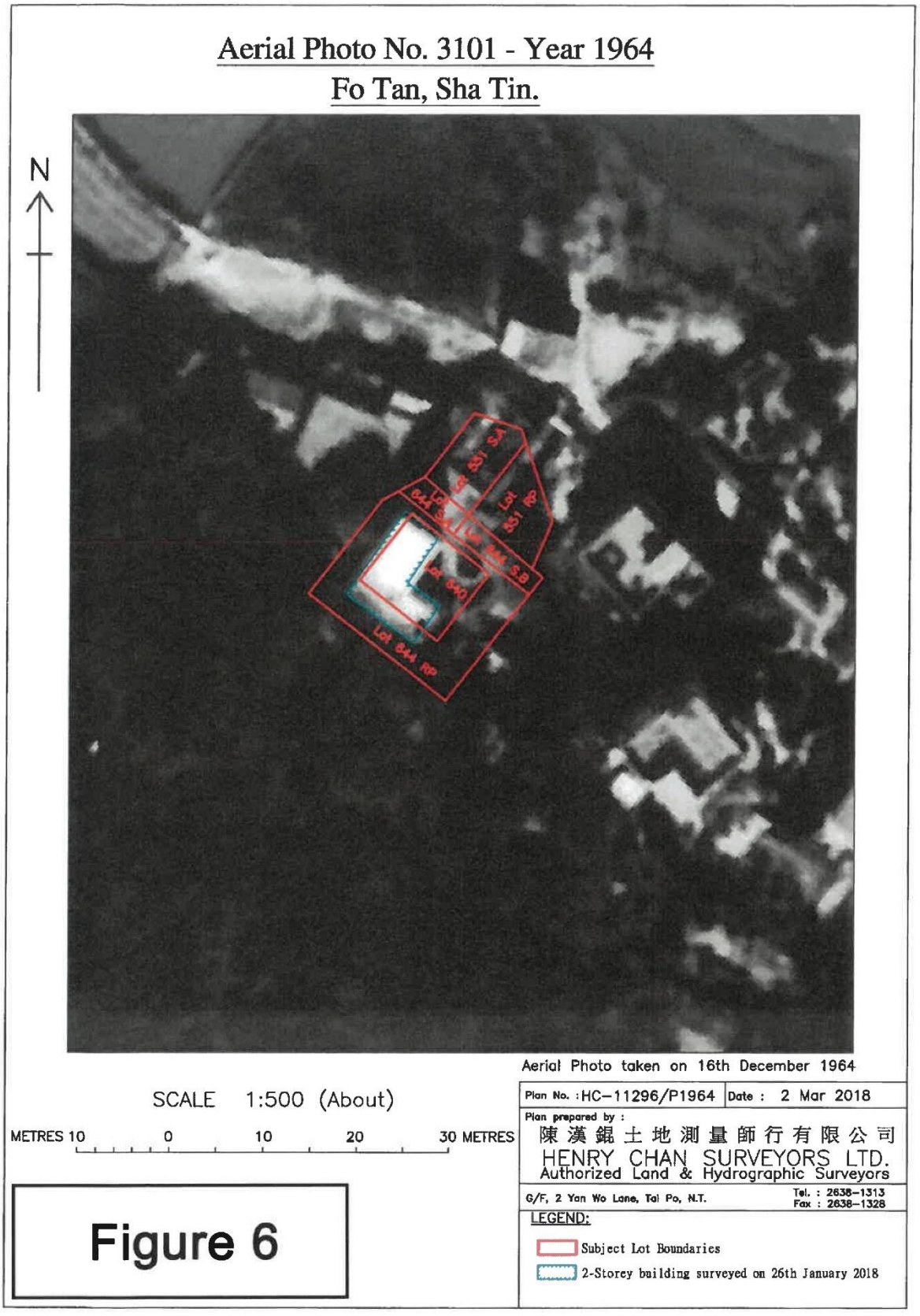



**Figure 6. Aerial Photo No.3101 take in 1964**

Further examination of the Aerial Photos has revealed that the area around the Application Site in 1972 (**Figure 7**) was primarily vacant land. In about 1990, the Government resumed the land around the Application Site for the development of Fo Tan Village Expansion Area. However, the Application site was excluded from the resumption.

The construction projects surrounding the Application Site were Fo Tan Road (1980 - **Figure 8**), Fo Tan Village Expansion Area Infrastructural Works (1995 - **Figure 9**) and Fo Tan Road Widening (2000 - **Figure 10**) and these projects were implemented by the New Territories East Development Office, Territory Development Department, Hong Kong.

The Application Site was in-situ with a much longer history than the adjoining Fo Tan Village Expansion Area, on which the small houses were built around 1995 (**Figure 9**), and also long before the drawing up the first statutory plan covering Sha Tin on 28 April 1961.

The aerial photo of 2006 (**Figure 11**) shows the area surrounding the Application Site and the widened Fo Tan Road on its eastern side.

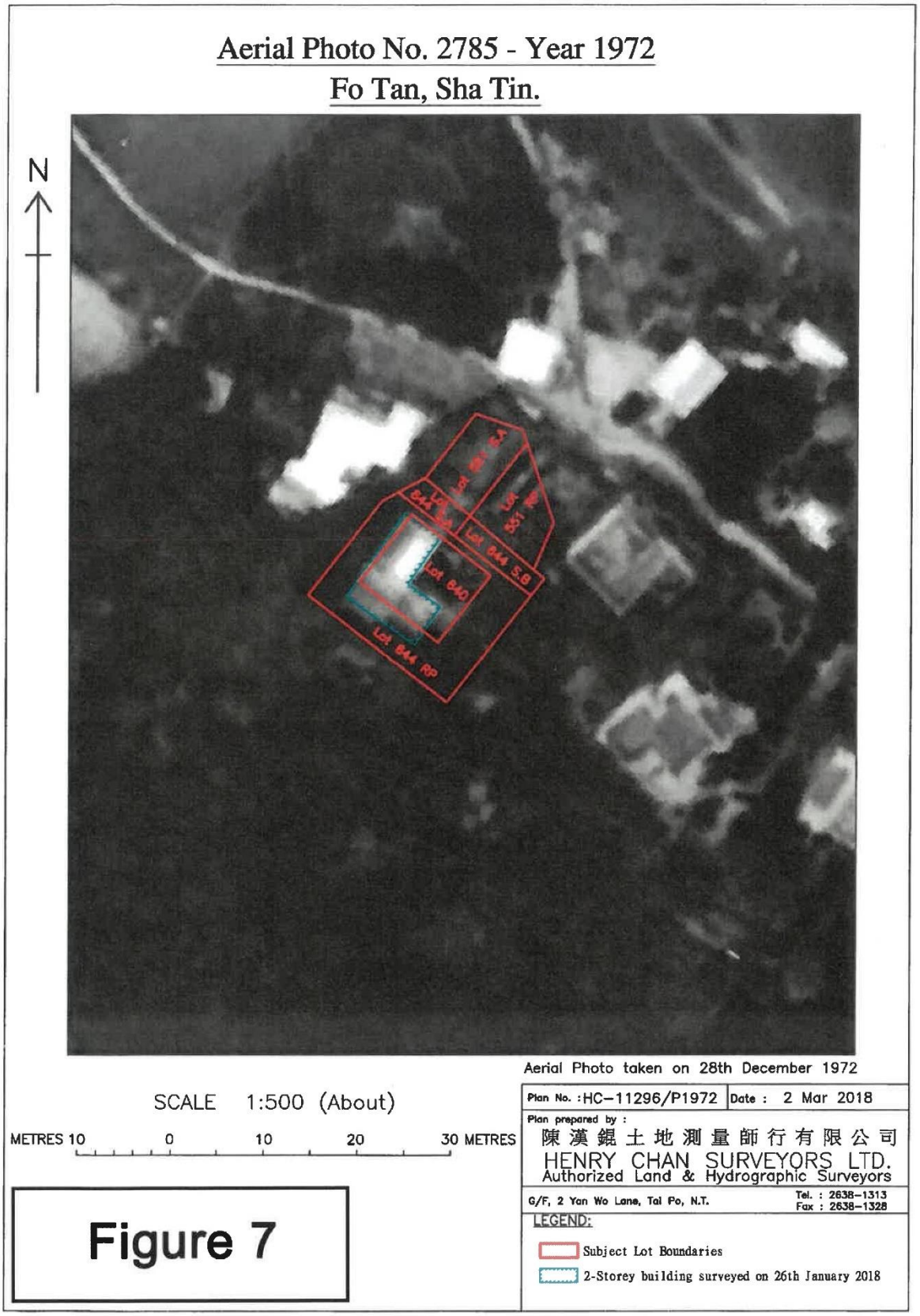



**Figure 7. Aerial Photo No.2785 taken in 1972**

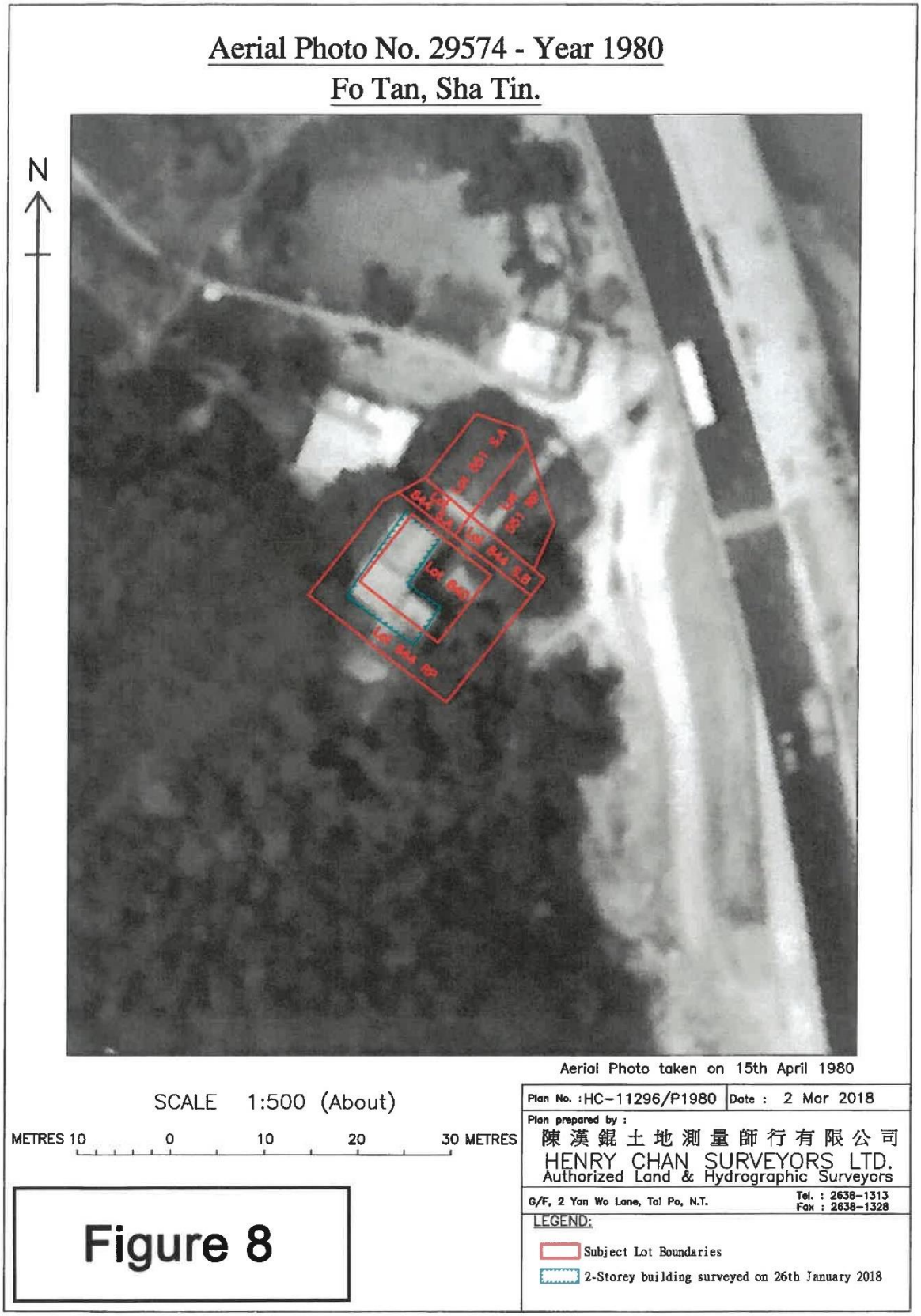



**Figure 8. Aerial Photo No.29574 taken in 1980**

**Figure 9. Aerial Photo No.CN10879 taken in 1995**

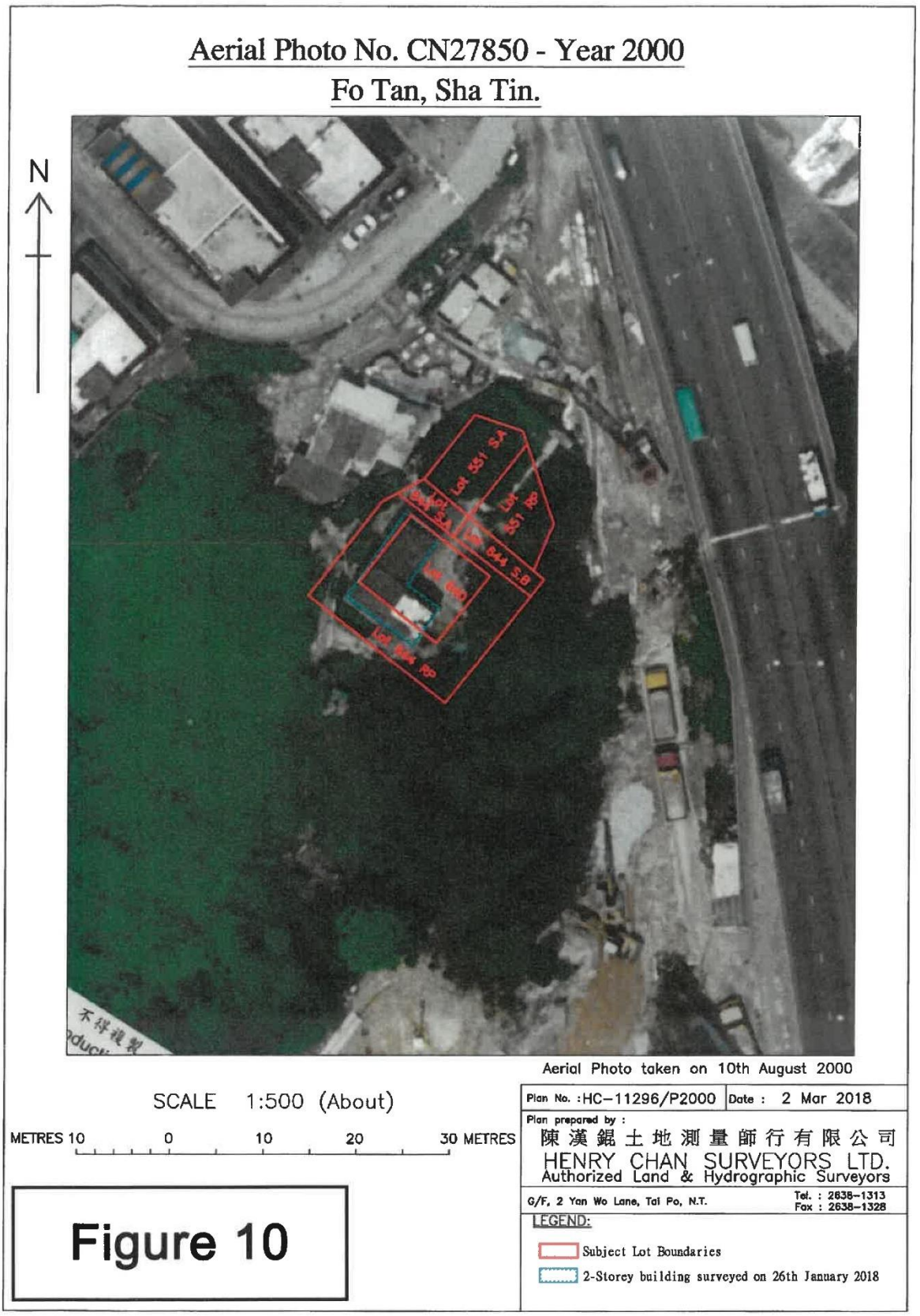



**Figure 10. Aerial Photo No.CN27850 taken in 2000**

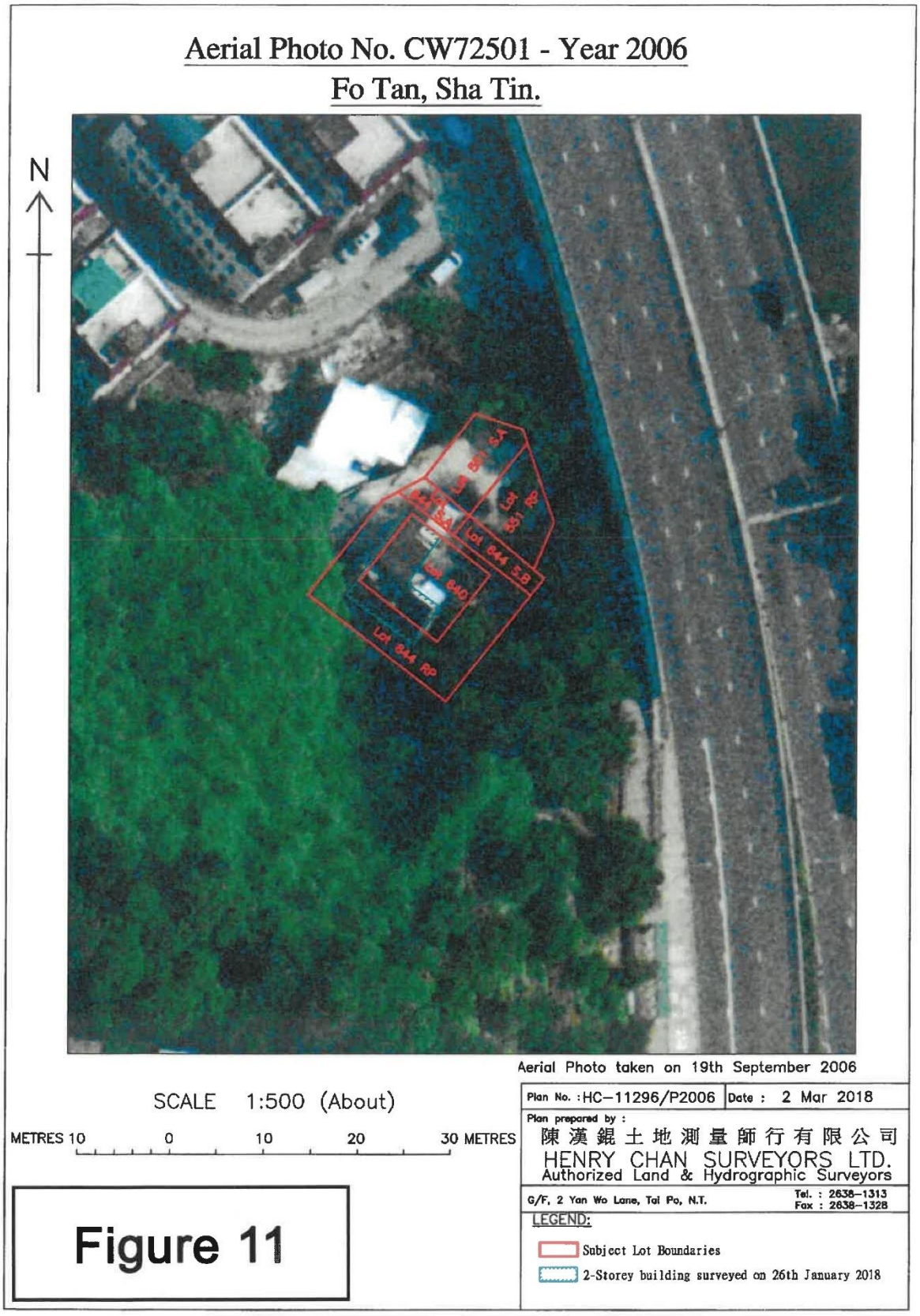



**Figure 11. Aerial Photo No.CW72501 taken in 2006**

## 2.5 Accessibility

The Application Site is not served by any vehicular access. It can be accessible through an existing footpath ("the Footpath"), which is 5m in width running parallel to Shing Mun River southern bank, connecting Shan Mei Street in the north and Fo Tan Station in the east via a footbridge. The distance from Fo Tan Station to the Footpath is about 150m. Visitors alighting at bus stops of Fo Tan Road northbound and southbound can come down to MPHK via the adjacent staircases and the Footpath.

The Application Site is well-served by various bus routes (e.g. 73A, 80M, 81K, 85, 88K, 88X, 280X and 798) and minibus routes (e.g. 481, 60K, 60P, 62K, 65K, 69K, 801, 808A, 811, 811A, 811P and 811S) mainly travelling along Lok King Street, Au Pui Wan Street and Shan Mei Street (**Figure 2.1 of Appendix III**).

There is an Emergency Vehicular Access built by the Government at Shan Mei Street via the side of Fo Tan Village Expansion Area for emergency vehicles to reach MPHK.

# 3 Policy Background and Planning Context

## 3.1 Private Columbaria under the Private Columbaria Ordinance

In order to protect consumer interests and ensure the sustainability of private columbaria, the Government regularizes columbaria by introducing PCO, which has come into effect since 30 June 2017. Under PCO, all private columbaria must be covered by a specified instrument namely, licence, exemption or TSOL to permit its operation. The prerequisites and restrictions on operation of each instrument vary accordingly. Only private columbaria granted with licence are allowed to sell or newly let out new niches. According to the PCO, a licence shall only be granted if the applicant manages to comply with all the requirements stipulated in the PCO and specified by Private Columbaria Licensing Board ("PCLB"), including those relating to land, planning, buildings, the management plan, the right to use the premises, fire safety, electrical and mechanical safety, etc.

FEHD has set up PCAO to provide executive support to the PCLB and handle matters relating to the implementation of PCO. Applications for specified instruments by pre-cut-off columbaria must be submitted within a three-month period from 30 December 2017 to 29 March 2018. Any person who operates, keeps, manages or in any way has control of a columbarium illegally or disposes of ashes improperly commits an offence and is liable to a fine and imprisonment.

## 3.2 Policy Initiatives of Pre-Cut-Off Columbaria

In November 2017, The Chief Executive in Council has approved two policy initiatives to address the land premium and TIA issues of pre-cut-off columbaria seeking a licence. The Government recognizes the need to resolve the historic problems of private columbaria which have accumulated over the years. A pragmatic and sensitive approach towards the consumers who have purchased these niches will be adopted by the Government in order to minimize their losses and any social disruption arising from massive displacement of interred ashes. The Government mainly takes into account the overall interests of the community so as to avoid affecting the descendants, in particular their wishes not to disturb the interred ashes of the deceased as far as practicable.

On land premium, in addition to exemption, pre-cut-off columbaria eligible for licence may also allow to apply for waiving payment of the regularization exercise. However, operators must pay a full market value land premium for all post-cut-off sold or newly let out niches. The Director of Lands should, upon an application and subject to policy support from the Secretary for Food and Health, consider administratively regularising, in respect of the pre-cut-off sold niches , breaches of lease conditions and / or unlawful occupation of unleased land by way of

a waiver and / or a STT, and consider waving the relevant waiver fees, STT rentals and administrative fees before and during the licence period[1].

In relation to TIA, taking into account the overall interests of the community, the Government has decided to use an empirical evidence approach as the basis for assessing traffic impacts when processing the licence application from a pre-cut-off columbarium whose operation only involves the number of niches sold before 30 June 2017. If a pre-cut-off columbarium would like to sell or newly let out niches after 30 June 2017, the TIA mechanism will be applicable to it.

### 3.3 Shortage in Columbarium Facilities

With reference to The Mortality Trend in Hong Kong, 1986 to 2018[2] issued by Census and Statistics Department, although the standardized death rate in Hong Kong has been diminishing, the number of deaths in Hong Kong increased from 32,847 in 1998 to 47,400 in 2018, which can be attributed to the population growth and aging population. According to the Hong Kong Population Projections 2017 - 2066[3], an uptrend in the number of deaths will persist and the demand for niches will be heated in the coming years. The estimated death toll will increase to 73,900 in 2038[4].

In handling with the increasing number of deceased, the Government adopted a three-pronged strategy including enhancing public columbaria, regularizing private columbaria and promoting green burial. With regards to the supply of niches, the Government identified 24 potential sites in 18 districts for columbarium developments in 2011. However, the supply of public columbarium facilities remains limited due to the complicated process for technical studies and addressing the concerns of neighboring residents and Districts Council members. Therefore, most of the potential public columbaria are yet to be implemented. As at 2018, the waiting time of a niche in public columbaria is up to 99 months[5], subject to the location of the columbaria. It is apparent that the provision of niches by public columbaria alone can barely meet with the present demand.

By 2016, the private columbaria altogether provide a total of about 385,000 niches, accounting for 63% of total supply of niche spaces. In other words, the provision of niche space is highly

[1] Food and Health Bureau (2017). LEGISLATIVE COUNCIL BRIEF - Implementation of Private Columbarium Ordinance - Issues on Land Premium and traffic Impact Assessment: File Ref.: FH CR 2/3751/07. Hong Kong
[2] Census and Statistics Department of HKSAR (2019). The Mortality Trend in Hong Kong, 1986 to 2018. Hong Kong. Retrieved from https://www.statistics.gov.hk/pub/B71911FB2019XXXXB0100.pdf
[3] Census and Statistics Department of HKSAR (2017). Hong Kong Population Projection 2017 – 2066. Hong Kong. Retrieved from https://www.statistics.gov.hk/pub/B1120015072017XXXXB0100.pdf
[4] Meeting Paper of Finance Committee of Legislative Council on 17 July 2020 FCR(2020-21)70-PWSC(2019-20)14 RECOMMENDATION OF PUBLIC WORKS SUBCOMMITTEE MADE ON 13 NOVEMBER 2019 (a) Provision of columbarium at Shek Mun, Sha Tin and (b) construction of subway in support columbarium at Shek Mun.
[5] Legislative Council Secretariat (2018). Statistical Highlights ISSH31/17-18. Hong Kong. Retrieved from https://www.legco.gov.hk/research-publications/english/1718issh31-columbarium-facilities-in-hong-kong-20180626-e.pdf

dependent on the private sector. Whilst the number of deaths is increasing steadily, the provision of private niches remains static and results in an acute shortage. The development of private columbaria is mostly lagging owing to the unexpectedly lengthy process of licensing matters, i.e. existing columbaria are not allowed to sell or let out new niches before receipt of the licence from PCLB. For the niches sold but not interred before the cut-off date, interment is not allowed until the subject columbarium is granted with the exemption. Only until August 2019, the PCLB introduced "Approval-in-Principle for TSOL Application" which allows ashes interment in eligible columbaria[6].

As of today, there are only a few columbaria being licensed while some are officially refused by PCLB since the applicants fail to submit the required documents and / or comply with the building-related requirements. The rest of the applications are still under processing. In this connection, the shortage of niches is unresolved.

### 3.4 Application for Private Columbaria under the Private Columbaria Ordinance

As one of the existing and pre-cut-off private columbaria, MPHK had submitted the licence and TSOL applications to PCLB on 2 January 2018. Working closely with relevant Government departments, MPHK has already complied with different requirements to the satisfactions of the Fire Services Department, Hong Kong Police Force and Environmental Protection Department.

In order to facilitate MPHK's application for the licence, this Application is submitted to fulfill the planning-related requirements since MPHK falls within an area mostly zoned "V" in which 'Columbarium' is neither a Column 1 nor Column 2 use.

### 3.5 Statutory Planning Context

The Application Site falls within an area largely zoned "V" with a minor encroachment onto the adjacent "GB" zone on the OZP. The planning intention of "V" zone is for development of Small Houses by indigenous villagers whereas the planning intention of "GB" is for defining the limits of urban and sub-urban development areas by natural features and to contain urban

[6] Eligible columbaria refer to pre-cut-off columbaria which have submitted application for TSOL and exemption/licence at the same time. Should those columbaria comply with all application requirements for TSOL and the niches occupied were sold before the cut-off time, PCLB may consider giving an approval-in-principle for TSOL applications. Columbaria granted with approval-in-principle for TSOL are in grace period and allows ashes interment.

sprawl as well as to provide passive recreational outlets. There is a general presumption against development within “GB”.

According to the Notes of the OZP, ‘Columbarium (within a Religious Institution or extension of existing Columbarium only)’ is under Column 2 for “GB” while there is no provision of ‘Columbarium’ for “V” zone. Therefore, an application for amendment of plan is required.

## 4 The Proposed Amendment of OZP & Current Condition at the Application Site

### 4.1 The Proposed Amendment of OZP

To rationalize the current 'Columbarium' use within the Application Site, an amendment to the current zoning will be required. Considering the planning intentions of various zonings in the OZP and the unique nature of the current use at the Application Site, an "OU (Columbarium (1))" zoning appears to be the most appropriate. Notes of the proposed "OU (Columbarium (1))" zone is detailed in **Figure 12**.

OTHER SPECIFIED USES

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

For "Columbarium (1)" Only

Columbarium

Planning Intention

The zone is primarily for land intended for columbaria use.

Remarks

(a) On land designated "Other Specified Uses" annotated "Columbarium (1)",

(i) 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 of 292.674m$^2$**,** a maximum site coverage of 39.073% and a maximum building height of 6.19m; and

(ii) the total numbers of niches for columbarium use shall not exceed 3,499 (single niches: 3,050; double niches: 449).

(b) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the gross floor area and/or site coverage and/or building height and/or total number of niches restrictions stated in paragraphs (a) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

**Figure 12**. **Notes of the proposed "OU(Columbarium (1))" zone**

### 4.2 Current Condition at the Application Site

A set of architectural drawings indicating the current condition is enclosed in **Appendix I**. The major development parameters are detailed in **Table 1** and the niches information is detailed in **Table 2(a), Table 2(b)** and **Table 2(c)**.

| Development Parameters | Proposed Development Scheme | |
|---|---|---|
| **Application Site Area** | 520.4m$^2$ (including 63.7m$^2$ of Government land) | |
| **Total Gross Floor Area (GFA)** | 292.674 m$^2$ | |
| **Plot Ratio** | 0.562 | |
| **Site Coverage** | 39.073% | |
| **No. of Blocks** | 5 | |
| **Maximum Building Height** | 6.19m | 2 storeys |
| **Total Number of Niches** | 3,499 (single niches: 3,050; double niches: 449) | |

**Table 1:** Development parameters of MPHK

| Niches Sold Before 30 June 2017 | | | | |
|---|---|---|---|---|
| **Location** | **Main Building** | **Outdoor Hau Tak Toi** | **Outdoor Wall A & B** | |
| **Single Niches** | 1,384 | 219 | 0 | |
| **Double Niches** | 246 | 0 | 0 | **Grand Total** |
| **Total** | 1,630 | 219 | 0 | 1,849 |

**Table 2(a):** Sold Niches

| Niches Not Yet Sold | | | | |
|---|---|---|---|---|
| **Location** | **Main Building** | **Outdoor Hau Tak Toi** | **Outdoor Wall A & B** | |
| **Single Niches** | 1,090 | 1 | 356 | |
| **Double Niches** | 158 | 0 | 45 | **Grand Total** |
| **Total** | 1,248 | 1 | 401 | 1,650 |

**Table 2(b):** Unsold Niches

| Summary | | | | |
|---|---|---|---|---|
| **Location** | **Main Building** | **Outdoor Hau Tak Toi** | **Outdoor Wall A & B** | **Grand Total** |
| **Total Niches** | 2,878 | 220 | 401 | 3,499 |

**Table 2(c):** Grand Total of Niches

### 4.3 Operations and Crowd Control Management

MPHK normally opens Mondays to Sundays from 9:00 am to 6:00 pm. For Lunar Chinese New Year season, the opening hours are shortened from 10:00 am to 2:00 pm. In addition to the columbarium use, MPHK is also a venue for various kinds of complementary and voluntary activities including pray to buddha and chanting sutra (誦經) sessions twice a month, health care seminars for the elderly and distribution of rice and provision to the elderly after the sessions.

MPHK is now effectively implementing a Crowd Control Management Plan including visitor booking arrangement.

In order to avoid overcrowding at MPHK, visitors coming during festive period, i.e. Ching Ming and Chung Yeung Festivals, are subject to advanced booking. Visitors can make their appointments online via the official website (https://memorialpark.hk) or mobile phone App and they are only allowed to enter MPHK within the agreed timeslots. Since the Application Site is highly accessible by public transportations, visitors are encouraged to visit MPHK by buses and MTR East Rail Line. No on-site parking facilities are provided. Based on the observations from previous festive periods, most visitors arrive at the Application Site on foot from the abutting footpath and hence more security guards are deployed to ensure smooth pedestrian traffic flow.

Regarding the crowd control within the Application Site, a one-way pedestrian circulation is introduced to sperate the arriving and departing grave sweepers (**Figure 13**). The maximum number of visitors within the Main Building is limited to 160 at all times. The Applicant also works closely with Hong Kong Police Force ("HKPF") by reporting the number of visitors every hour. Registered first-aiders are particularly stationed at the Application Site in case of emergency.

The above crowd control measures have been implemented in recent years and no accident nor issue has arisen so far.

**Figure 13. Crowd Control Management Plan**

## 5 Justifications

### 5.1 Meeting with the Demand for Niches

Based on the Policy Address 2011, the Government recognized that columbaria are essential facilities for the community and should be constructed across the territory. More than 20 potential sites were subsequently identified to meet with the present and future demand. However, the development of new columbaria is fairly slow and incapable to meet with the outstanding demand for niches. In 2019, the Government can only provide 85,000 number of new niches, which are still far from the planned number. With the complicated consultation process with the neighboring residents and Districts Council members, existing private columbaria seem a better choice to meet with the urgent demand for niches. Instead of searching new sites that will likely be unwelcomed by its surrounding neighborhoods, in addition to 1,849 of niches sold, MPHK can provide another 1,650 niches to moderately relieve the short-term pressure.

### 5.2 Compatibility with Surrounding Context

The Main Building has existed at the Application Site for decades. The abutting Fo Tan Road and Shing Mun River help separate the Application Site from the high-rise and high-density residential and industrial developments. With 39.073% of site coverage, 6.19m of building height and 0.562 of plot ratio, the Proposed Amendment will remain as a low-rise development, which will not induce any change on the local village setting. The large vegetated area to its immediate south and west provides a tranquil environment, which is suitable for columbarium use. Meanwhile, the Applicant has no intention to intensify the scale of MPHK or further encroach onto the adjacent “GB” zone. Therefore, the Proposed Amendment is generally compatible with the surrounding context which is predominately rural in character.

### 5.3 In Line with the Government Policy

Although the existing columbarium use at the Application Site does not conform with the statutory planning restrictions. The Applicant has demonstrated a strong effort to regularize the columbarium by applying to PACO for the issue of licences. Despite all the technical difficulties encountered, the Applicant has managed to comply with various requirements including environmental and management issues to the satisfactions of relevant Government Departments. This Application is submitted to fulfill part of the requirements in respect of land use planning under the PCO and hence echoes with the Government policy which suggests regularizing private columbaria. The Government should apply their pragmatic and sensitive approach in considering this regularization process of MPHK.

### 5.4 Rectifying Land Use Zoning

MPHK is well known in the local area and has been recognized by the local community. With its long and strong connection with its with its patrons, visitors and neighborhood, the Applicant intends to continue its operation without disrupting the current stakeholders. Should the Application Site be rezoned to "OU (Columbarium (1))" as proposed, relevant Government departments can still retain control of the Application Site in accordance with the current site condition.

### 5.5 Good Accessibility for Columbarium Development

The Application Site is highly accessible by public transportations including a variety of buses and mini buses. It can also be accessed from Fo Tan Station with approximately 5 minutes of walk via a footbridge. The adjacent staircases are connected to bus stops at Fo Tan Road northbound and southbound. The Footpath (5m width) allows pedestrians to access the Application Site from Fo Tan Station and Shan Mei Street. Although the Application Site does not provide vehicular access, there are two car parks near the Application Site, namely Shatin Galleria and San Mei Street Car Park, providing about 297 hourly parking spaces in total. Both car parks are located within 500m walking distance from the Application Site and have sufficient parking surplus to serve surrounding developments. In short, the large capacity of public transports and the extensive footpath will be more than adequate to serve the columbarium development in the area.

### 5.6 Avoid the Scattering of Village Houses over the "Village Environ"

The Application Site is located at the southern edge of the village environ of Fo Tan Village and is relatively far away and segregated from the main village core by footpaths, shops and services structures. The central part of Fo Tan Village is considered more suitable for small house development since it can avoid the scattering of village houses over the "Village Environ" area. Moreover, the Application Site has its own separate access point and will not cause any direct conflict with the existing and future village developments.

The Application Site has a total area of about 520.4m$^2$. According to the OZP, the total area of the subject "V" zone is about 18,594m$^2$. In comparing the area of Application Site with the area of the subject "V" zone, the loss of "V" land in this application is only about 2.8%. Hence, the Proposed Amendment would not result in a significant loss of "V" land.

**5.7 No Impact on the Availability of land for New Territories Exempted House ("**NTEH**")**

The Lot Nos. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B and 644 RP in D.D.176 are all owned by the Applicant. Although the Applicant has been the owner of the subject lots since 2006, he has no intention to develop the land into NTEH. In fact, the Application Site was being used as a Buddhist worship hall known as "Hing Lung Buddhist Hall" (興隆佛堂) ("HLBH") all along before 2006 (Photos at **Appendix II** refer). Given the circumstances, the Application Site has been using for community purpose in early and recent years.

**5.8 MPHK and Its Stakeholders Including Patrons, Disciples and Neighboring People - Community Gain**

MPHK is genuinely committed to take up its social responsibility. MPHK keeps its patrons and visitors regularly informed of the progress of its application for PCL via periodicals, official website and Facebook. MPHK has devised mobile phone App for its patrons and visitors to book timeslots before coming to MPHK.

MPHK is not solely used as a columbarium but also a worship place for religious commemoration of its patrons' ancestors. MPHK also functions as a gathering place for its stakeholders including patrons, visitors, disciples and neighboring people living in nearby Fo Tan Village and Shek Shui Wan Village as well as Public Rental Housing Estates and Private Estates in Sha Tin District.

MPHK has inherited the merit of HLBH since 2008 and is being used for different kinds of complementary and voluntary activities, including pray to Buddha and chanting sutra (誦經) sessions twice a month, health care seminars for the elderly, and distribution of rice and provisions to the elderly after sessions. During Chinese festivals, traditional food such as new year cakes, rice dumplings, mooncakes, noodles, etc., are particularly distributed to the elderly. Distribution of masks and alcohol hand rub to the elderly and people living in Fo Tan Village was arranged during the Covid-19 period from March to September 2020. Regular donations have been made to different local universities to support academic research and events.

It is now nearly 12 years since the bringing into operation of MPHK in 2008. Over all these years, MPHK has maintained a harmonious relationship with the neighborhood. The cohesion that MPHK brings to the local community and the wider society shall not be undermined owing to the mismatch of land use zoning.

## 5.9 No Adverse Technical Impact

### 5.9.1 Traffic Impact

A TIA Report (**Appendix III**) was prepared in accordance with the policy initiative announced by the Government in November 2017 where the niches still available for sale and vacant pre-enactment sold niches were taken into account. The additional vehicular trips and visitors generated by the 1,853 ashes capacity (**Appendix III**) available for sale will be 31 and 393 during peak periods respectively. The additional vehicular trips and visitor generated by the 1,260 unoccupied but sold ash capacity (**Appendix III**) will be 21 and 267 during peak periods respectively. The car parking spaces near the Application Site has sufficient capacity to accommodate the additional parking demand associated with the unoccupied niches. The performance of the local key junctions and footpath will be satisfactory with adequate reserved capacities in the design year of 2028. The TIA Report concludes that together with the traffic and crowd management measures, there will be no adverse traffic impact on the road networks and pedestrian flow arising from the Proposed Amendment.

### 5.9.2 Environmental Impact

The Environmental Assessment (**Appendix IV**) concludes that no insurmountable environmental problems with respect to air quality, noise and sewerage are anticipated.

For air quality impact, there are three air sensitive receivers, i.e. No. 92 Fo Tan Village, No. 1 Shek Shui Wan Village and Fo Tan Railway House. In order to reduce air pollution to the surrounding area, an integrated joss paper furnace, which can control the emission of smoke is currently in use. Large pieces of fly ashes can be filtered and collected at the bottom of tray. Eco-friendly offerings such as electronic incense and flowers are encouraged. For noise impact, although the integrated joss paper furnace cum dry-type air pollution control equipment is the major noise source, the predicted noise level is still within the required level and hence no noise mitigation measures would be required. For sewerage impact, in view of the short stay of visitors at the Application Site, generally for about 30 minutes to an hour, high sewage generation is not anticipated. The existing septic tank / soak away facility has sufficient capacity to cope with the peak flows.

### 5.9.3 Landscape Impact

In order to preserve the existing environment and land use character, the existing trees and planters will be maintained and managed by the Applicant to create a tranquil

environment for patrons, visitors and residents nearby (Photos of Landscaping in MPHK at **Appendix VII** refer). The Proposed Amendment does not involve any tree felling since the existing trees are regularly inspected by MPHK's landscape contractor to check their health conditions and any trimming required to be undertaken.

In addition, the Applicant also assists in managing the trees and plants around the periphery of MPHK to further improve the landscape amenity around the Application Site and create a pleasant access arrangement for the patrons and visitors.

## 6 Conclusion

This subject Application is submitted to seek TPB's permission for the Proposed Amendment. Favorable consideration by TPB is sought based on the following grounds: -

a) The Proposed Amendment is compatible with the surrounding context, which is predominately rural in character. It can also function as a transitional zoning between the adjacent "V" and "GB" zones;

b) Echoing with the columbarium policy, the Proposed Amendment aims to regularize and upgrade the existing columbarium in compliant with statutory requirements. The Government should apply their pragmatic and sensitive approach in considering this regularization process of MPHK;

c) The Proposed Amendment will be able to provide 3,499 niches on the Application Site (single niches: 3,050; double niches: 449) to meet with the urgent demand for columbarium facilities; and there remains 1,447 single niches and 203 double niches (total 1,650) to be sold;

d) The size of the Application Site is insignificant, and it will not affect the supply of land for "V" zone and small house development; and

e) The Proposed Amendment would not induce adverse traffic, environmental and landscape impacts to the surroundings.

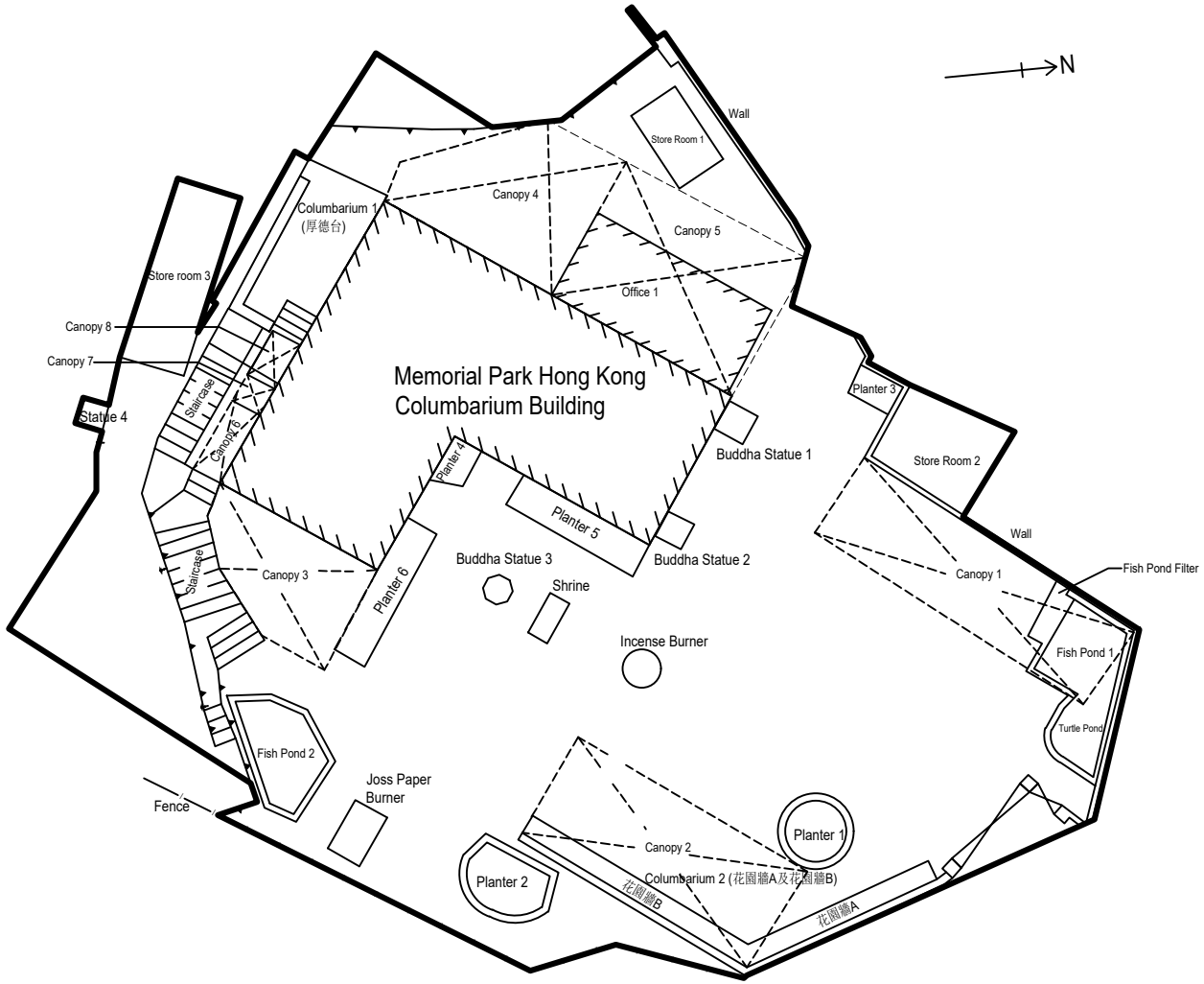
In view of the above, we sincerely request TPB to give favorable consideration to agree to this Application.

## 7 Appendices

| | |
|---|---|
| **Appendix I** | Schematic Architectural Drawings |
| **Appendix II** | Photos of Hing Lung Buddhist Hall (興隆佛堂) before 2006 |
| **Appendix III** | TIA Report |
| **Appendix IV** | EA Report |
| **Appendix V** | Management Plan |
| **Appendix VI** | Fire Safety Arrangement |
| **Appendix VII** | Photos of Landscaping in MPHK |

# Appendix I

# Schematic Architectural Drawings




1:200

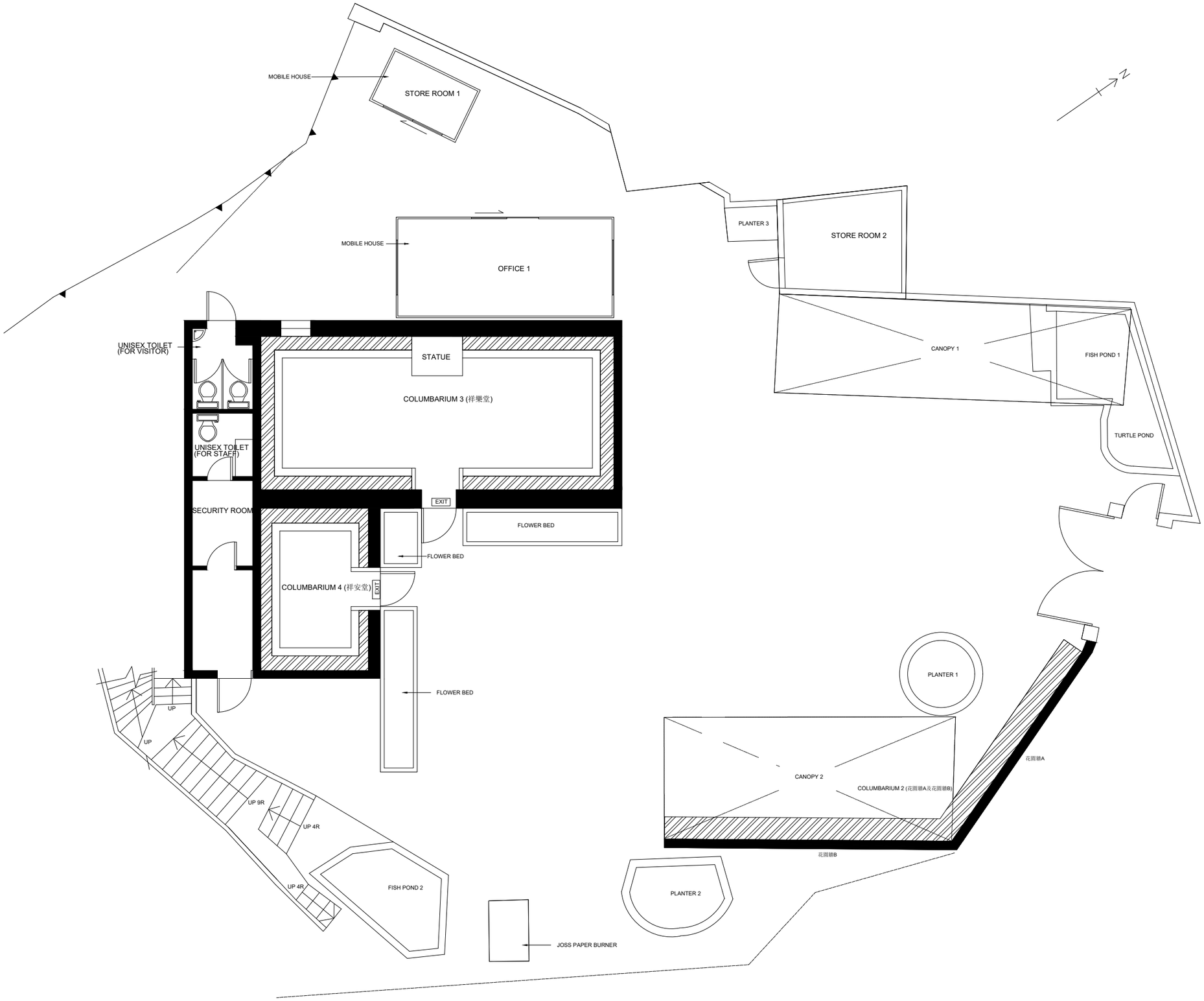
Buildings used as columbarium within the site

| | No. of building | No. of storey | Building Floor Area |
|---|---|---|---|
| Columbarium Building A | 1 | 2 | 147.0 sq.m |
| *In addition, 2 outdoor niches, which namely Columbarium 1 (厚德台)、Columbarium 2 (花園牆A及花園牆B), are in the site. | | | |

Others buildings / facilities which are necessary for, or ancillary to the operation of the columbarium

| | No. of building(s) / No. | No. of storey | Building Floor Area / Length x Width |
|---|---|---|---|
| Toilet* | 2 | 1 | 7.7 sq.m |
| Store room 1 | 1 | 1 | 3.5 sq.m |
| Store room 2 | 1 | 1 | 8.4 sq.m |
| Store room 3 | 1 | 1 | 9.4 sq.m |
| Office 1 | 1 | 1 | 13.9 sq.m |
| Canopy 1 | N/A | N/A | 2.5m x 8.8m |
| Canopy 2 | N/A | N/A | 3.1m x 7.3m |
| Canopy 3 | N/A | N/A | 3m x 5m |
| Canopy 4 | N/A | N/A | 4.3m x 5.4m |
| Canopy 5 | N/A | N/A | 4.3m x 5.7m |
| Canopy 6 | N/A | N/A | 0.8m x 2.5m |
| Canopy 7 | N/A | N/A | 0.9m x 0.8m |
| Canopy 8 | N/A | N/A | 0.8m x 1.4m |
| Toilet is located in Columbarium Building | | | |

The above only shows the building floor area of ancillary facilities which is not for GFA calculations.




# GROUND FLOOR PLAN

BD Ref:

Knight Frank 萊坊

| Date (Y-M-D) | Descriptions | Revison |
|---|---|---|
| | | |

FOR SUBMISSION

Project

MEMORIAL PARK HONG KONG

93, Fo Tan Village, Fo Tan, Shatin, New Territories
(Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)

Drawing Title

GROUND FLOOR PLAN

| Job No. | Square Feets/Metres | |
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| Drawing Number | | Revision No. |
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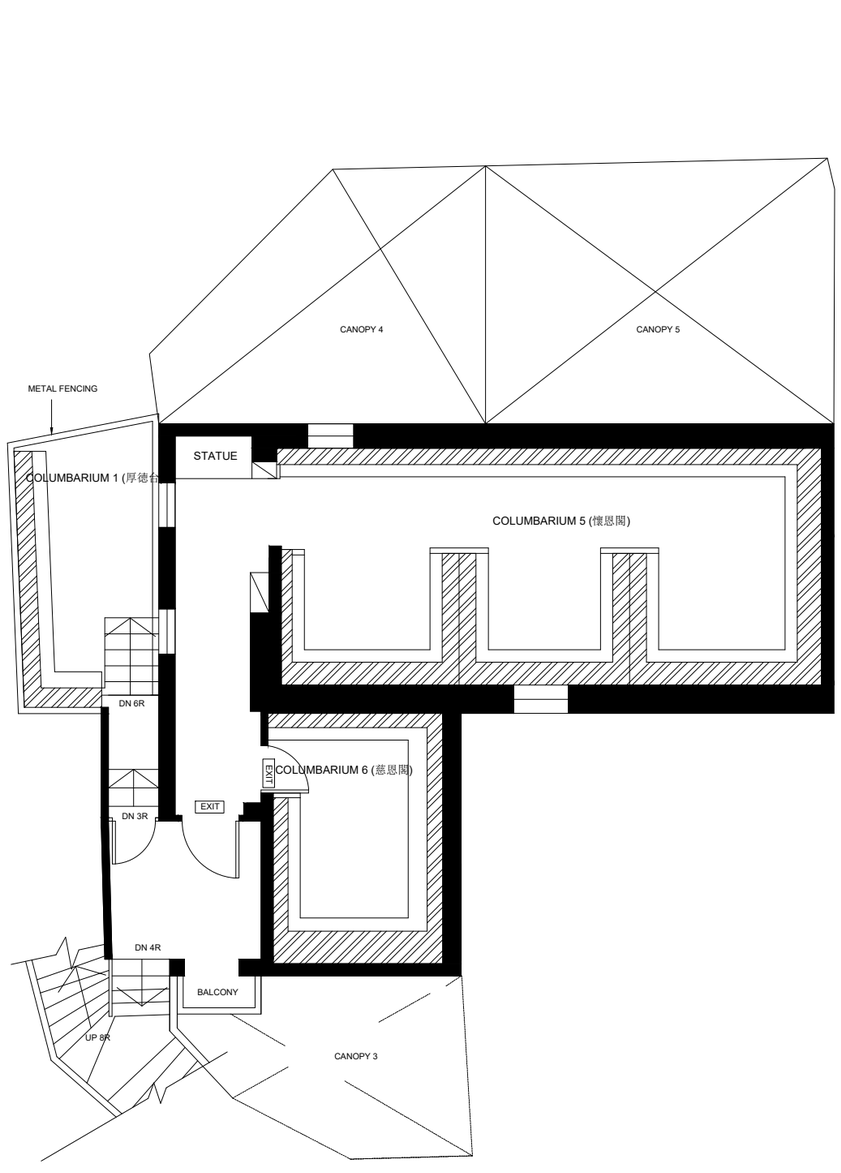


# FIRST FLOOR PLAN

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Knight Frank 萊坊

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|---|---|---|
| | | |

FOR SUBMISSION

Project

MEMORIAL PARK HONG KONG

93, Fo Tan Village, Fo Tan, Shatin, New Territories
(Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)

Drawing Title

FIRST FLOOR PLAN

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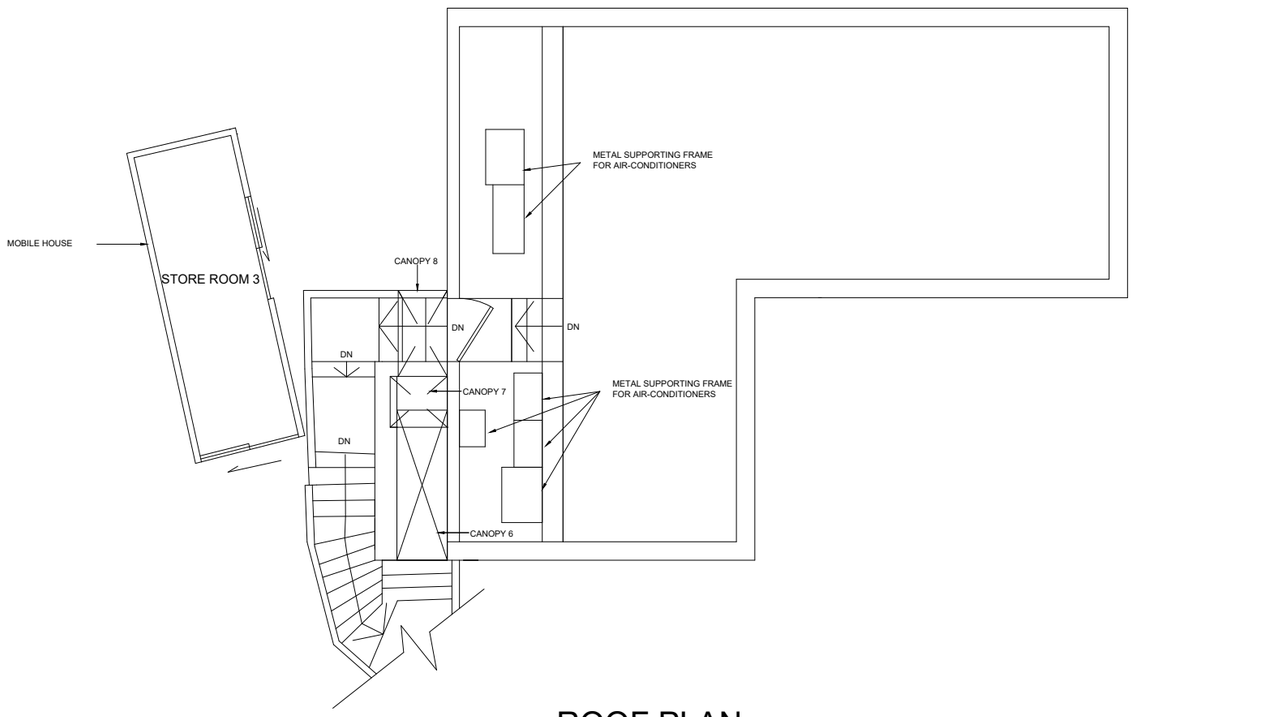


# ROOF PLAN

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FOR SUBMISSION

Project

MEMORIAL PARK HONG KONG

93, Fo Tan Village, Fo Tan, Shatin, New Territories
(Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)

Drawing Title

ROOF PLAN

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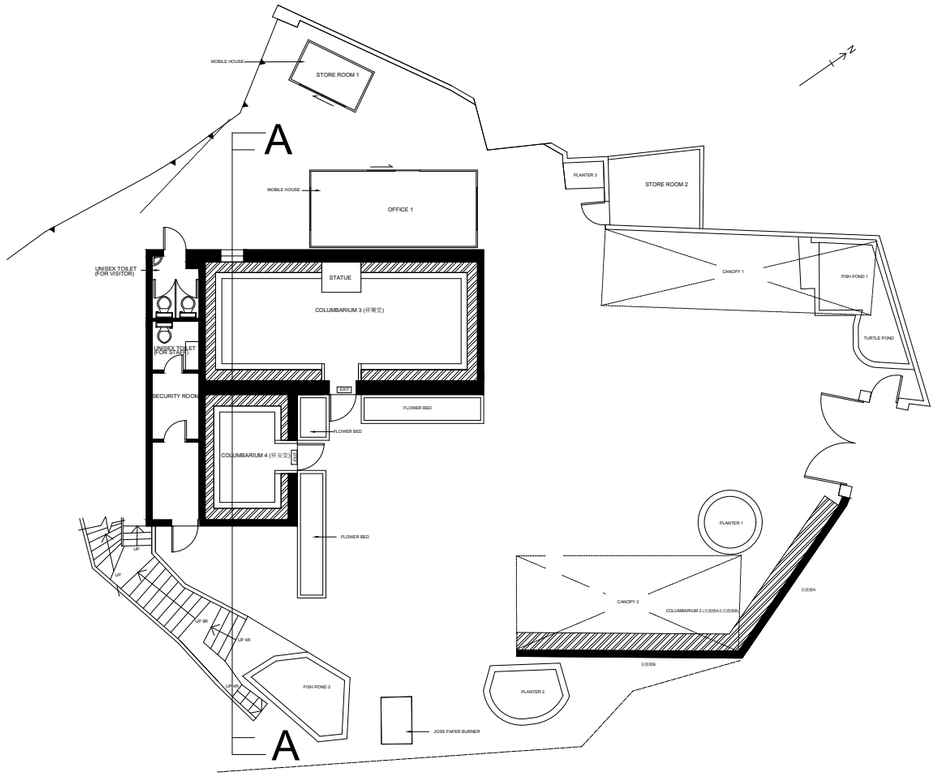
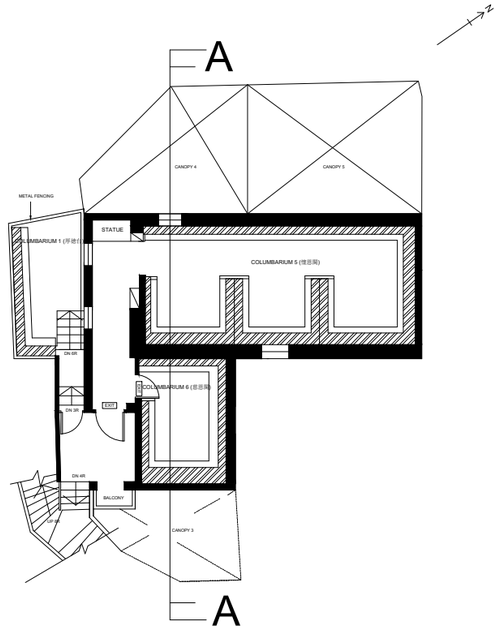



GROUND FLOOR PLAN (1:200)

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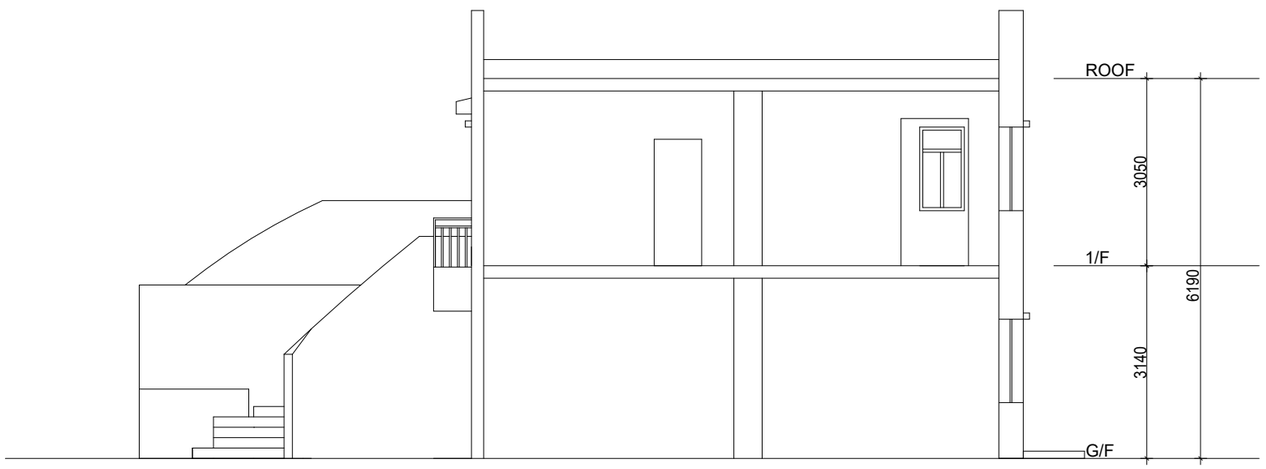
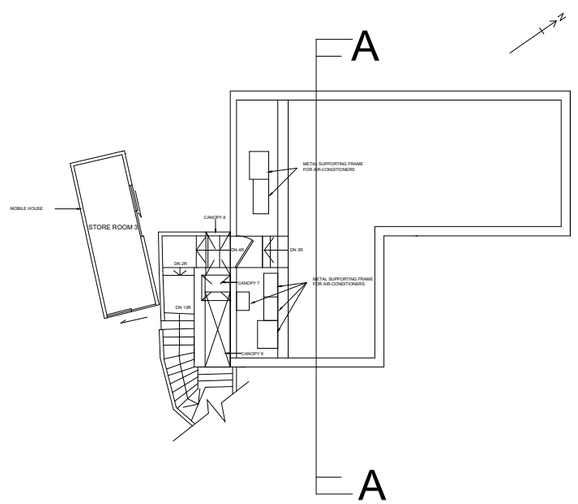



SECTION A-A (1:100)




ROOF PLAN (1:200)

BD Ref:

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| Date (Y-M-D) | Descriptions | Revison |
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FOR SUBMISSION

Project

MEMORIAL PARK HONG KONG

93, Fo Tan Village, Fo Tan, Shatin, New Territories
(Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)

Drawing Title

GROUND FLOOR, 1ST FLOOR AND ROOF PLAN, SECTION

| Job No. | Square Feets/Metres |
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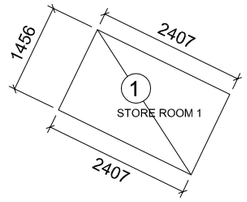
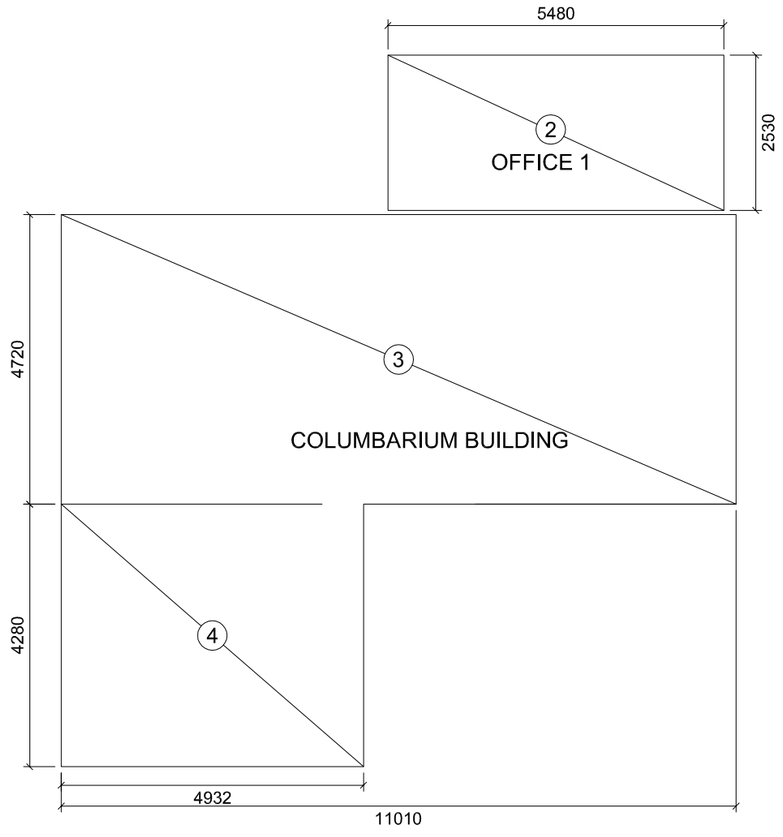
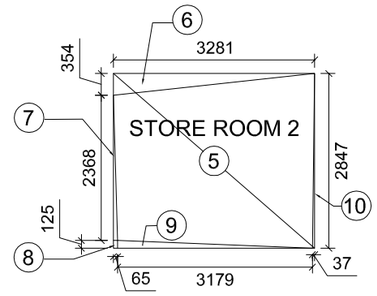
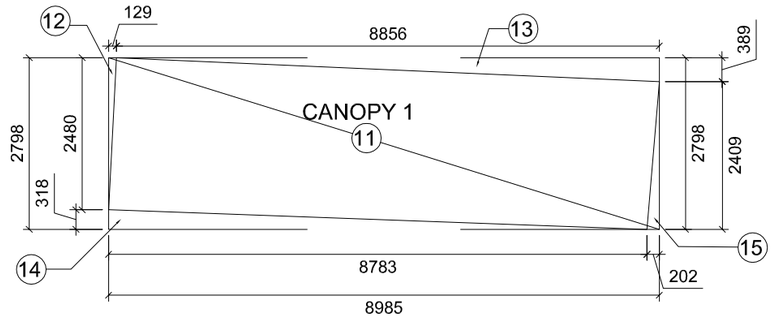
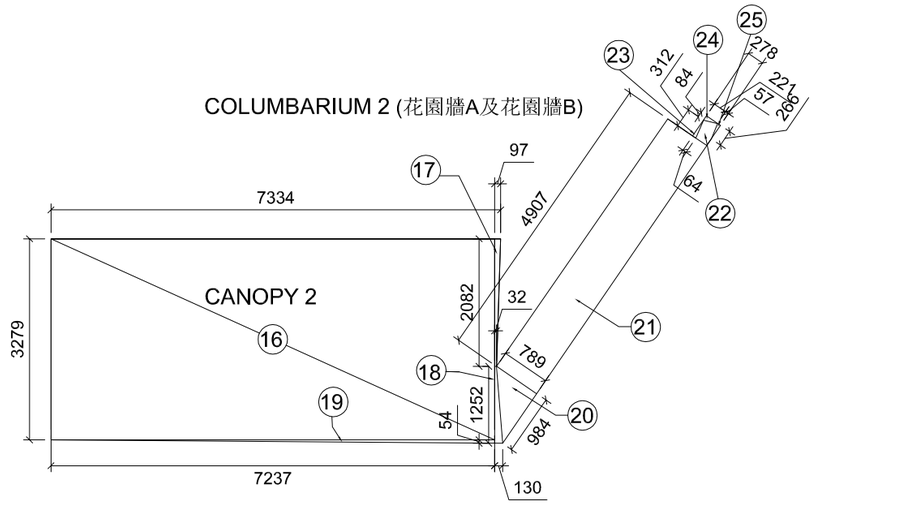
# GFA Calculation




GROSS FLOOR AREA CALCULATION OF G/F PLAN

STORE ROOM 1 (GROUND FLOOR )

| | | | | | | |
|---|---|---|---|---|---|---|
| ① | 2.407 | x | 1.456 | = | 3.505 m² |
| | | | TOTAL | = | 3.505 m² |

OFFICE 1 (GROUND FLOOR )

| | | | | | | |
|---|---|---|---|---|---|---|
| ② | 5.480 | x | 2.530 | = | 13.864 m² |
| | | | TOTAL | = | 13.864 m² |

COLUMBARIUM BUILDING (GROUND FLOOR )

| | | | | | | |
|---|---|---|---|---|---|---|
| ③ | 11.010 | x | 4.720 | = | 51.967 m² |
| ④ | 4.932 | x | 4.280 | = | 21.109 m² |
| | | | TOTAL | = | 73.076 m² |

STORE ROOM 2 (GROUND FLOOR )

| | | | | | | |
|---|---|---|---|---|---|---|
| ⑤ | 3.281 | x | 2.847 | = | 9.341 m² |
| | DEDUCT | | | | |
| ⑥ | 3.281 | x | 0.354 /2 | = | 0.581 m² |
| ⑦ | 0.065 | x | 2.368 /2 | = | 0.077 m² |
| ⑧ | 0.126 | x | 0.065 | = | 0.008 m² |
| ⑨ | 3.179 | x | 0.126 /2 | = | 0.200 m² |
| ⑩ | 0.037 | x | 2.847 /2 | = | 0.053 m² |
| | | | TOTAL | = | 8.422 m² |

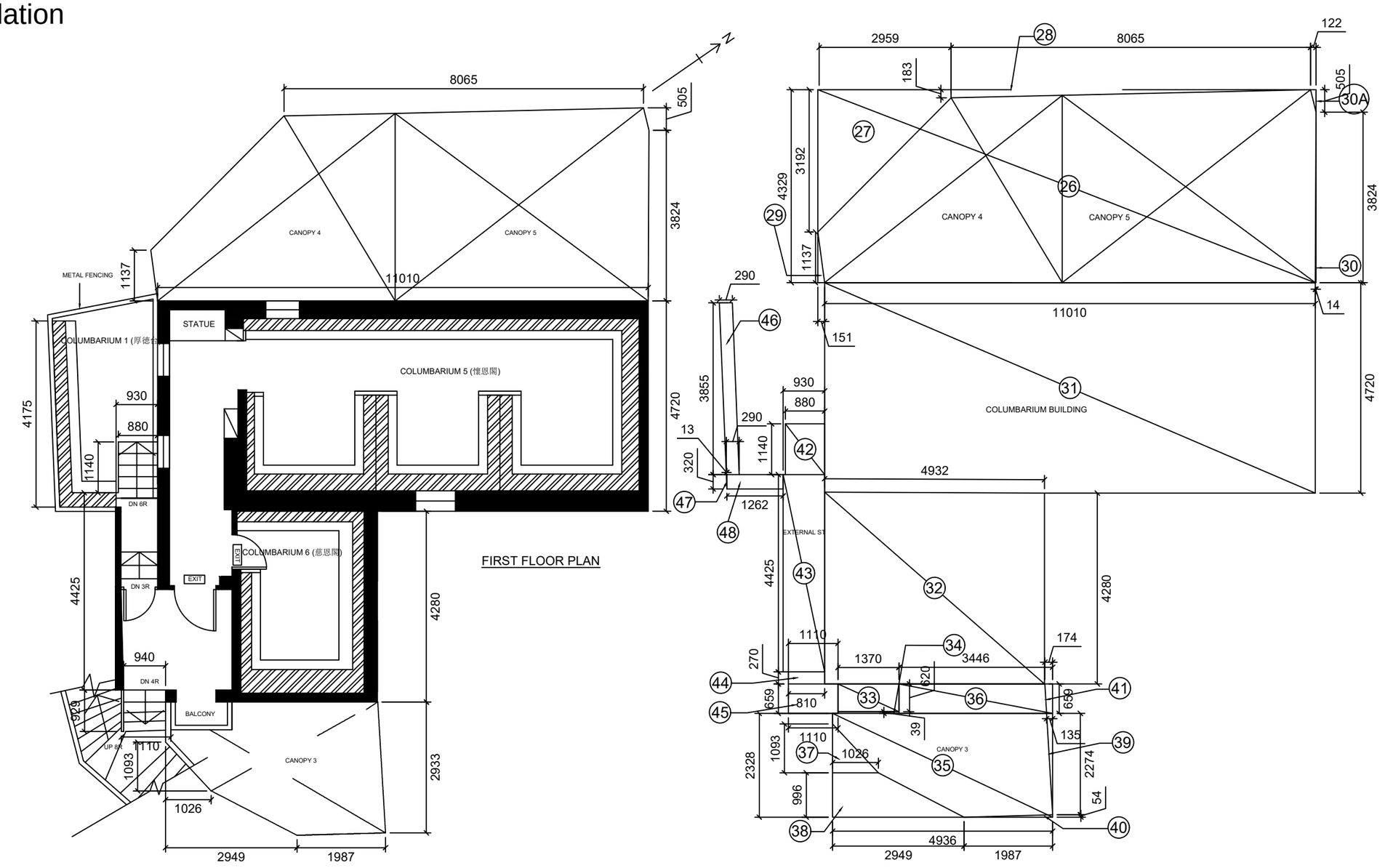
CANOPY 1 (GROUND FLOOR )

| | | | | | | |
|---|---|---|---|---|---|---|
| ⑪ | 8.985 | x | 2.798 | = | 25.140 m² |
| | DEDUCT | | | | |
| ⑫ | 0.129 | x | 2.480 /2 | = | 0.160 m² |
| ⑬ | 8.856 | x | 0.389 /2 | = | 1.722 m² |
| ⑭ | 0.318 | x | 8.783 /2 | = | 1.396 m² |
| ⑮ | 2.409 | x | 0.202 /2 | = | 0.243 m² |
| | | | TOTAL | = | 21.619 m² |

CANOPY 2 & COLUMBARIUM 2 (花園牆A及花園牆B) (GROUND FLOOR )

| | | | | | | |
|---|---|---|---|---|---|---|
| ⑯ | 7.237 | x | 3.279 | = | 23.730 m² |
| ⑰ | (0.097+0.032) x 2.082 / 2 | | | = | 0.134 m² |
| ⑱ | (0.032+0.130) x 1.252 / 2 | | | = | 0.101 m² |
| ⑲ | 7.237 x 0.054 / 2 | | | = | 0.195 m² |
| ⑳ | 0.984 | x | 0.789 / 2 | = | 0.388 m² |
| ㉑ | 4.907 | x | 0.789 | = | 3.872 m² |
| ㉒ | 0.278 | x | 0.396 | = | 0.110 m² |
| | DEDUCT | | | | |
| ㉓ | 0.064 | x | 0.312 /2 | = | 0.010 m² |
| ㉔ | 0.084 | x | 0.221 /2 | = | 0.009 m² |
| ㉕ | 0.057 | x | 0.266 /2 | = | 0.008 m² |
| | | | TOTAL | = | 28.503 m² |

# GFA Calculation




## GROSS FLOOR AREA CALCULATION OF 1/F PLAN

CANOPY 4 & 5 (FIRST FLOOR )

| | | | | |
|---|---|---|---|---|
| (26) | 11.024 x 4.329 | = | 47.723 m² |
| | DEDUCT | | |
| (27) | (0.183 + 3.192) x 2.959 / 2 | = | 4.993 m² |
| (28) | 0.183 x 8.065 / 2 | = | 0.738 m² |
| (29) | 1.137 x 0.151 / 2 | = | 0.086 m² |
| (30) | 0.014 x 3.824 / 2 | = | 0.054 m² |
| (30A) | 0.122 x 0.505 / 2 | = | 0.031 m² |
| | TOTAL | = | 41.848 m² |

COLUMBARIUM BUILDING (FIRST FLOOR )

| | | | |
|---|---|---|---|
| (31) | 11.010 x 4.720 | = | 51.967 m² |
| (32) | 4.932 x 4.280 | = | 21.109 m² |
| (33) | 1.370 x 0.62 | = | 0.849 m² |
| | TOTAL | = | 73.925. m² |

CANOPY 3 (FIRST FLOOR )

| | | | |
|---|---|---|---|
| (34) | 1.370 x 0.039 | = | 0.053 m² |
| (35) | 4.936 x 2.328 | = | 11.491 m² |
| (36) | 3.446 x 0.659 | = | 2.271 m² |
| | DEDUCT | | |
| (37) | 1.093 x 1.026 / 2 | = | 0.561 m² |
| (38) | (1.026 + 2.949) x 0.996 / 2 | = | 1.980 m² |
| (39) | 0.135 x 2.274 / 2 | = | 0.153 m² |
| (40) | 1.987 x 0.054 / 2 | = | 0.054 m² |
| (41) | (0.174 +0.135) x 0.659 / 2 | = | 0.102 m² |
| | TOTAL | = | 10.965 m² |

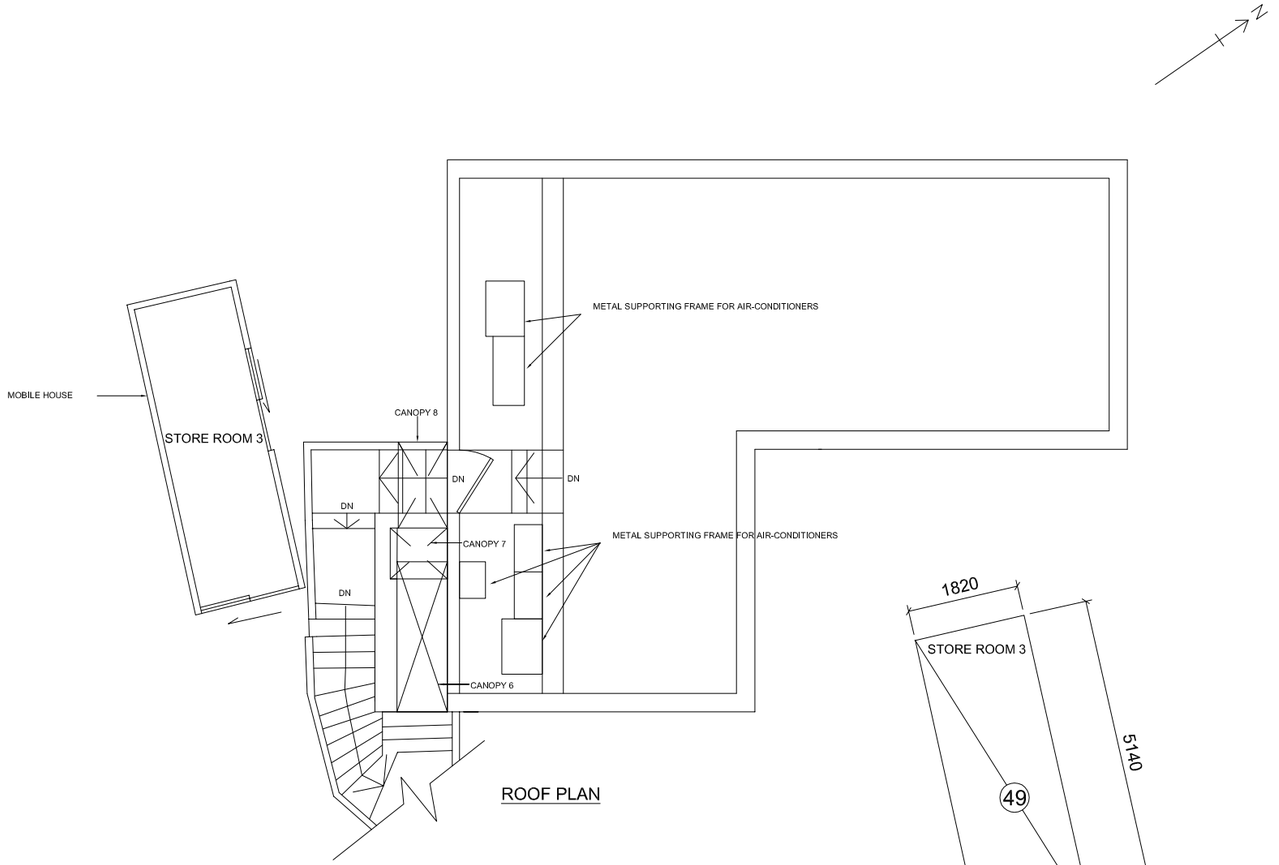
EXTERNAL STAIRCASE (UNDER CANOPY 6,7 & 8 )

| | | | |
|---|---|---|---|
| (42) | 0.880 x 1.140 | = | 1.003 m² |
| (43) | 0.930 x 4.425 | = | 4.115 m² |
| (44) | 0.810 x 0.270 | = | 0.219 m² |
| (45) | 1.110 x 0.659 | = | 0.731 m² |
| | TOTAL | = | 6.068 m² |

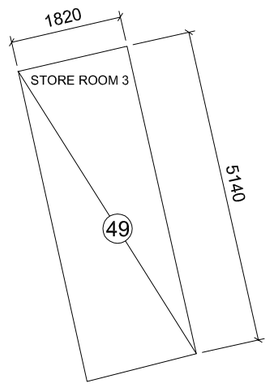
COLUMBARIUM 1 (厚德台)

| | | | |
|---|---|---|---|
| (46) | 0.290 x 3.855 | = | 1.118 m² |
| (47) | 0.013 x 0.320 /2 | = | 0.002 m² |
| (48) | 1.262 x 0.320 | = | 0.404 m² |
| | TOTAL | = | 1.524 m² |

# GFA Calculation




ROOF PLAN




GROSS FLOOR AREA CALCULATION OF ROOF PLAN

| | | | | |
|---|---|---|---|---|
| STORE ROOM 3 | | | | |
| ㊾ 5.140 | x | 1.820 | = | 9.355 m² |
| | | TOTAL | = | 9.355 m² |

# Appendix II

# Photos of Hing Lung Buddhist Hall

# Photos of Hing Lung Buddhist Hall (興隆佛堂)
# on the Application Site before 2006

# Appendix III

# Traffic Impact Assessment Report

# Licensing Application (Serial No. 38) for Post-cut-off Columbarium at Memorial Park Hong Kong 93, Fo Tan Village, Fo Tan, Shatin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and Adjoining Government Land)

Traffic Impact Assessment
Final Report
9 October 2018

Prepared by: CKM Asia Limited

Prepared for: Memorial Park Hong Kong Limited

# Licensing Application (Serial No. 38) for Post-cut-off Columbarium at Memorial Park Hong Kong 93, Fo Tan Village, Fo Tan, Shatin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and Adjoining Government Land)

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# Licensing Application (Serial No. 38) for Post-cut-off Columbarium at Memorial Park Hong Kong 93, Fo Tan Village, Fo Tan, Shatin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and Adjoining Government Land)

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# Licensing Application (Serial No. 38)
# for Post-cut-off Columbarium at
# Memorial Park Hong Kong
# 93, Fo Tan Village, Fo Tan, Shatin, N.T.
# (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B &
# RP in D.D.176 and Adjoining Government Land)

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# Licensing Application (Serial No. 38)
# for Post-cut-off Columbarium at
# Memorial Park Hong Kong
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# (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B &
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# 1.0 INTRODUCTION

## Background

1.1 The Subject Site, namely Memorial Park Hong Kong, is located at 93, Fo Tan Village, Fo Tan, Shatin, New Territories (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and Adjoining Government Land). A two storey building within the Subject Site has been used as a columbarium (hereinafter "Columbarium Building") for a period of time.

1.2 With enactment of the Private Columbaria Ordinance (Cap. 630), the Columbarium Building of Memorial Park Hong Kong is divided into a Pre-cut-off Columbarium with niches which were sold by 30 June 2017, and a Post-cut-off Columbarium with niches which are yet to be sold as of 30 June 2017.

1.3 The Pre-cut-off Columbarium has 2,095 sold niches, of which 836 sold niches are occupied, and 1,259 sold niches are vacant on 2018 Ching Ming Festival Day. Whereas, the Post-cut-off Columbarium has 1,853 vacant niches that are yet to be sold.

1.4 The Memorial Park Hong Kong Limited ("the Applicant") is currently seeking 2 licenses from the Private Columbaria Licensing Board for the Pre-cut-off Columbarium (Application Serial No. 1) and the Post-cut-off Columbarium (Application Serial No. 38).

1.5 With reference to the Legislative Council Brief, "*Implementation of Private Columbaria Ordinance – Issues on Land Premium and Traffic Impact Assessment*", (File Ref.: FH CR 2/3751/07), CKM Asia Limited, a traffic and transportation planning consultancy firm, was commissioned by the Applicant to carry out a Traffic Impact Assessment ("TIA") for the Post-cut-off Columbarium in connection with the licensing application (Application Serial No. 38). This report describes the traffic impact assessment undertaken.

## Scope of Study

1.6 The main objectives of this study are as follows:

- To review the traffic conditions in the vicinity of the Subject Site on Ching Ming Festival Day,
- To present traffic information associated with the Pre-cut-off Columbarium,
- To quantify the traffic generated by the Post-cut-off Columbarium when fully occupied during peak hour on the Ching Ming Festival Day,
- To present the proposed Traffic and Crowd Management Plan ("TCMP") for Ching Ming and Chung Yeung Festival periods;
- To examine the traffic and pedestrian impact on the local road and footpath network, and
- To identify deficiencies, if any, in the road network in accommodating the traffic impact associated with the Post-cut-off Columbarium when fully occupied.

## Contents of the Report

1.7 After this introduction, the remaining chapters contain the following:

| | | |
|---|---|---|
| Chapter Two | - | Describes the existing condition and surveys, |
| Chapter Three | - | Gives details of the Post-cut-off Columbarium and presents the Traffic and Crowd Management Plan, |
| Chapter Four | - | Presents the traffic and pedestrian impact analyses, and, |
| Chapter Five | - | Summarises the overall conclusion. |

# 2.0 THE EXISTING SITUATION

## The Subject Site

2.1 The Subject Site is bounded by the Fo Tan Road flyover to the east, Fo Tan Village to the north and west, and area zoned as green belt to the south. The Subject Site has no vehicular access; and pedestrian access is through Fo Tan Village.

## The Road Network

2.2 Fo Tan Village, including the Subject Site, is not accessible by motor vehicles, and the road closest to the Subject Site is Shan Mei Street and Fo Tan Road.

2.3 Shan Mei Street is a single carriageway 2-way local road connecting Fo Tan Road to the south, and Kwei Tei Street to the north. The Shan Mei Street Children's Playground Metered Open Car Park is located to the immediate north of Fo Tan Village.

2.4 Fo Tan Road is of a dual 3 / 4 carriageway Primary Distributor connecting Fo Tan with Sha Tin and beyond. To the immediate south, an interchange is provided between Fo Tan Road and Tai Po Road – Shatin providing regional access to/from the Subject Site.

## Pedestrian Facilities

2.5 The Subject Site is connected to the Fo Tan Village with footpaths. The footpath fronting the Subject Site is some 5m wide and runs parallel to the nullah to the east of Fo Tan Village towards Shan Mei Street. To the south of the Subject Site, a footbridge is provided across the nullah towards the MTR Fo Tan Station.

## Historic Traffic Growth

2.6 Table 2.1 presents the historic annual average daily traffic ("AADT") and average annual growth rates of sections of Fo Tan Road near the Subject Site between 2007 and 2016.

TABLE 2.1 ATC STATIONS LOCATED ON FO TAN ROAD NEAR THE SUBJECT SITE

| ATC Station No. | 5415 | 6010 |
|---|---|---|
| Road | Fo Tan Road | Fo Tan Road |
| From | Lok King Street | Tai Po Road – Shatin |
| To | Sui Wo Road | Yuen Wo Road |
| Year | Annual Average Daily Traffic (vehicles / day) | |
| 2008 | 21,630* | 45,500 |
| 2009 | 18,340 | 44,710* |
| 2010 | 20,400 | 46,670* |
| 2011 | 20,890* | 47,800* |
| 2012 | 21,070* | 41,440 |
| 2013 | 21,520* | 42,810 |
| 2014 | 22,970 | 43,030* |
| 2015 | 25,680 | 44,020* |
| 2016 | 26,070* | 44,680* |
| 2017 | 26,140* | 41,960 |
| Average Annual Growth = | 2.13% | -0.90% |

*AADT estimated by Growth Factor

2.7 Table 2.1 shows that the average annual growth rates are modest.

## Population Projection

2.8 Reference is made to the "*Projections of Population Distribution*" published by the Planning Department for Shatin and is presented in Table 2.2.

TABLE 2.2 PROJECTED POPULATIONS IN SHATIN

| Year | Population in Shatin |
|---|---|
| 2016[#] | 659,800 |
| 2018 | 683,700 |
| 2026 | 708,600 |
| **Average Annual Growth (2016 to 2026)** | **0.7%** |

Note: [#]Base year population as published.

2.9 Table 2.2 shows that population in the Shatin District is projected to increase by 0.7% per annum between 2016 and 2026.

## Public Transport Services

2.10 Access to road-based public transport services and the MTR from the Subject Site is convenient. The MTR Fo Tan Station is located just 150m from the Subject Site. Numerous franchised bus and green minibus ("GMB") routes also operate close to the Subject Site.

2.11 Table 2.3 presents the details of the public transport services, and Figures 2.1 shows the stop locations and pedestrian routings of these public transport services in the vicinity of the Subject Site.

TABLE 2.3 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR THE SUBJECT SITE

| Route | Origin – Destination | Frequency (min) |
|---|---|---|
| KMB 73A | Yu Chui Court - Wah Ming | 20 - 30 |
| KMB 80M | Sui Wo Court - Kowloon Tong (Suffolk Road) | 20 - 30 |
| KMB 81K | Sui Wo Court - Sun Tin Wai | 7 - 15 |
| KMB 85 | Fo Tan (Shan Mei Street) - Kowloon City Ferry | 13 - 25 |
| KMB 88K | Royal Ascot - Hin Keng | 12 - 20 |
| KMB 88X | Fo Tan Station - Ping Tin (Circular) | 20 - 30 |
| KMB 280X | Sui Wo Court - Tsim Sha Tsui East (Mody Road) | 15 - 20 |
| NWFB 798 | Fo Tan (Shan Mei Street) - Tiu Keng Leng Public Transport Interchange | 10 - 30 |
| GMB 481 | Tsuen Wan Central - Fo Tan (Shan Mei Street) | 5 - 10 |
| GMB 60K | Sha Tin Station - Fo Tan Cottage Area | 4 - 6 |
| GMB 60P | Sha Tin Station - Kwei Tei Street (Wah Luen Industrial Building) | 2 – 3 [(1)] |
| GMB 62K | Sha Tin Station - Shatin Lodge | 7 - 15 |
| GMB 65K | Fo Tan Station - Wong Nai Tau | 10 - 20 |
| GMB 69K | Ville De Jardin / Greenwood Terrace - Sha Tin Station (Pai Tau Street) | 4 - 10 |
| GMB 801 | Yiu On - Fo Tan (Cheung Lek Mei Street)(Circular) | 10 - 30 |
| GMB 808A | Yiu On - Fo Tan (Cheung Lek Mei Street) | 30 [(2)] |
| GMB 811 | Yu Chui Court - Sui Wo Court | 5 - 8 |
| GMB 811A | Greenwood Terrace - Shek Mun Station(Circular) | 20 - 30 |
| GMB 811P | Ngan Shing Street - Royal Ascot, Lok Shun Path(Circular) | 5 – 6 [(3)] |
| GMB 811S | Sui Wo Court Phase I - Yiu On (Hang Hong Street)(Circular) | 20 [(4)] |

Note: KMB – Kowloon Motor Bus CTB – Citybus GMB – Green Minibus

(1) No services on Sundays and Public Holidays

(2) AM Peak Hour Only on Monday through Saturday, except Public Holidays

(3) AM and PM Peak Hour Only on Monday through Saturday, except Public Holidays

(4) AM Peak Hour Only

## Existing Sold Niches in the Pre-cut-off Columbarium

2.12 Table 2.4 summarises the status of the existing sold niches within the Pre-cut-off Columbarium before 30 June 2017.

TABLE 2.4 STATUSES OF EXISTING SOLD NICHES AT THE PRE-CUT-OFF COLUMBARIUM AS OF 30 JUNE 2017

| Status | Number of Niches | Percentage |
|---|---|---|
| Occupied | 836 | 40.0% |
| Unoccupied | 1,259 | 60.0% |
| **Total** | **2,095** | **100.0%** |

## Visitor Generation

2.13 Visitor generation survey was conducted by the Applicant at the Subject Site on 2018 Ching Ming Festival Day, i.e. 5th April, 2018, which is the busiest day of the year. According to the Applicant, the number of occupied sold niches is increased to 835, and the number of unoccupied sold niches is 1,260 on 2018 Ching Ming Festival Day.

2.14 Table 2.5 presents the peak hour visitor generation and rates on the 2018 Ching Ming Festival Day.

TABLE 2.5 VISITOR GENERATION ON CHING MING FESTIVAL DAY

| Item | Unit | Ching Ming Festival Day Peak Hour | |
|---|---|---|---|
| | | Attraction | Generation |
| Visitor Generation | visitor/hour | 177 | 145 |
| Visitor Generation Rate | visitor/hour/niche | 0.2120 | 0.1737 |

Note: Based on 835 occupied sold niches on 2018 Ching Ming Festival Day.

## Transport Mode Survey

2.15 Transport mode survey was conducted by the Applicant at the Subject Site on 2018 Ching Ming Festival Day and the results are summarised in Table 2.6.

TABLE 2.6 MODE OF TRANSPORT USED BY SURVEYED VISITORS

| Mode of Transport | Number of Surveyed Visitors | Percentage | Number of Vehicles | Average Occupancy |
|---|---|---|---|---|
| MTR | 226 | 63.1% | -- | -- |
| Bus | 10 | 2.8% | -- | -- |
| Public Light Bus | 23 | 6.4% | -- | -- |
| Taxi | 21 | 5.9% | 7 | 3.0 |
| Private Car | 78 | 21.8% | 21 | 3.7 |
| **TOTAL** | **358** | **100.0%** | -- | -- |

2.16 Visitors using "private cars" are those who parked their vehicles at off-site hourly car parks, and then walk to the Subject Site. These private car users did not park at the Subject Site because the Subject Site is not accessible to vehicles, hence, no parking is provided.

## Other Surveys Conducted

2.17 Table 2.7 summarises the details of the other surveys conducted.

TABLE 2.7 DETAILS OF OTHER SURVEYS UNDERTAKEN

| Type of Survey | Description |
|---|---|
| Traffic counts at junctions | Manual classified traffic counts were conducted at junctions to assess their operational performance in the peak hour. |
| Pedestrian counts at key pedestrian facilities | Pedestrian counts at key sections of pedestrian facilities to assess the operation condition in the peak hour. |
| Car Park Utilisation Survey | Survey at car parks located near the Subject Site to determine the utilisation rate of these facilities. |

2.18 The results of the other surveys are presented in the following paragraphs.

## Traffic Counts at Junctions

2.19 Manual classified traffic counts for the following junctions were conducted:

- J01 – Junction of Fo Tan Road / Shan Mei Street / Min Fong Street,
- J02 – Junction of Fo Tan Road / Tsung Tau Ha Road,
- J03 – Junction of Au Pui Wan Street / Min Fong Street, and
- J04 – Junction of Au Pui Wan Street / Wo Heung Street

2.20 Figure 2.2 shows the locations of the surveyed junctions, and Figures 2.3 - 2.6 show the existing junction layout.

2.21 The traffic counts were classified by vehicle types to enable traffic flows in passenger car unit ("pcu") to be calculated, and Figure 2.7 shows the peak hour traffic flow on Ching Ming Festival Day.

## Operational Performance at Surveyed Junctions

2.22 The existing operational performance of the surveyed junctions is calculated based on the peak hour traffic flows and the analysis method found in Volume 2 of the Transport Planning and Design Manual ("TPDM"). The analysis results are summarised in Table 2.8 and detailed calculations are found in Appendix A.

TABLE 2.8 EXISTING JUNCTION OPERATION PERFORMANCE

| Junction | | Type of Junction | Indicator | Ching Ming Festival Peak Hour |
|---|---|---|---|---|
| J01 | Junction of Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | >100% |
| J02 | Junction of Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% |
| J03 | Junction of Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.383 |
| J04 | Junction of Au Pui Wan Street / Wo Heung Street | Priority | RFC | 0.158 |

Note: RC – Reserved Capacity RFC – Ratio-of-Flow to Capacity

2.23 The above results indicate the surveyed junctions currently operate with capacities during the Ching Ming Festival peak hour.

## Pedestrian Counts at Pedestrian Facilities

2.24 Pedestrian counts were conducted at footpaths near the Subject Site and the peak hour pedestrian flows at the surveyed footpaths are shown in Figure 2.8.

2.25 Based on the peak hour pedestrian flows, the Levels of Service ("LOS") analysis was conducted. Conservatively, a 'dead area' of 0.5 m is assumed on both sides of the footpaths when calculating the footpath "Effective Width". The LOS grading is as per TPDM Vol 6, Section 10.4 for footpaths. In general, LOS 'C' is considered as desirable at streets with dominant 'living' pedestrian activities. Table 2.9 summarizes the analysis results.

TABLE 2.9 EXISTING FOOTPATH OPERATION PERFORMANCE

| Pedestrian Facilities | | Measured Width (m) | Effective Width (m) | 2-way Pedestrian Flow (ped/hour) | Flow Rates [LOS] (ped/m/min) |
|---|---|---|---|---|---|
| FP01 | Footpath along Fo Tan Village adjacent to Nullah | 4.5 | 3.5 | 297 | 1.4 [A] |
| FP02 | Footpath between MTR Fo Station and Nullah | 6.2 | 4.2 | 699 | 2.8 [A] |
| FP03 | Footbridge across Nullah | 2.7 | 1.7 | 707 | 6.9 [A] |
| FP04 | Footpath outside the Subject Site | 3.1 | 2.9 | 322 | 2.6 [A] |

Note: A 'dead area' of 0.5m was assumed at both sides of the footpaths to estimate the" Effective Width"

2.26 As shown in Table 2.9, the surveyed pedestrian footpaths operate LOS A, which is acceptable, during the Ching Ming Festival peak hour.

## Car Park Utilisation Survey

2.27 Utilisation survey was conducted at 2 car parks near the Subject Site, and the locations are shown in Figure 2.1. Details of these 3 car parks are summarised in Table 2.10, and the survey results are presented in Table 2.11.

TABLE 2.10 DETAILS OF NEARBY CAR PARKS

| Car Park | | Address | Approximate number of hourly car parking spaces | Distance from the Subject Site |
|---|---|---|---|---|
| A. | Shatin Galleria | 18 – 24 Shan Mei Street | 233 | 420m |
| B. | San Mei Street Car Park (Outdoor) | Junction of Shan Mei Street / Sui Wo Road | 64 | 500m |

TABLE 2.11 UTILIZATION OF THE SURVEYED CAR PARKS

| Car Park | | Approx. no. of hourly car parking spaces | Morning (1000 hours) | | Noon (1200 hours) | | Afternoon (1400 – 1600) | |
|---|---|---|---|---|---|---|---|---|
| | | | Occ. Spaces | % Occ. | Occ. Spaces | % Occ. | Occ. Spaces | % Occ. |
| A. | Shatin Galleria | 233 | 82 | 35% | 107 | 46% | 135 | 58% |
| B. | San Mei Street Car Park (Outdoor) | 64 | 48 | 75% | 46 | 72% | 52 | 81% |
| **Total** | | **297** | **130** | **44%** | **153** | **52%** | **187** | **63%** |
| | ***Parking Surplus*** | | ***167*** | ***56%*** | ***144*** | ***48%*** | ***110*** | ***37%*** |

Note: Occ. Spaces – Occupied Spaces % Occ. – Percentage of Occupancy

2.28 The above survey results indicate the existing car parks have approximately 297 hourly car parking spaces, and the utilisation rates were between 37% and 56%. Hence, some 110 to 167 car parking spaces were available between 1000 and 1600 hours.

# 3.0 THE POST-CUT-OFF COLUMBARIUM

## The Post-cut-off Columbarium

3.1 Figure 3.1 shows the layout of the Subject Site which includes a Columbarium Building that houses both Pre-cut-off Columbarium and the Post-cut-off Columbarium. The Applicant intends to obtain a license for the operation of the Post-cut-off Columbarium with 1,853 unsold niches.

## Pedestrian Access

3.2 In view the Post-cut-off Columbarium is part of Columbarium Building within the Subject Site, the Post-cut-off Columbarium will utilise the existing pedestrian access of the Subject Site.

## Additional Visitor and Traffic Generation associated with the Post-cut-off Columbarium

3.3 Based on the visitor generation rates and mode of transport by visitors presented in Tables 2.5 and 2.6, the additional peak hour visitor and traffic generation associated with the 1,853 unsold niches on Ching Ming Festival Day are estimated and presented in Table 3.1.

TABLE 3.1 ADDITIONAL PEAK HOUR TRAFFIC AND VISITOR GENERATION ASSOCIATED WITH THE 1,853 UNSOLD NICHES AT THE POST-CUT-OFF COLUMBARIUM

| Mode of Transport | Percentage | Peak Hour Visitor Generation | | Average Occupancy | Peak Hour Traffic Generation | |
|---|---|---|---|---|---|---|
| | | Attraction | Generation | | Attraction | Generation |
| MTR | 63.1% | 249 | 203 | -- | -- | -- |
| Bus | 2.8% | 11 | 9 | -- | -- | -- |
| Public Light Bus | 6.4% | 25 | 21 | -- | -- | -- |
| Taxi | 5.9% | 23 | 19 | 3.0 | 8 | 6 |
| Private Car | 21.8% | 85 | 70 | 3.7 | 23 | 19 |
| **TOTAL** | **100.0%** | **393** | **322** | -- | **31** | **25** |

## Traffic and Crowd Management Plan ("TCMP") on Festival Periods

3.4 Figure 3.2 shows the on-site crowd management plan to be implemented on Ching Ming and Chung Yeung Festival Days, and their shadow periods. The details are described in below paragraphs.

### *Implementation Period of the TCMP*

3.5 The TCMP is proposed to be implemented from 0900 to 1800 hours on the following days:

(i) 1st Saturday before Ching Ming / Chung Yeung Festival Day,
(ii) 1st Sunday before Ching Ming / Chung Yeung Festival Day,
(iii) Ching Ming / Chung Yeung Festival Day,
(iv) 1st Saturday after Ching Ming / Chung Yeung Festival,
(v) 1st Sunday after Ching Ming / Chung Yeung Festival, and / or
(vi) Other public holidays within (i) and (v)

*Visit-by-Appointment Scheme*

3.6 In order to control the number of grave sweepers and the associated traffic, the Applicant propose to operate with a Visit-by-Appointment system during the Ching Ming and Chung Yeung Festival Periods. Visitors who wish to visit the Subject Site must register with the Applicant to agree on the time and date of visit prior to the Ching Ming and Chung Yeung Festival Periods.

*Promotion to Use Public Transport Services*

3.7 Prior to the each Ching Ming and Chung Yeung festival period, the Applicant will continue to remind and encourage niche owners to use public transport services to access the Subject Site, and discourage the use of cars and taxis.

*Stationing of In-House Staff*

3.8 In-house staff will be stationed within the Subject Site to ensure smooth pedestrian flow and safety of visitors

*Waiting Area*

3.9 According to the Applicant, the combined total holding capacity is 160 people for the existing Columbarium Building. An additional open waiting area of some 40m$^2$, which can hold another 160 people, will be provided.

*One-Way Pedestrian Circulation*

3.10 A one-way pedestrian circulation is proposed within the Subject Site to separate the arriving and departing grave sweepers as shown in Figure 3.2.

*Visitor Count*

3.11 Since the commencement of the Subject Site in 2008, during the Ching Ming and Chung Yeung Festival Periods, the Applicant has had continuously conducted visitor count to monitor the number of visitors within the Subject Site. The hourly visitor counts were provided to the Hong Kong Police Force. No accident and issues had occurred since 2008. The Applicant will continue the count and provide hourly reports in the future.

# 4.0 TRAFFIC IMPACT

## Design Year

4.1 The Post-cut-off Columbarium with 1,853 unsold niches is assumed to be fully occupied by 2025, and the assessment year adopted is 2028, i.e. 3 years after the full occupation. The two scenarios assessed are:

(i) Year 2028 Ching Ming Festival Day with Full Occupancy at the Pre-cut-off Columbarium, and

(ii) Year 2028 Ching Ming Festival Day with the Post-cut-off Columbarium fully occupied

## Traffic Forecast

4.2 The 2028 Ching Ming Festival Day peak hour traffic flows are estimated based on the existing traffic flow with the estimated traffic growth from 2018 to 2028. Based on the historic AADT (see Table 2.1), a conservative growth rate of 2.0% per annum is adopted to derive the 2028 traffic flows:

*2028 Traffic Flows with Full Occupancy at the Pre-cut-off Columbarium [A]* = *Existing Traffic Flows + Estimated Traffic Growth From 2018 to 2028 + Traffic Generated by other Major Developments + Additional Traffic associated with the Unoccupied Sold Niches at the Pre-cut-off Columbarium*

*2028 Traffic Flows with the Post-cut-off Columbarium Fully Occupied* = *[A] + Additional Traffic associated with the Unsold Niches at the Post-cut-of Columbarium*

4.3 Figures 4.1 and 4.2 show the Year 2028 Ching Ming Festival Day peak hour traffic flows with full occupancy at the Pre-cut-off Columbarium and when the Post-cut-off Columbarium it is fully occupied.

## Addition Visitor and Traffic Generation associated with the Pre-cut-off Columbarium

4.4 Based on the visitor generation rates and mode of transport by visitors presented in Tables 2.5 and 2.6, the additional peak hour visitor and traffic generation associated with the 1,260 unoccupied sold niches on Ching Ming Festival Day are estimated and presented in Table 4.1.

TABLE 4.1 ADDITIONAL PEAK HOUR TRAFFIC AND VISITOR GENERATION ASSOCIATED WITH THE 1,260 UNOCCUPIED SOLD NICHES AT THE PRE-CUT-OFF COLUMBARIUM

| Mode of Transport | Percentage | Peak Hour Visitor Generation | | Average Occupancy | Peak Hour Traffic Generation | |
|---|---|---|---|---|---|---|
| | | Attraction | Generation | | Attraction | Generation |
| MTR | 63.1% | 168 | 140 | -- | -- | -- |
| Bus | 2.8% | 7 | 6 | -- | -- | -- |
| Public Light Bus | 6.4% | 18 | 14 | -- | -- | -- |
| Taxi | 5.9% | 16 | 12 | 3.0 | 5 | 4 |
| Private Car | 21.8% | 58 | 47 | 3.7 | 16 | 13 |
| **TOTAL** | **100.0%** | **267** | **219** | -- | **21** | **17** |

## Year 2028 Junction Capacity Analysis

4.5 Year 2028 Ching Ming Festival peak hour junction capacity analyses are summarised in Table 4.2 and detailed calculations are presented in Appendix A.

TABLE 4.2 YEAR 2028 JUNCTION OPERATIONAL PERFORMANCE ON CHING MING FESTIVAL PEAK HOUR

| Junction | | Type of Junction | Indicator | Ching Ming Festival Day Peak Hour | |
|---|---|---|---|---|---|
| | | | | Pre-cut-off Columbarium with Full Occupancy | Pre-cut-off Columbarium Fully Occupied |
| J01 | Junction of Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | 76% | 73% |
| J02 | Junction of Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% | >100% |
| J03 | Junction of Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.525 | 0.526 |
| J05 | Junction of Au Pui Wan Street / Wo Heung Street | Priority | RFC | 0.294 | 0.307 |

Note: RC – Reserved Capacity RFC – Ratio-of-Flow to Capacity

4.6 The above results indicate that the surveyed junctions in the vicinity are expected to operate with capacities during the Ching Ming Festival Day peak hour. Hence, traffic associated with the Post-cut-off Columbarium when fully occupied will have no significant impact.

## Additional Parking Demand

4.7 Table 3.1 shows that the Post-cut-off Columbarium is expected to generate maximum 23 private car trips during the Ching Ming Festival peak hour. The car park utilisation survey in Table 2.11 shows that there is some 110 to 167 available car parking throughout the day. Hence, the existing hourly car parks found near the Subject Site have capacity to accommodate the additional parking demand associated with the Post-cut-off Columbarium.

## Pedestrian Forecast

4.8 Year 2028 Ching Ming Festival peak hour pedestrian flows are estimated based on the existing pedestrian flow with the estimated pedestrian growth from 2018 to 2028. Based on the projected population in the study area shown in Table 2.2, a nominal growth rate of 1.0% per annum is assumed to derive the 2028 pedestrian flows:

*2028 Pedestrian Flows with Full Occupancy at the Pre-cut-off Columbarium [A]* = *Existing Pedestrian Flows + Estimated Pedestrian Growth From 2018 To 2028 + Additional Pedestrian associated with the Unoccupied Sold Niches at the Pre-cut-off Columbarium*

*2028 Pedestrian Flows with the Post-cut-off Columbarium Fully Occupied* = *[A] + Additional Pedestrian associated with the Unsold Niches at the Post-cut-of Columbarium*

4.9 Year 2028 Ching Ming Festival peak hour pedestrian flows with full occupancy at the Pre-cut-off Columbarium and when the Post-cut-off Columbarium is fully occupied are shown in Figures 4.3 and 4.4 respectively.

## Year 2028 Pedestrian Footpath Operation Performance

4.10 Year 2028 Ching Ming Festival peak hour footpath operation performances are summarised in Table 4.3.

TABLE 4.3 YEAR 2028 FOOTPATH OPERATION PERFORMANCES ON CHING MING FESTIVAL PEAK HOUR

| Footpath Section | Actual Width (m) | Effective Width (m) | Pre-cut-off Columbarium with Current Occupancy | | Pre-cut-off Columbarium Fully Occupied | |
|---|---|---|---|---|---|---|
| | | | Peak Hour 2-way Pedestrian Flow (ped/hour) | Flow Rates [LOS] (ped/m/min) | Peak Hour 2-way Pedestrian Flow (ped/hour) | Flow Rates [LOS] (ped/m/min) |
| FP01 | 4.5 | 3.5 | 441 | 2.1 [A] | 619 | 2.9 [A] |
| FP02 | 6.2 | 4.2 | 1,098 | 4.4 [A] | 1,614 | 6.4 [A] |
| FP03 | 2.7 | 1.7 | 1,107 | 10.9 [A] | 1,623 | 15.9 [A] |
| FP04 | 3.1 | 2.9 | 808 | 6.4 [A] | 1,523 | 12.1 [A] |

Note: A 'dead area' of 0.5m was assumed on both sides of the footpaths to estimate the "Effective Width"

FP01 - Footpath along Fo Tan Village adjacent to Nullah
FP02 - Footpath between MTR Fo Station and Nullah
FP03 - Footbridge across Nullah
FP04 - Footpath outside the Subject Site

4.11 The above results indicate that footpath sections in the vicinity will operate with capacities during the Ching Ming Festival Day peak hour. The condition outside the peak hour is better than the peak hour because there are fewer visitors outside the peak hour. Hence, the Post-cut-off Columbarium will have no significant impact to the surrounding pedestrian network when fully occupied.

# 5.0 SUMMARY

5.1 The Memorial Park Hong Kong which is located at No. 93 Fo Tan Village, Shatin, N.T. intends to obtain a license for its operation of a Post-cut-off Columbarium with 1,853 unsold niches. The Subject Site is not accessible to vehicles and only pedestrians could access via the Fo Tan Village.

5.2 Traffic and visitor generation surveys, and transport mode interview were conducted on the 2018 Ching Ming Festival Day at the Memorial Park Hong Kong, to determine the traffic and visitor generation rates and the mode of transport used by visitors associated with the Pre-cut-off Columbarium. The Pre-cut-off Columbarium has 2,095 sold niches, of which 835 sold niches are occupied and 1,260 sold niches are vacant.

5.3 Traffic and visitor generation rates derived from the surveys are used to estimate the additional traffic and visitor generated by the 1,260 unoccupied sold niches at the Pre-cut-off Columbarium, and the 1,853 unsold niches at the Post-cut-off Columbarium.

5.4 Manual traffic and pedestrian counts were conducted at selected road junctions and footpath sections which are located in the vicinity. The capacity analyses found that these selected road junctions and footpath sections operate with capacity.

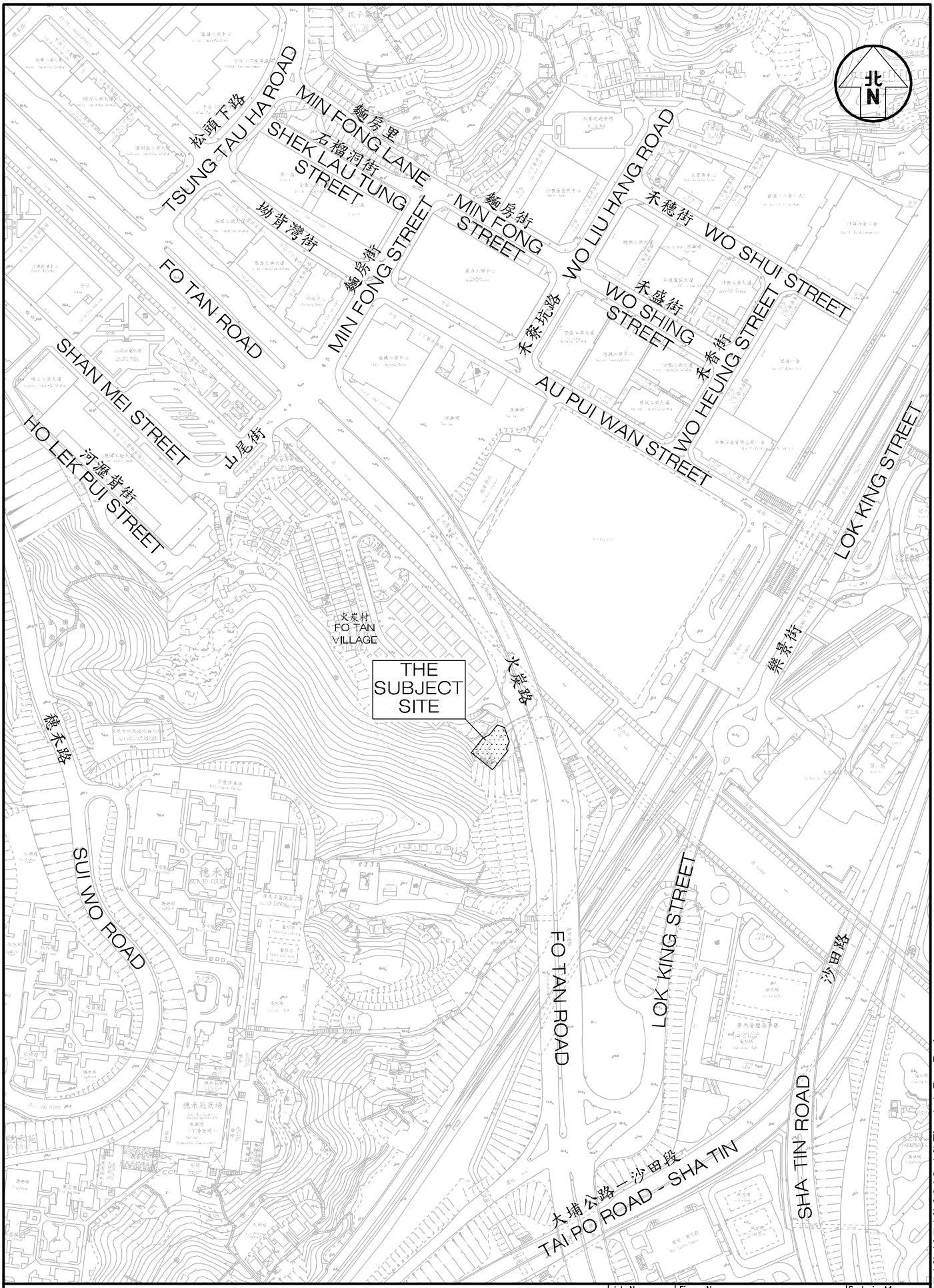
5.5 There are 2 car parks located in the vicinity of the Subject Site which could be used by visitors of the Subject Site. Utilisation surveys conducted show that these car parks have the capacity to accommodate the additional parking demand associated with the Post-cut-off Columbarium.

5.6 The Applicant has implemented a TCMP at the Subject Site during the Ching Ming and Chung Yeung Festival Periods and their shadow periods for a number of years. No accident and issues had occurred since 2008. Additional measurements are proposed to cope with operation of the Post-cut-off Columbarium.

5.7 The year 2028 junction and footpath capacity analyses concluded that, the junction and footpath analysed have capacity to accommodate the expected traffic and pedestrian growth and the additional demand generated by the 1,853 unsold niches at the Post-cut-off Columbarium.

5.8 Based on the above, it can be concluded that the Post-cut-off Columbarium is acceptable from traffic engineering viewpoint.

# Figures




Project Title

LICENSING APPLICATION (SERIAL NO. 38) FOR POST-CUT-OFF COLUMBARIUM AT MEMORIAL PARK HONG KONG, 93, FO TAN VILLAGE, FO TAN, SHATIN, N.T. (LOT NOS. 551 S.A, RP, 640 AND 644 S.A, S.B & RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)

| Job No. | Figure No. | | | Scale in A4 |
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| Designed by | Drawn by | Checked by | Revision | Date |
| H C F | S C Y | K C | B | 09 OCT 2018 |

Figure Title

LOCATION OF THE SUBJECT SITE

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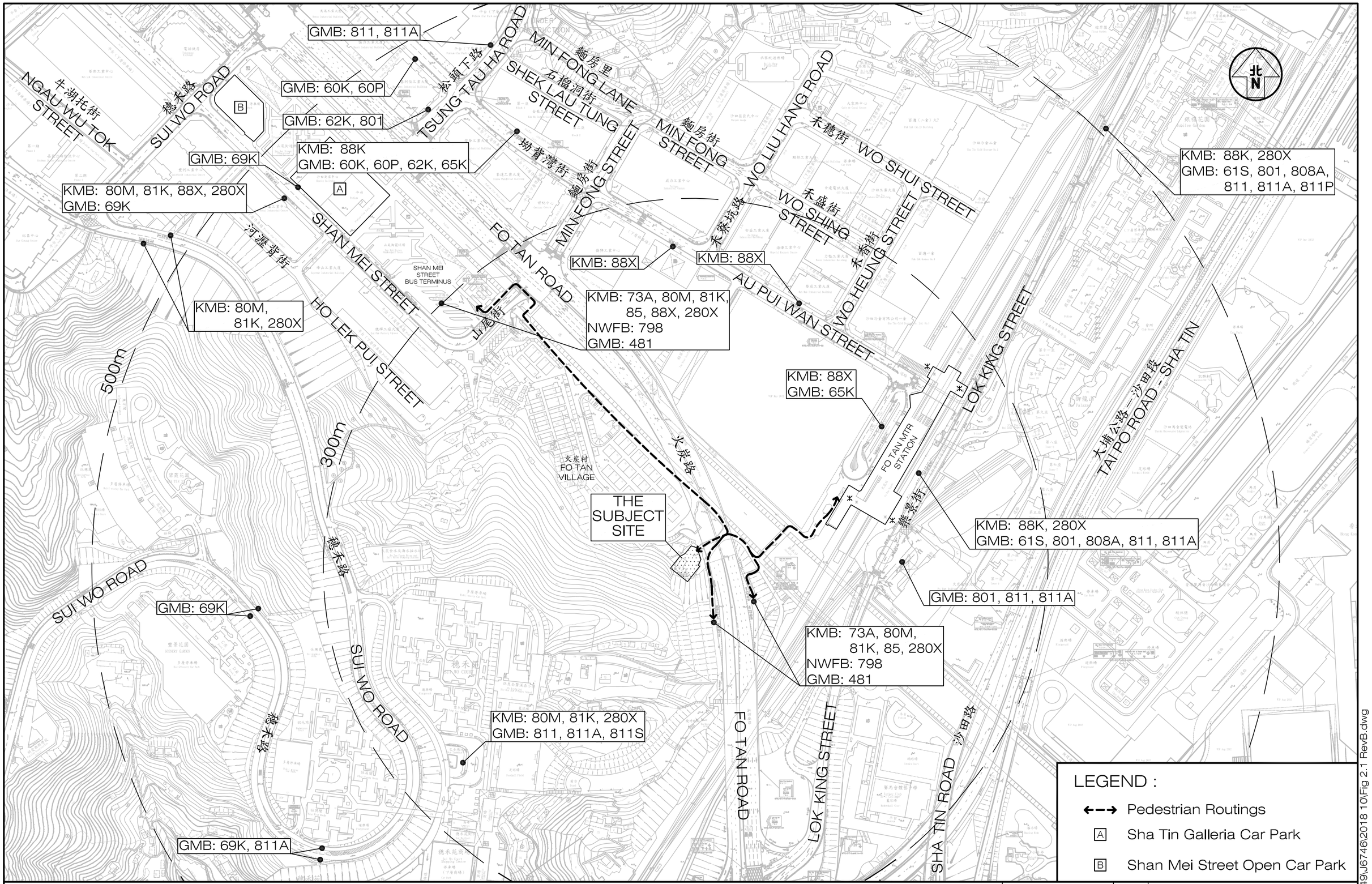
Traffic and Transportation Planning Consultants
21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong
Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk

T:\JOB\J6700-J6749\J6746\2018 10\Fig 1.1 RevB.dwg

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J6745

Figure Title: EXISTING PUBLIC TRANSPORT SERVICES IN THE VICINITY OF THE SUBJECT SITE

Figure No. 2.1 | Revision B

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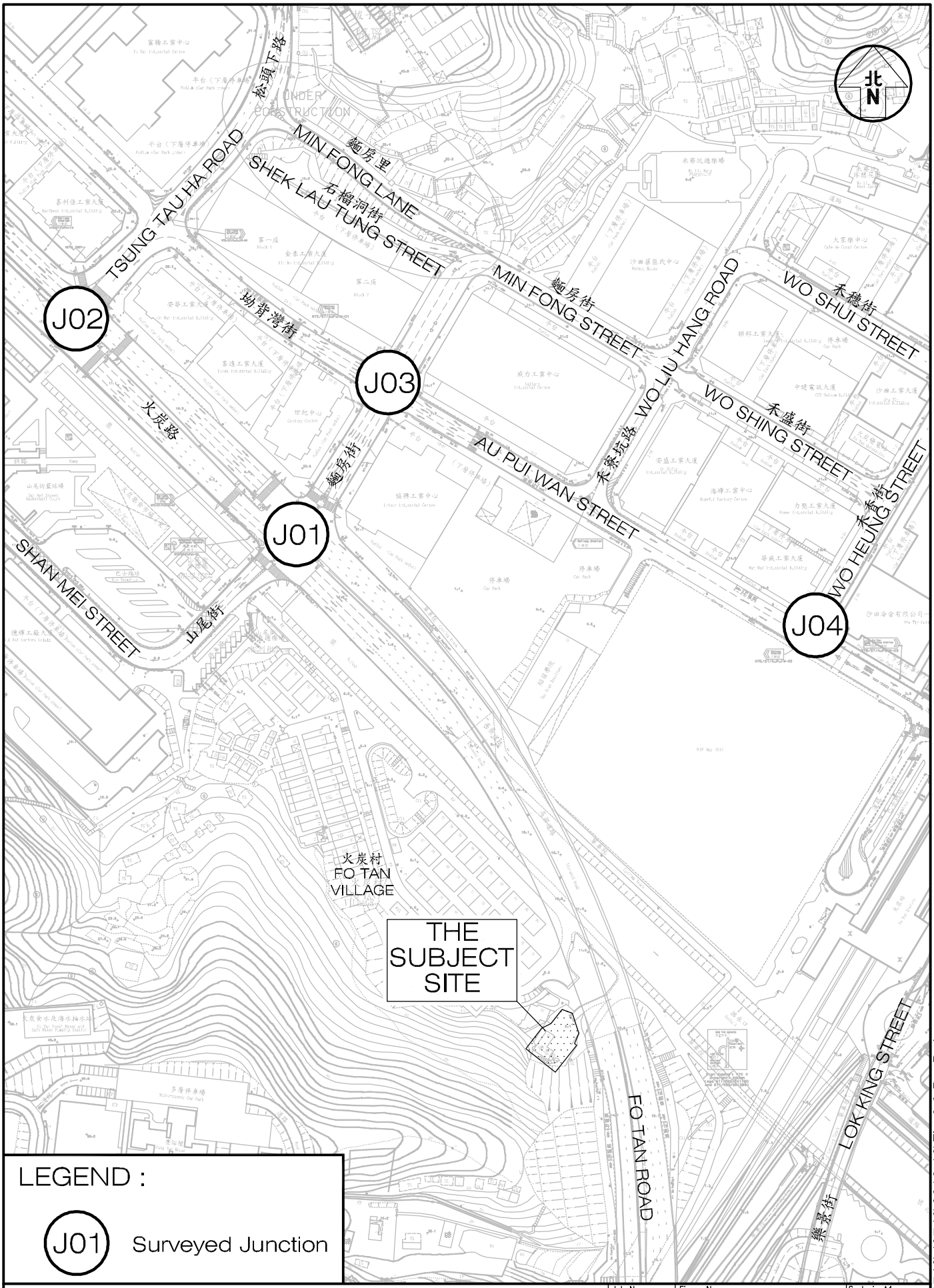


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J01 Surveyed Junction

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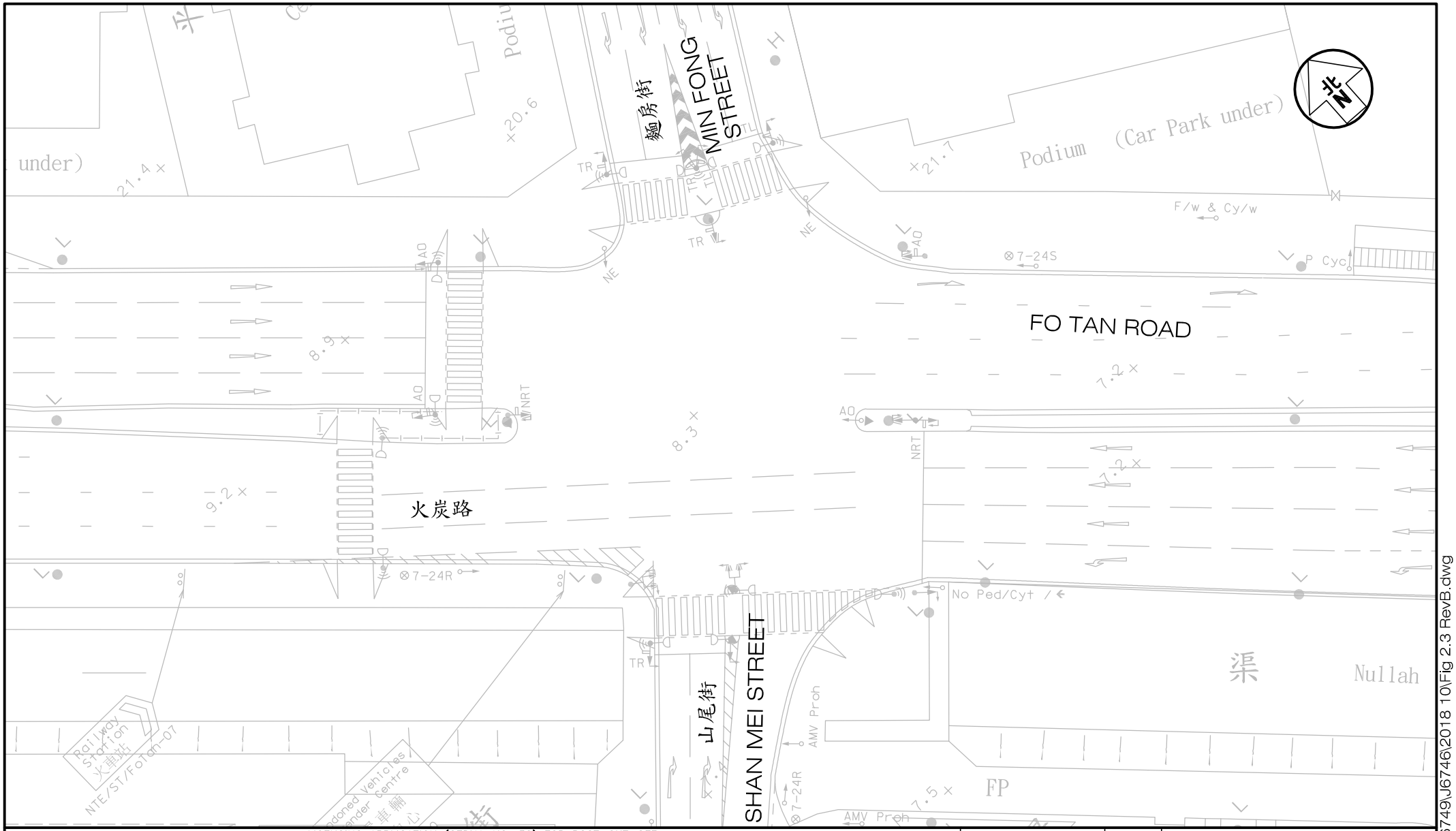


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| Figure Title | JUNCTION OF FO TAN ROAD / SHAN MEI ROAD / MIN FONG STREET | | Designed by H C F / Drawn by S C Y / Checked by K C / Scale in A4 1 : 500 / Date 09 OCT 2018 |

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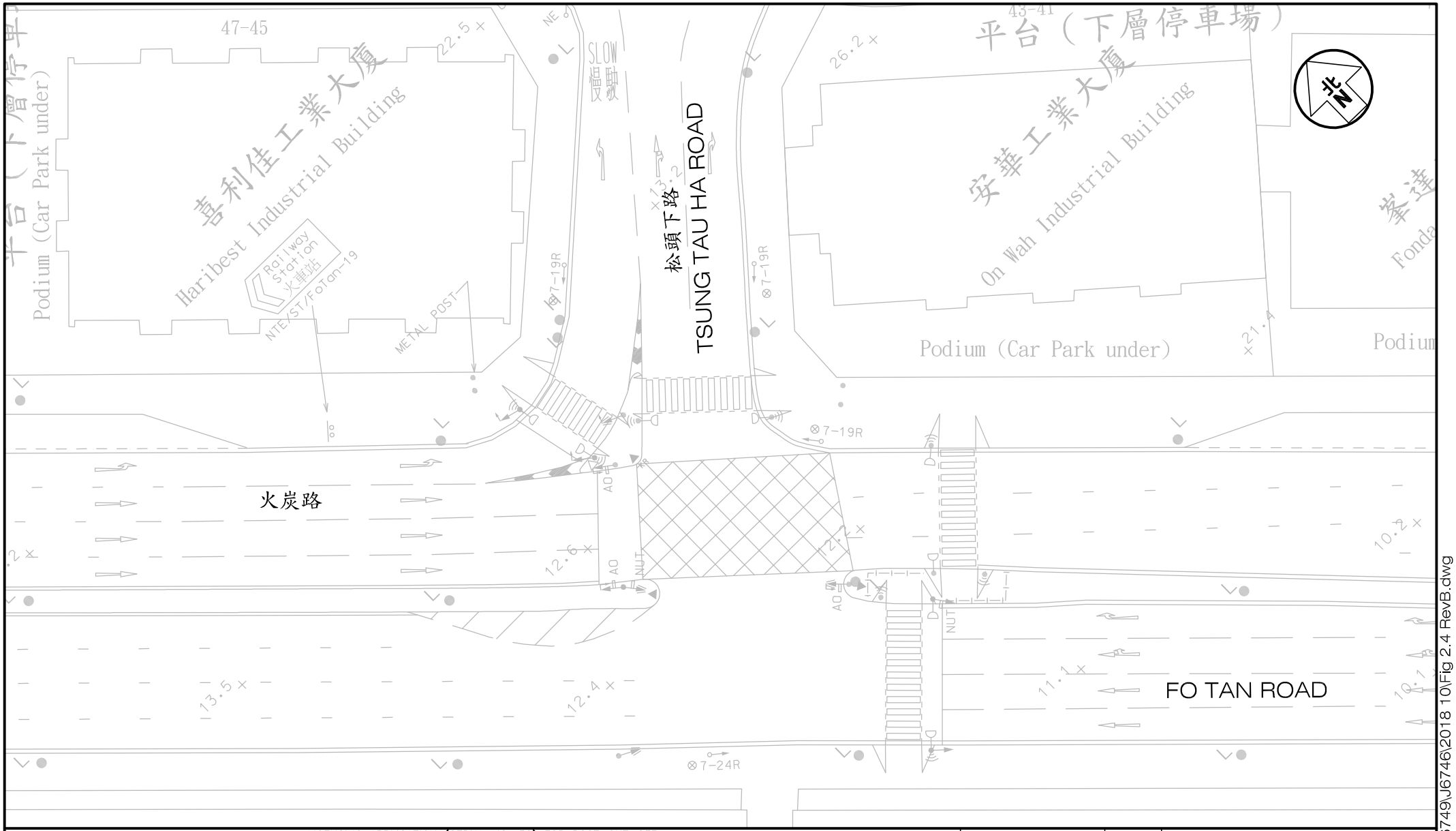


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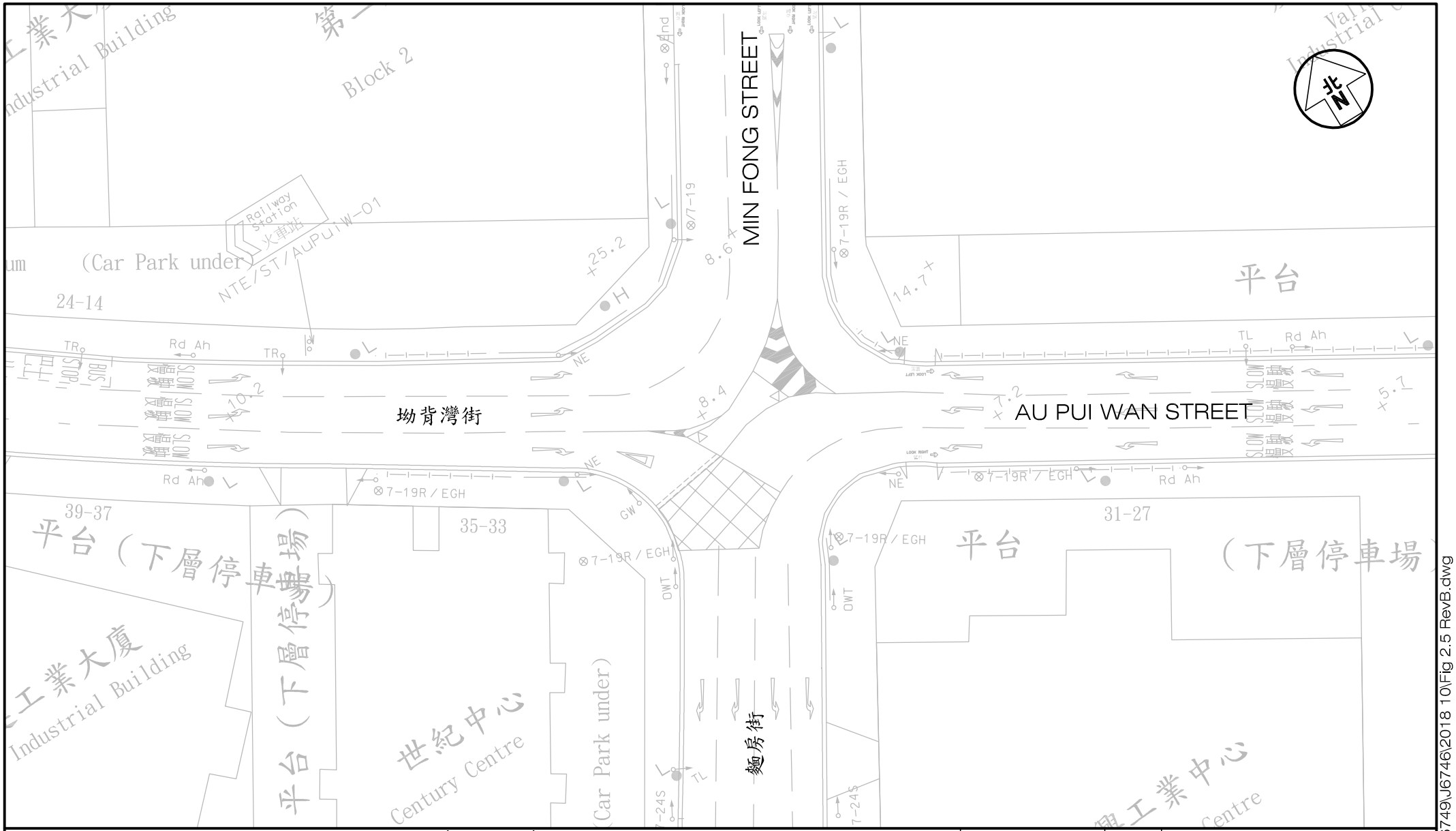


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| Figure Title | JUNCTION OF AU PUI WAN STREET / MIN FONG STREET | | Designed by H C F / Drawn by S C Y / Checked by K C |
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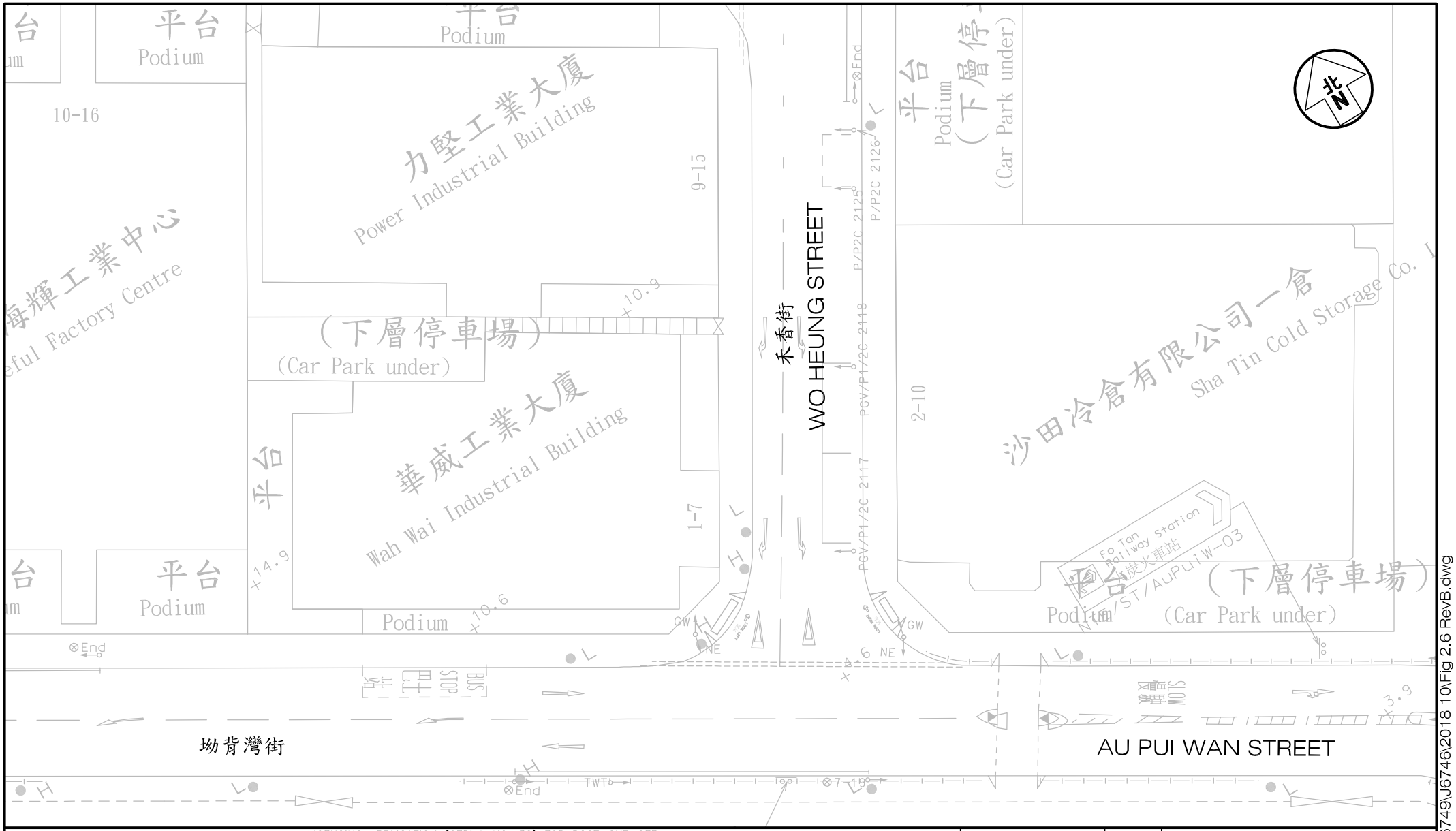


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| Figure Title | JUNCTION OF AU PUI WAN STREET / WO HEUNG STREET | | Designed by H C F / Drawn by S C Y / Checked by K C |
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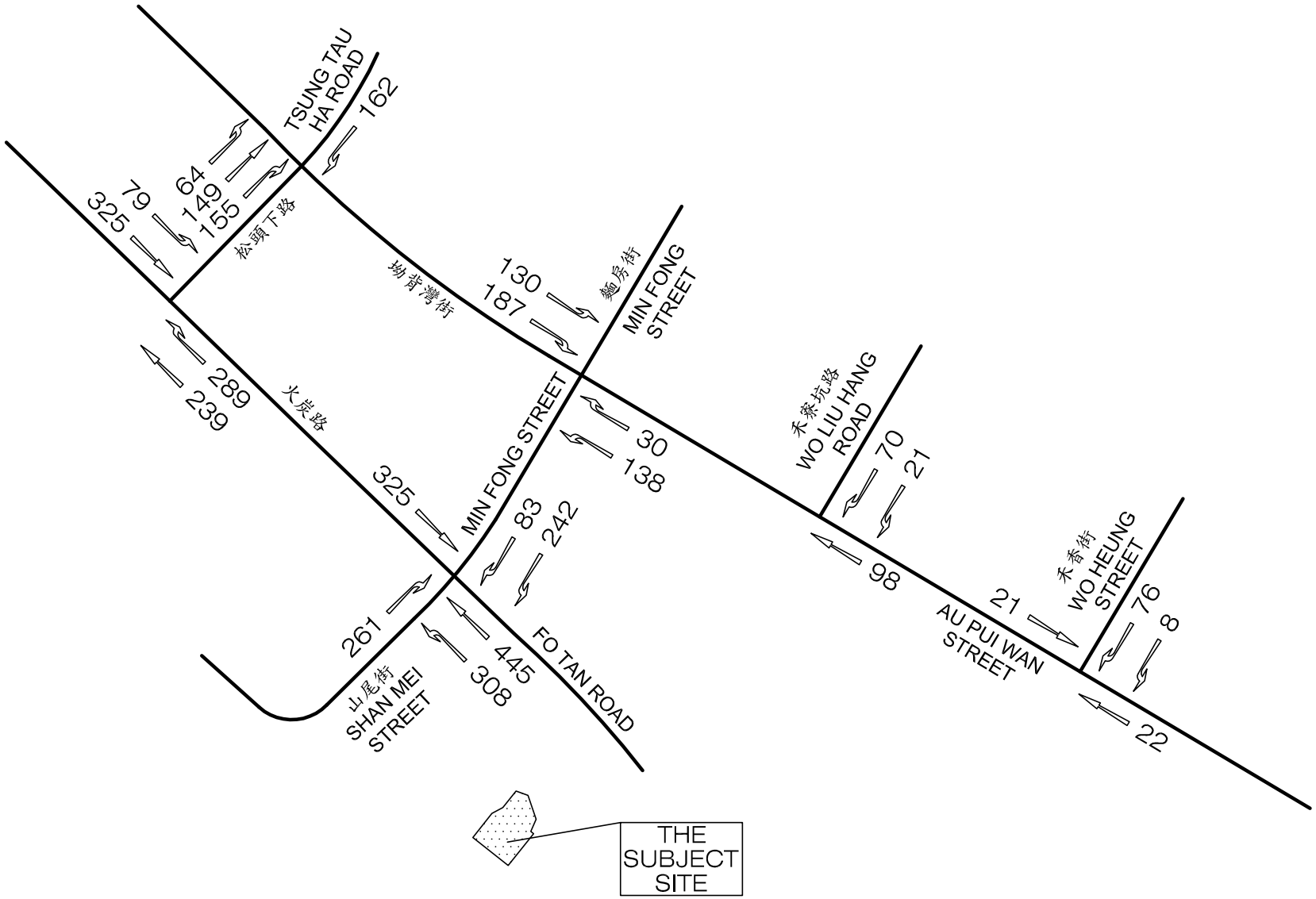


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123 - peak hour traffic flow, pcu / hr

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| Figure Title: EXISTING PEAK HOUR TRAFFIC FLOWS ON CHING MING FESTIVAL DAY | Designed by H C F / Drawn by S C Y / Checked by K C | | |
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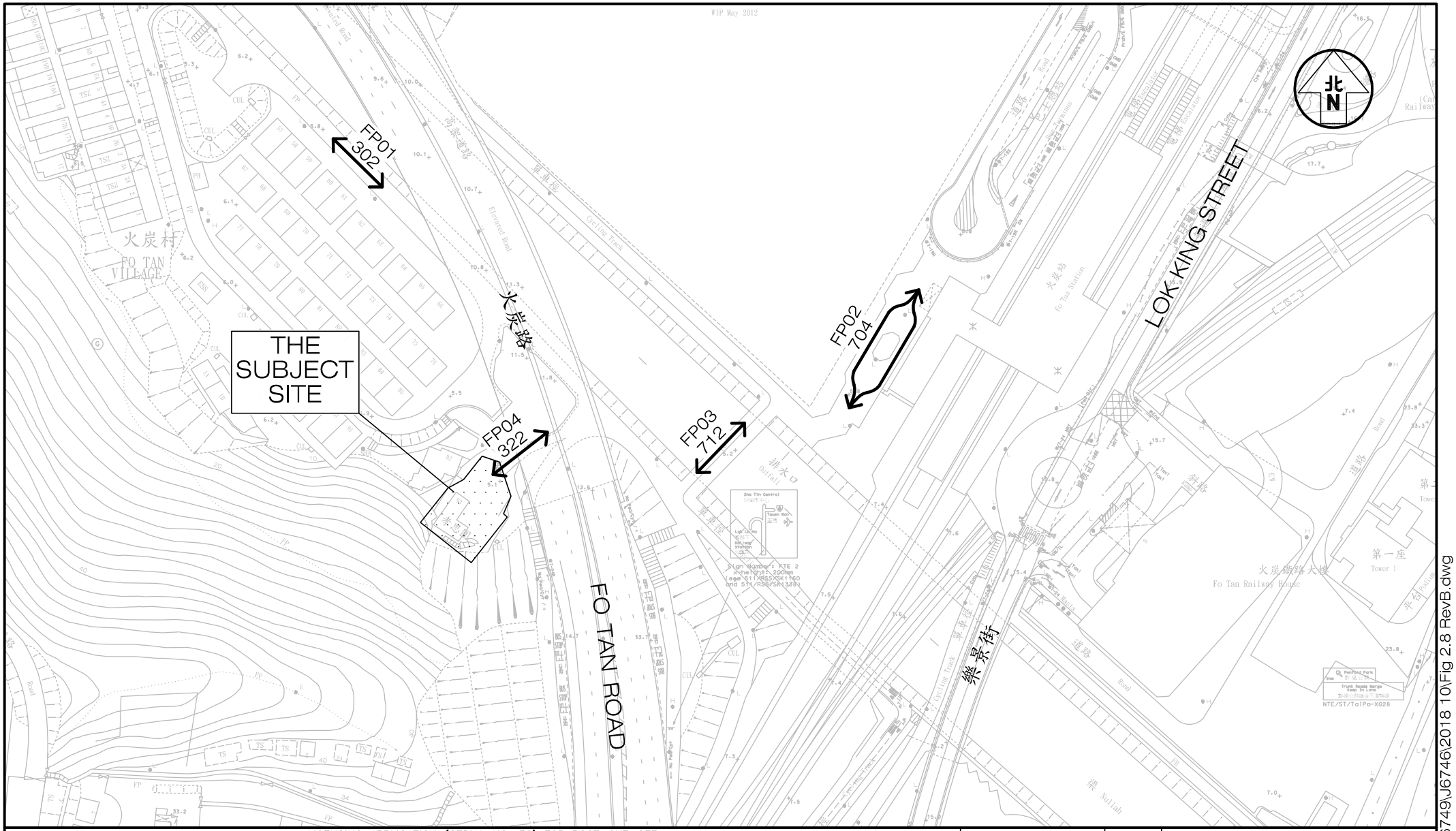


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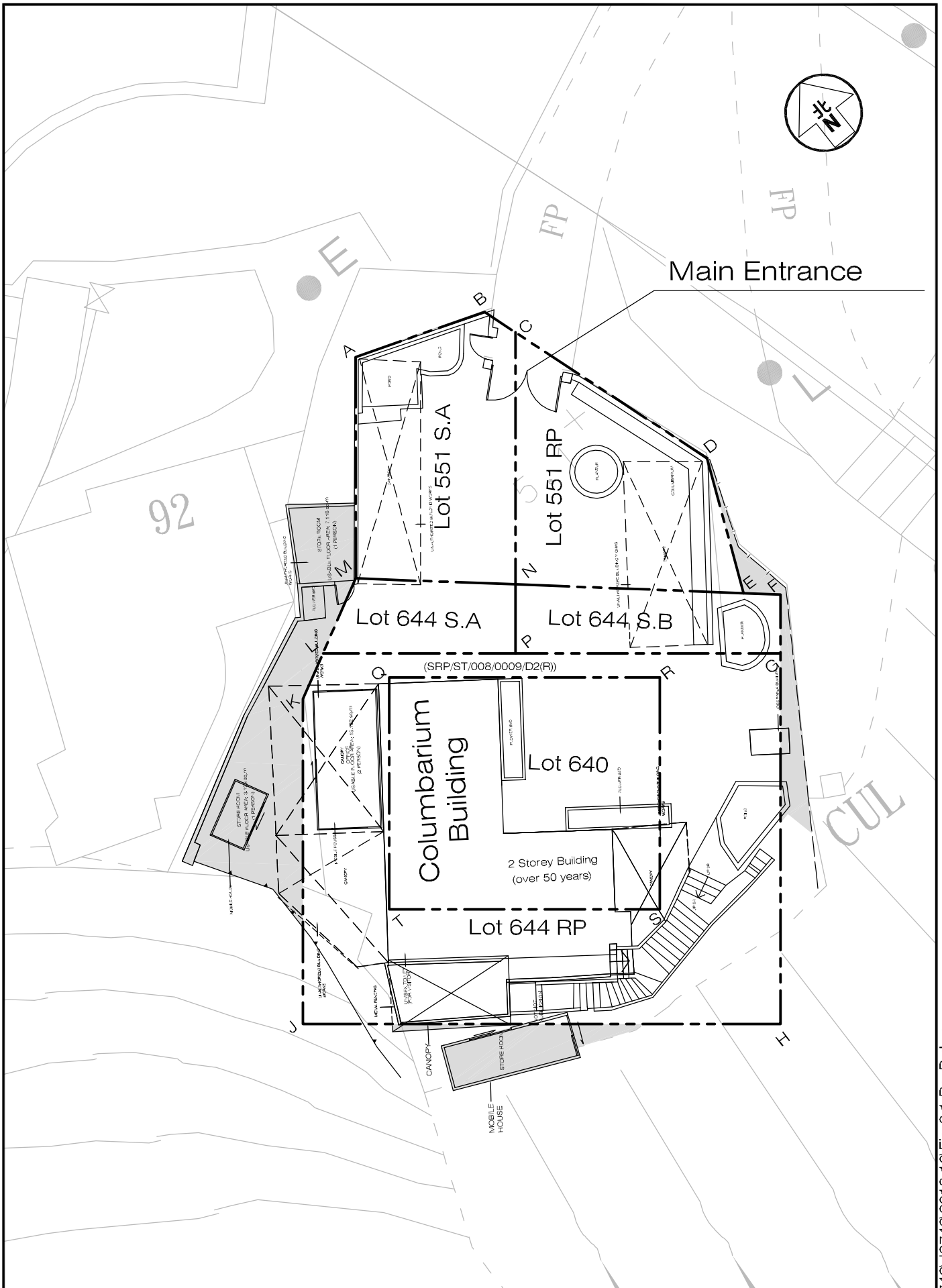


Project Title

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| H C F | S C Y | K C | B | 09 OCT 2018 |

Figure Title

LAYOUT OF THE SUBJECT SITE

CKM Asia Limited
Traffic and Transportation Planning Consultants
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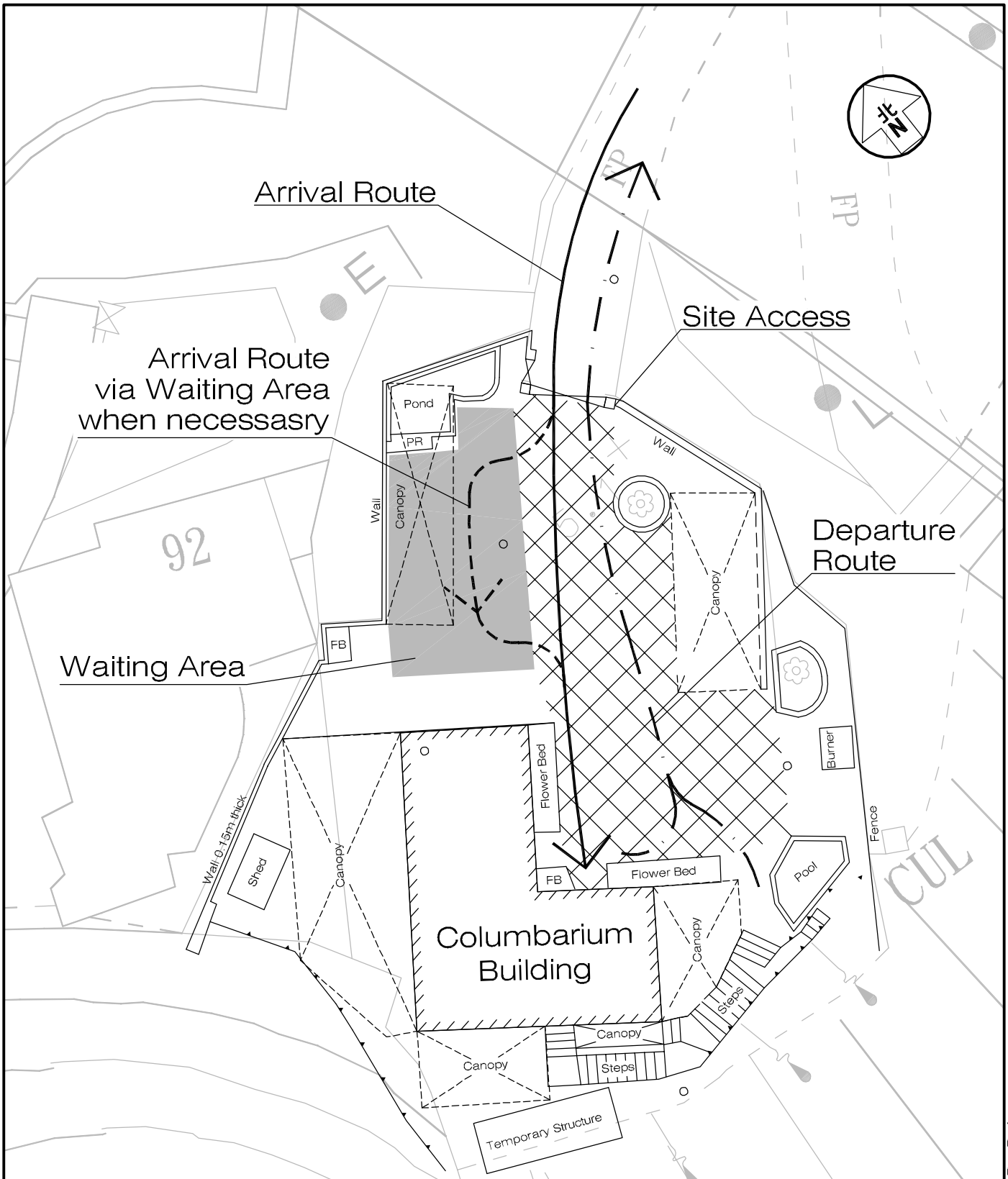
Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk

T:\JOB\J6700-J6749\J6746\2018 10\Fig 3.1 RevB.dwg




LEGEND :

- Waiting Area
- No Waiting Permitted

| | |
|---|---|
| Project Title | LICENSING APPLICATION (SERIAL NO. 38) FOR POST-CUT-OFF COLUMBARIUM AT MEMORIAL PARK HONG KONG, 93, FO TAN VILLAGE, FO TAN, SHATIN, N.T. (LOT NOS. 551 S.A, RP, 640 AND 644 S.A, S.B & RP IN D.D.176 AND ADJOINING GOVERNMENT LAND) |
| Figure Title | PROPOSED TRAFFIC AND CROWD MANAGEMENT PLAN |

| Job No. | Figure No. | Scale in A4 |
|---|---|---|
| J6746 | 3.2 | 1 : 200 |

| Designed by | Drawn by | Checked by | Revision | Date |
|---|---|---|---|---|
| H C F | S C Y | K C | B | 09 OCT 2018 |

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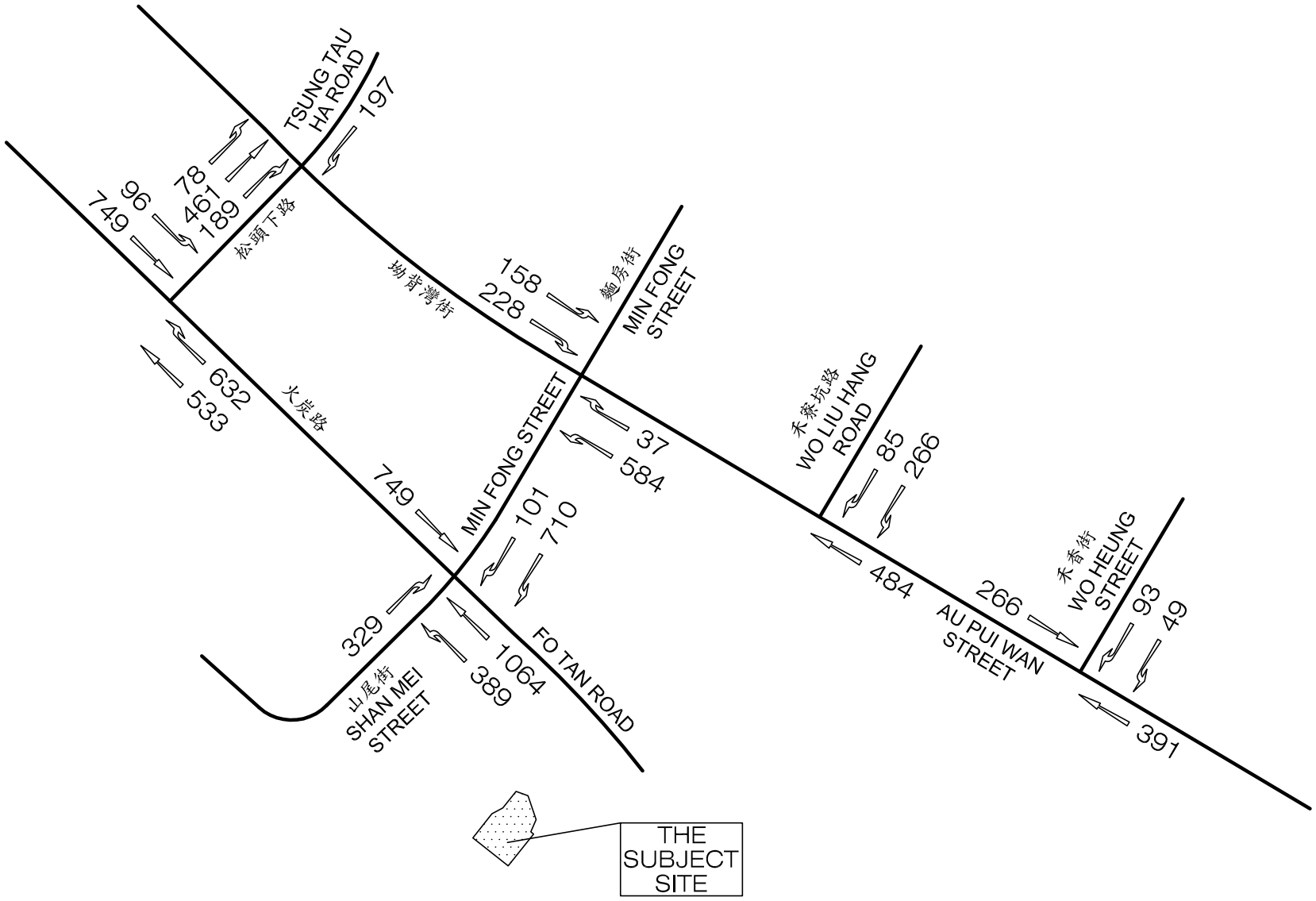


LEGEND :

123 - peak hour traffic flow, pcu / hr

| | | | |
|---|---|---|---|
| Project Title | LICENSING APPLICATION (SERIAL NO. 38) FOR POST-CUT-OFF COLUMBARIUM AT MEMORIAL PARK HONG KONG, 93, FO TAN VILLAGE, FO TAN, SHATIN, N.T. (LOT NOS. 551 S.A, RP, 640 AND 644 S.A, S.B & RP IN D.D.176 AND ADJOINING GOVERNMENT LAND) | J6746 | Figure No. 4.1 / Revision B |
| Figure Title | YEAR 2028 CHING MING FESTIVAL PEAK HOUR TRAFFIC FLOW WITH FULL OCCUPANCY AT THE PRE-CUT-OFF COLUMBARIUM | | Designed by H C F / Drawn by S C Y / Checked by K C; Scale in A4 N.T.S. / Date 09 OCT 2018 |

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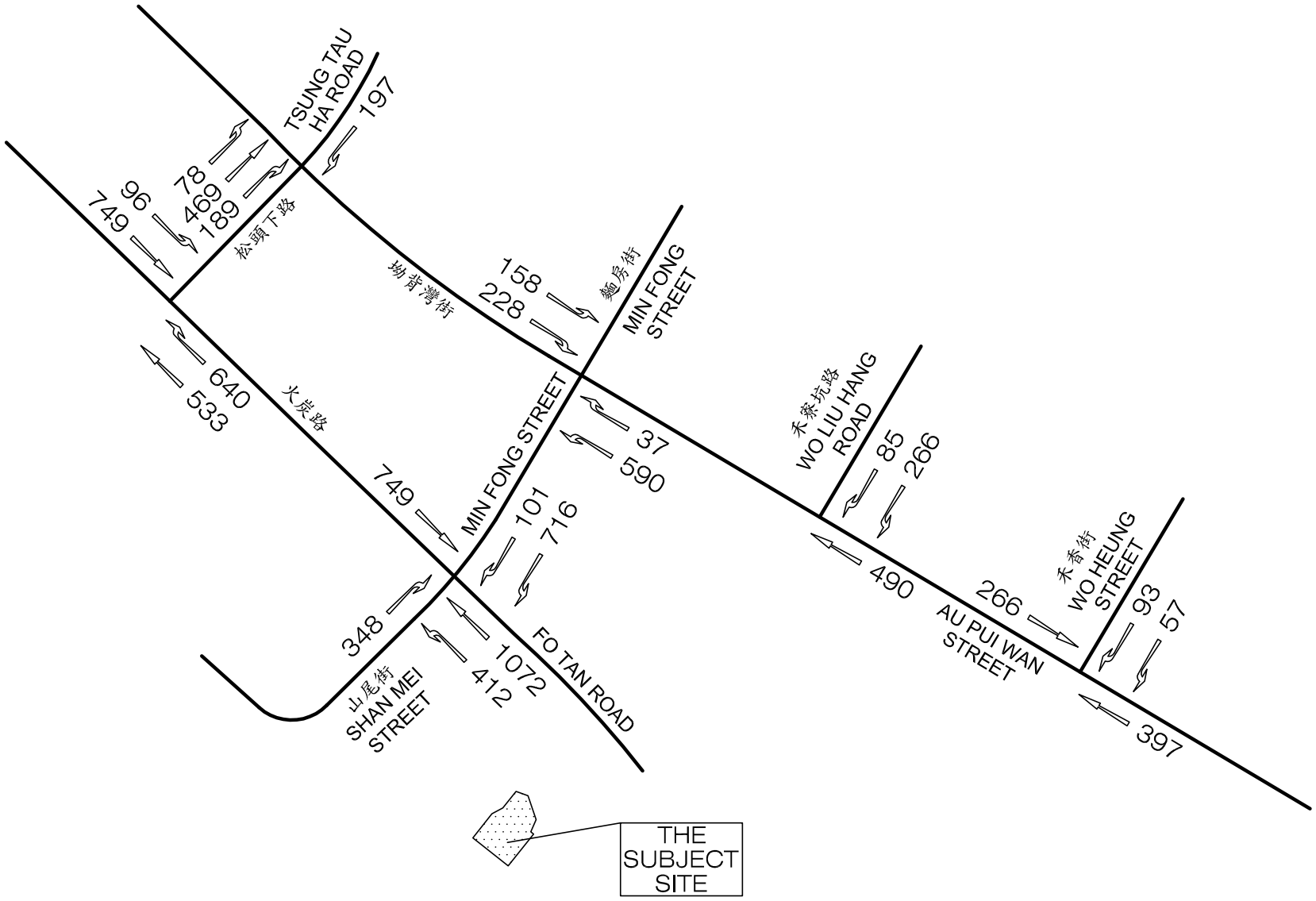
T:\JOB\J6700-J6749\J6746\2018 10\Fig 4.1 RevB.dwg




LEGEND :

123 - peak hour traffic flow, pcu / hr

| | | | |
|---|---|---|---|
| Project Title | LICENSING APPLICATION (SERIAL NO. 38) FOR POST-CUT-OFF COLUMBARIUM AT MEMORIAL PARK HONG KONG, 93, FO TAN VILLAGE, FO TAN, SHATIN, N.T. (LOT NOS. 551 S.A, RP, 640 AND 644 S.A, S.B & RP IN D.D.176 AND ADJOINING GOVERNMENT LAND) | J6746 | Figure No. 4.2 / Revision B |
| Figure Title | YEAR 2028 CHING MING FESTIVAL PEAK HOUR TRAFFIC FLOW WITH THE POST-CUT-OFF COLUMBARIUM FULLY OCCUPIED | | Designed by H C F / Drawn by S C Y / Checked by K C |
| | | | Scale in A4 N.T.S. / Date 09 OCT 2018 |

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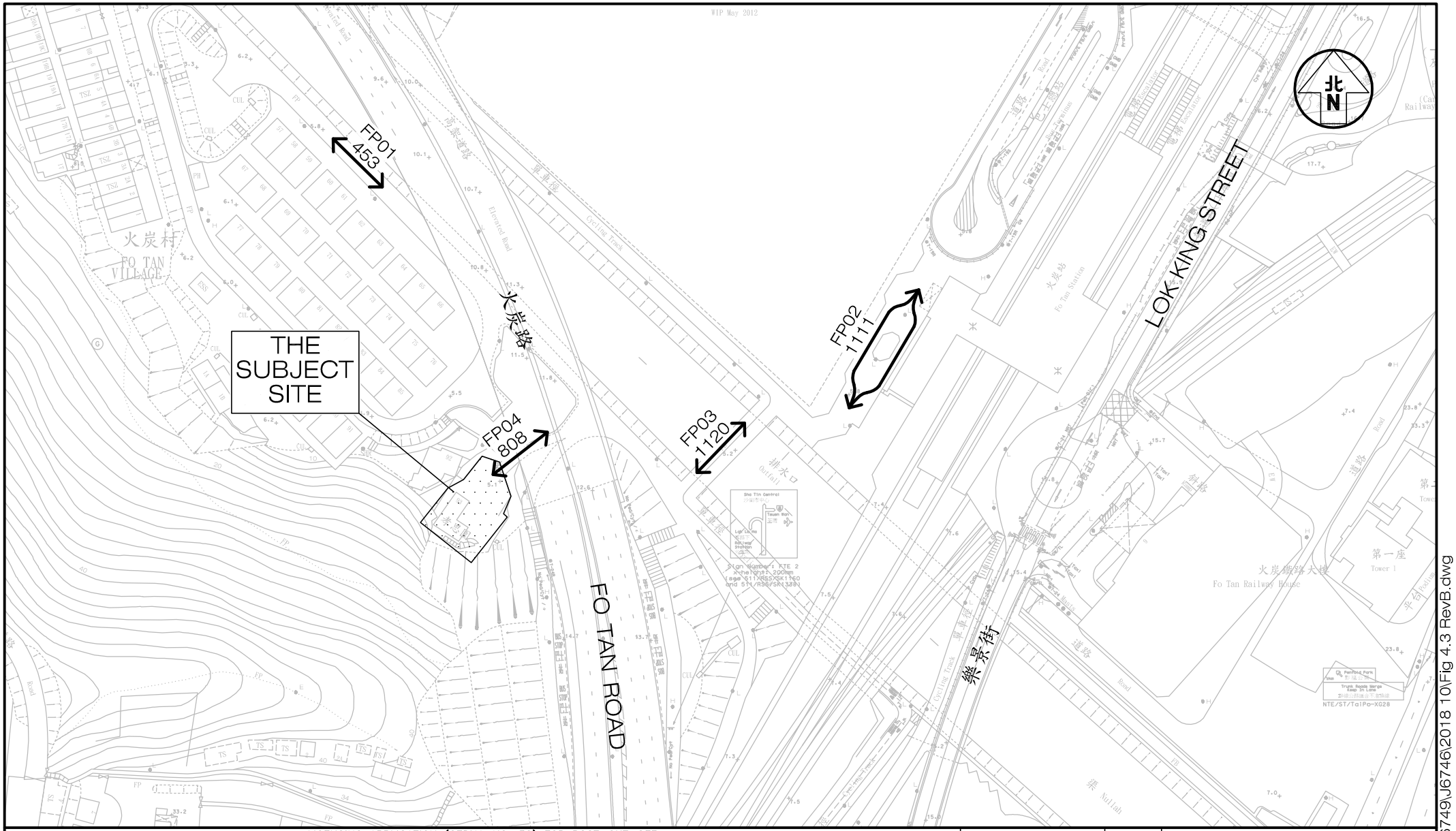
T:\JOB\J6700-J6749\J6746\2018 10\Fig 4.2 RevB.dwg




| | | | |
|---|---|---|---|
| Project Title | LICENSING APPLICATION (SERIAL NO. 38) FOR POST-CUT-OFF COLUMBARIUM AT MEMORIAL PARK HONG KONG, 93, FO TAN VILLAGE, FO TAN, SHATIN, N.T. (LOT NOS. 551 S.A, RP, 640 AND 644 S.A, S.B & RP IN D.D.176 AND ADJOINING GOVERNMENT LAND) | J6746 | Figure No. 4.3 / Revision B |
| Figure Title | YEAR 2028 CHING MING FESTIVAL PEAK HOUR PEDESTRIAN FLOW WITH FULL OCCUPANCY AT THE PRE-CUT-OFF COLUMBARIUM | Designed by H C F / Drawn by S C Y / Checked by K C | Scale in A4 1 : 1,500 / Date 09 OCT 2018 |

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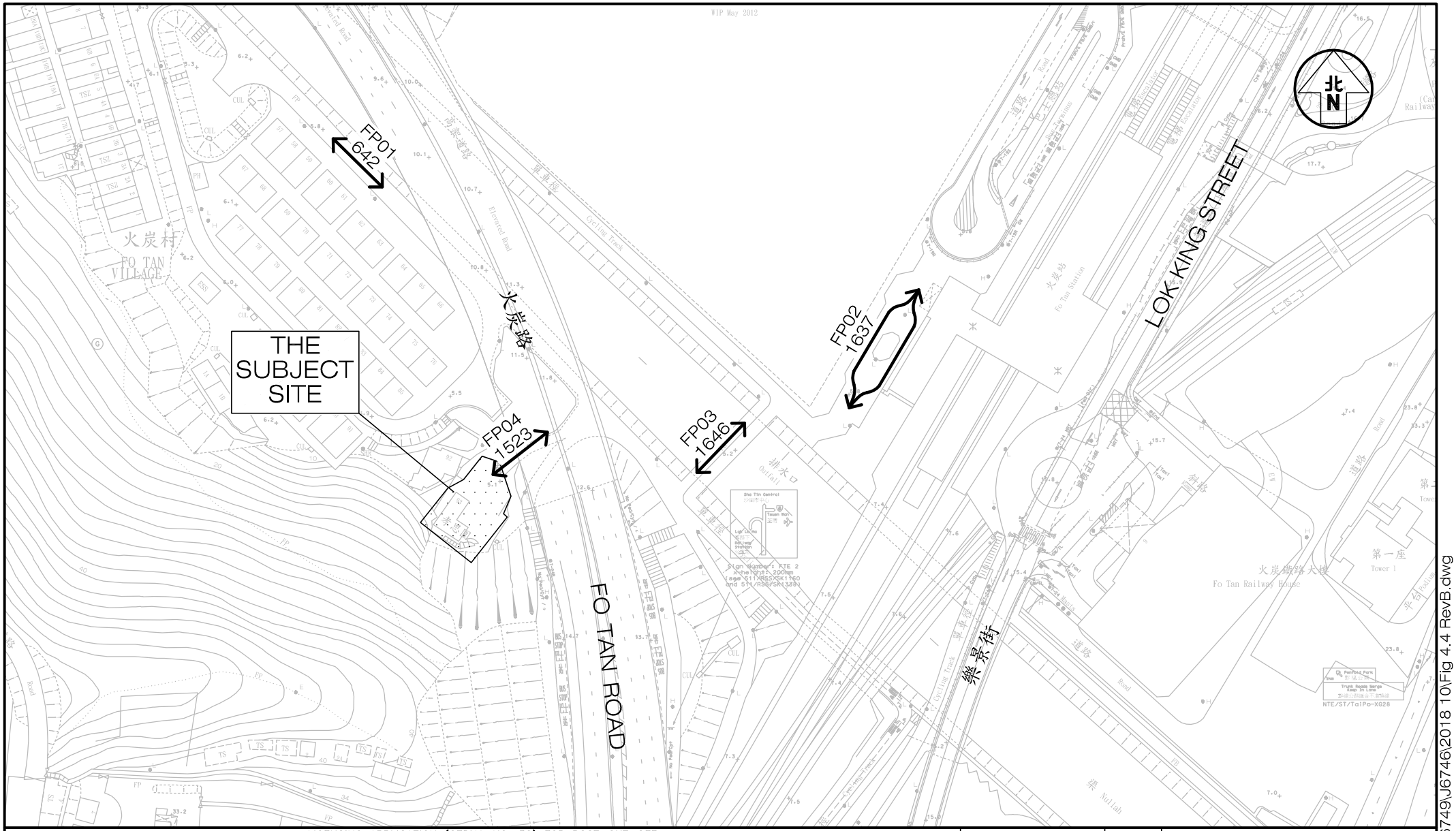
T:\JOB\J6700-J6749\J6746\2018 10\Fig 4.3 RevB.dwg




| | | | |
|---|---|---|---|
| Project Title | LICENSING APPLICATION (SERIAL NO. 38) FOR POST-CUT-OFF COLUMBARIUM AT MEMORIAL PARK HONG KONG, 93, FO TAN VILLAGE, FO TAN, SHATIN, N.T. (LOT NOS. 551 S.A, RP, 640 AND 644 S.A, S.B & RP IN D.D.176 AND ADJOINING GOVERNMENT LAND) | J6746 | Figure No. 4.4 / Revision B |
| Figure Title | YEAR 2028 CHING MING FESTIVAL PEAK HOUR PEDESTRIAN FLOW WITH THE POST-CUT-OFF COLUMBARIUM FULLY OCCUPIED | | Designed by H C F / Drawn by S C Y / Checked by K C<br>Scale in A4 1 : 1,500 / Date 09 OCT 2018 |

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# Appendix A – Junction Capacity Analyses

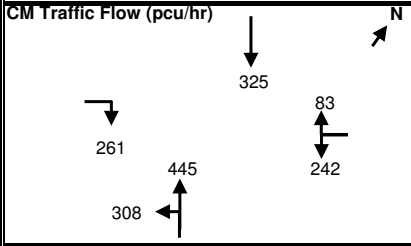
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | | | Job Number: | J6746 |
| Scenario: | 2018 Existing Ching Ming Condition | | | Page | 1 |
| Design Year: | 2018 | Designed By: | HCF | Checked By: | WCH | Date: | 03 July 2018 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | CM Peak Turning % | Sat.Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road WB | LT | A1 | 1, 3 | 3.50 | 16.0 | | 100 | 1797 | 308 | 0.171 | 0.171 |
| Fo Tan Road WB | SA | A2 | 1 | 3.50 | 16.0 | | | 2105 | 149 | 0.071 | |
| Fo Tan Road WB | SA | A3 | 1 | 3.50 | | | | 2105 | 148 | 0.070 | |
| Fo Tan Road WB | SA | A4 | 1 | 3.50 | | | | 2105 | 148 | 0.070 | |
| | | | | | | | | | | | |
| Shan Mei Street NB | RT | B1 | 3 | 3.00 | 22.5 | | 100 | 1795 | 126 | 0.070 | |
| Shan Mei Street NB | RT | B2 | 3 | 3.00 | 20.0 | | 100 | 1912 | 135 | 0.071 | |
| | | | | | | | | | | | |
| Fo Tan Road EB | SA | C1 | 1 | 3.30 | | | | 1945 | 76 | 0.039 | |
| Fo Tan Road EB | SA | C2 | 1 | 3.30 | | | | 2085 | 83 | 0.040 | |
| Fo Tan Road EB | SA | C3 | 1 | 3.30 | | | | 2085 | 83 | 0.040 | |
| Fo Tan Road EB | SA | C4 | 1 | 3.30 | | | | 2085 | 83 | 0.040 | |
| | | | | | | | | | | | |
| Min Fong Street SB | LT | D1 | 2 | 3.50 | 20.0 | | 100 | 1828 | 341 | 0.187 | 0.187 |
| Min Fong Street SB | LT | D2 | 2 | 3.50 | 22.5 | | 100 | 1973 | 369 | 0.187 | |
| Min Fong Street SB | RT | D3 | 2 | 3.50 | 22.5 | | 100 | 1973 | 43 | 0.022 | |
| Min Fong Street SB | RT | D4 | 2 | 3.50 | 20.0 | | 100 | 1828 | 40 | 0.022 | |

| Pedestrian Phase | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $E_{(p)}$ | 1, 3 | Min Crossing Time = | 8 | sec GM + | 7 | sec FGM = | 15 | sec | |
| | $F_{(p)}$ | 2, 3 | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 | sec | |
| | $G_{(p)}$ | 3 | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 | sec | |
| | $H_{(p)}$ | 2 | Min Crossing Time = | 11 | sec GM + | 10 | sec FGM = | 21 | sec | |

**CM Traffic Flow (pcu/hr)**

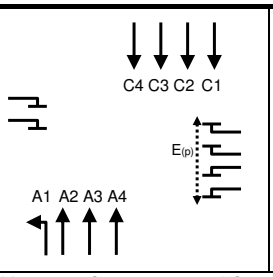
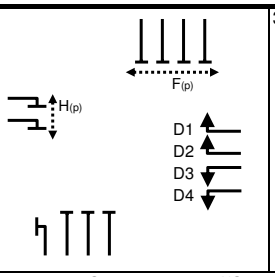
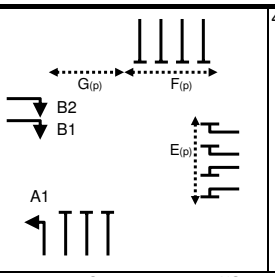



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | CM PEAK HOUR Check 1 | Check 2 | Check 3 |
|---|---|---|---|
| Sum y | 0.358 | | |
| L (s) | 8 | | |
| C (s) | 100 | | |
| Prac. y | 0.828 | | |
| R.C. (%) | 131% | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   |   | | |
| CM G = I/G = 5 | G = I/G = 5 | G = I/G = | G = I/G = | G = |
| Peak G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |

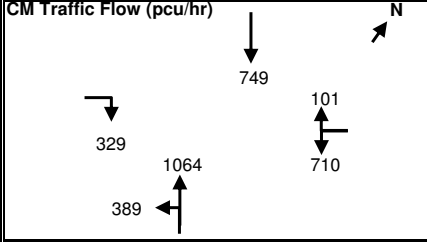
# Signal Junction Analysis

Junction: Fo Tan Road / Shan Mei Street / Min Fong Street — Job Number: J6746
Scenario: 2028 With Full Occupancy at the Pre-cut-off Columbarium — Page 2
Design Year: 2028 — Designed By: HCF — Checked By: WCH — Date: 03 July 2018

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | CM Peak Turning % | Sat.Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road WB | LT | A1 | 1, 3 | 3.50 | 16.0 | | 100 | 1797 | 389 | 0.216 | |
| Fo Tan Road WB | SA | A2 | 1 | 3.50 | 16.0 | | | 2105 | 354 | 0.168 | 0.168 |
| Fo Tan Road WB | SA | A3 | 1 | 3.50 | | | | 2105 | 355 | 0.169 | |
| Fo Tan Road WB | SA | A4 | 1 | 3.50 | | | | 2105 | 355 | 0.169 | |
| Shan Mei Street NB | RT | B1 | 3 | 3.00 | 22.5 | | 100 | 1795 | 159 | 0.089 | 0.089 |
| Shan Mei Street NB | RT | B2 | 3 | 3.00 | 20.0 | | 100 | 1912 | 170 | 0.089 | |
| Fo Tan Road EB | SA | C1 | 1 | 3.30 | | | | 1945 | 179 | 0.092 | |
| Fo Tan Road EB | SA | C2 | 1 | 3.30 | | | | 2085 | 190 | 0.091 | |
| Fo Tan Road EB | SA | C3 | 1 | 3.30 | | | | 2085 | 190 | 0.091 | |
| Fo Tan Road EB | SA | C4 | 1 | 3.30 | | | | 2085 | 190 | 0.091 | |
| Min Fong Street SB | LT | D1 | 2 | 3.50 | 20.0 | | 100 | 1828 | 341 | 0.187 | 0.187 |
| Min Fong Street SB | LT | D2 | 2 | 3.50 | 22.5 | | 100 | 1973 | 369 | 0.187 | |
| Min Fong Street SB | RT | D3 | 2 | 3.50 | 22.5 | | 100 | 1973 | 52 | 0.026 | |
| Min Fong Street SB | RT | D4 | 2 | 3.50 | 20.0 | | 100 | 1828 | 49 | 0.027 | |

| Pedestrian Phase | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $E_{(p)}$ | 1, 3 | Min Crossing Time = | 8 | sec GM + | 7 | sec FGM = | 15 sec |
| | $F_{(p)}$ | 2, 3 | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 sec |
| | $G_{(p)}$ | 3 | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 sec |
| | $H_{(p)}$ | 2 | Min Crossing Time = | 11 | sec GM + | 10 | sec FGM = | 21 sec |

**CM Traffic Flow (pcu/hr)**

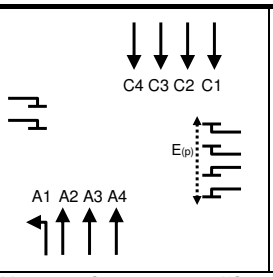



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$
$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

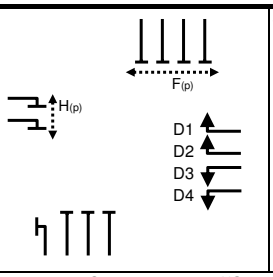
| | CM PEAK HOUR Check 1 | Check 2 | Check 3 |
|---|---|---|---|
| Sum y | 0.444 | | |
| L (s) | 13 | | |
| C (s) | 100 | | |
| Prac. y | 0.783 | | |
| R.C. (%) | 76% | | |

**NOTE:**

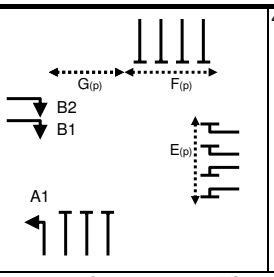
1




2




3




4

5

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CM | G = | I/G = 5 | G = | I/G = 5 | G = | I/G = 6 | G = | I/G = | G = | |
| Peak | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |

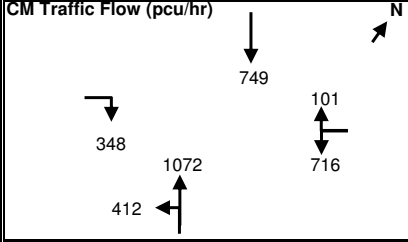
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | | | Job Number: | J6746 |
| Scenario: | 2028 With the Post-cut-off Columbarium Fully Occupied | | | Page | 3 |
| Design Year: | 2028 | Designed By: | HCF | Checked By: | WCH | Date: | 03 July 2018 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | CM Peak Turning % | Sat.Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road WB | LT | A1 | 1, 3 | 3.50 | 16.0 | | 100 | 1797 | 412 | 0.229 | |
| Fo Tan Road WB | SA | A2 | 1 | 3.50 | 16.0 | | | 2105 | 358 | 0.170 | |
| Fo Tan Road WB | SA | A3 | 1 | 3.50 | | | | 2105 | 357 | 0.170 | 0.170 |
| Fo Tan Road WB | SA | A4 | 1 | 3.50 | | | | 2105 | 357 | 0.170 | |
| | | | | | | | | | | | |
| Shan Mei Street NB | RT | B1 | 3 | 3.00 | 22.5 | | 100 | 1795 | 169 | 0.094 | 0.094 |
| Shan Mei Street NB | RT | B2 | 3 | 3.00 | 20.0 | | 100 | 1912 | 179 | 0.094 | |
| | | | | | | | | | | | |
| Fo Tan Road EB | SA | C1 | 1 | 3.30 | | | | 1945 | 179 | 0.092 | |
| Fo Tan Road EB | SA | C2 | 1 | 3.30 | | | | 2085 | 190 | 0.091 | |
| Fo Tan Road EB | SA | C3 | 1 | 3.30 | | | | 2085 | 190 | 0.091 | |
| Fo Tan Road EB | SA | C4 | 1 | 3.30 | | | | 2085 | 190 | 0.091 | |
| | | | | | | | | | | | |
| Min Fong Street SB | LT | D1 | 2 | 3.50 | 20.0 | | 100 | 1828 | 344 | 0.188 | 0.188 |
| Min Fong Street SB | LT | D2 | 2 | 3.50 | 22.5 | | 100 | 1973 | 372 | 0.189 | |
| Min Fong Street SB | RT | D3 | 2 | 3.50 | 22.5 | | 100 | 1973 | 52 | 0.026 | |
| Min Fong Street SB | RT | D4 | 2 | 3.50 | 20.0 | | 100 | 1828 | 49 | 0.027 | |

| Pedestrian Phase | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $E_{(p)}$ | 1, 3 | Min Crossing Time = | 8 | sec GM + | 7 | sec FGM = | 15 sec |
| | $F_{(p)}$ | 2, 3 | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 sec |
| | $G_{(p)}$ | 3 | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 sec |
| | $H_{(p)}$ | 2 | Min Crossing Time = | 11 | sec GM + | 10 | sec FGM = | 21 sec |

**CM Traffic Flow (pcu/hr)**

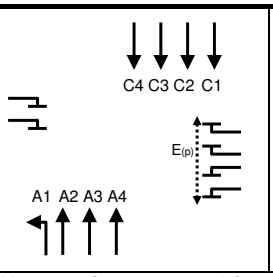
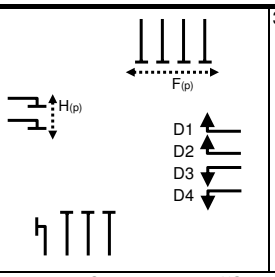
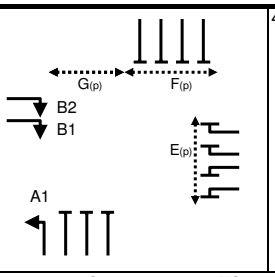



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | CM PEAK HOUR Check 1 | Check 2 | Check 3 |
|---|---|---|---|
| Sum y | 0.452 | | |
| L (s) | 13 | | |
| C (s) | 100 | | |
| Prac. y | 0.783 | | |
| R.C. (%) | 73% | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  |  | | |
|  |  |  | | |
| CM G = I/G = 5 | G = I/G = 5 | G = I/G = 6 | G = I/G = | G = I/G = |
| Peak G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

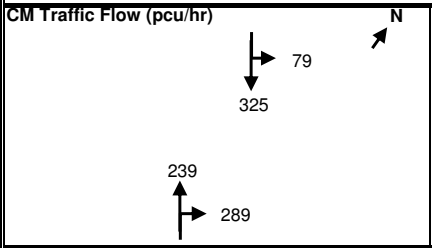
# Signal Junction Analysis

Junction: Fo Tan Road / Tsung Tau Ha Road — Job Number: J6746
Scenario: 2018 Existing Ching Ming Condition — Page 4
Design Year: 2018 — Designed By: HCF — Checked By: WCH — Date: 03 July 2018

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | CM Peak Turning % | Sat.Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road WB | SA | A1 | 1 | 3.30 | | | | 1945 | 115 | 0.059 | |
| Fo Tan Road WB | SA | A2 | 1 | 3.30 | | | | 2085 | 124 | 0.059 | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.30 | 22.5 | | 100 | 1955 | 145 | 0.074 | 0.074 |
| Fo Tan Road WB | RT | A4 | 1 | 3.30 | 20.0 | | 100 | 1940 | 144 | 0.074 | |
| | | | | | | | | | | | |
| Fo Tan Road EB | LT | B1 | 2 | 3.30 | 12.5 | | 100 | 1737 | 79 | 0.045 | |
| Fo Tan Road EB | SA | B2 | 2 | 3.30 | | | | 2085 | 109 | 0.052 | 0.052 |
| Fo Tan Road EB | SA | B3 | 2 | 3.30 | | | | 2085 | 108 | 0.052 | |
| Fo Tan Road EB | SA | B4 | 2 | 3.30 | | | | 2085 | 108 | 0.052 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | $E_{(p)}$ | 1 | | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 | sec |
| | $F_{(p)}$ | 2 | | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 | sec |
| | $G_{(p)}$ | 2 | | Min Crossing Time = | 5 | sec GM + | 11 | sec FGM = | 16 | sec |
| | $H_{(p)}$ | 1 | | Min Crossing Time = | 5 | sec GM + | 9 | sec FGM = | 14 | sec |

**CM Traffic Flow (pcu/hr)**

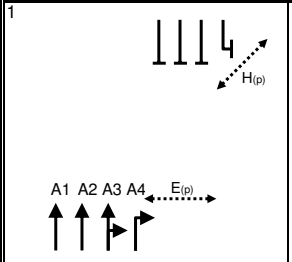
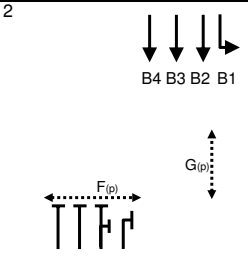



$S = 1940 + 100\ (W-3.25)$ $S_M = S / (1 + 1.5\ f/r)$

$S = 2080 + 100\ (W-3.25)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | CM PEAK HOUR Check 1 | Check 2 | Check 3 |
|---|---|---|---|
| Sum y | 0.126 | | |
| L (s) | 13 | | |
| C (s) | 100 | | |
| Prac. y | 0.783 | | |
| R.C. (%) | 521% | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CM | G = | I/G = | 10 | G = | I/G = | 5 | G = | I/G = | G = | I/G = | G = |
| Peak | G = | I/G = | | G = | I/G = | | G = | I/G = | G = | I/G = | G = |

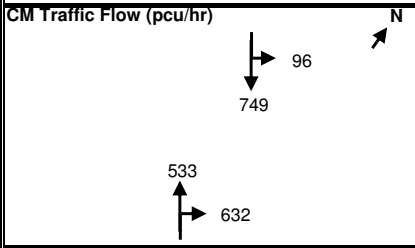
# Signal Junction Analysis

Junction: Fo Tan Road / Tsung Tau Ha Road — Job Number: J6746
Scenario: 2028 With Full Occupancy at the Pre-cut-off Columbarium — Page 5
Design Year: 2028 — Designed By: HCF — Checked By: WCH — Date: 03 July 2018

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | CM Peak Turning % | Sat.Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road WB | SA | A1 | 1 | 3.30 | | | | 1945 | 257 | 0.132 | |
| Fo Tan Road WB | SA | A2 | 1 | 3.30 | | | | 2085 | 276 | 0.132 | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.30 | 22.5 | | 100 | 1955 | 317 | 0.162 | 0.162 |
| Fo Tan Road WB | RT | A4 | 1 | 3.30 | 20.0 | | 100 | 1940 | 315 | 0.162 | |
| | | | | | | | | | | | |
| Fo Tan Road EB | LT | B1 | 2 | 3.30 | 12.5 | | 100 | 1737 | 96 | 0.055 | |
| Fo Tan Road EB | SA | B2 | 2 | 3.30 | | | | 2085 | 249 | 0.119 | |
| Fo Tan Road EB | SA | B3 | 2 | 3.30 | | | | 2085 | 250 | 0.120 | 0.120 |
| Fo Tan Road EB | SA | B4 | 2 | 3.30 | | | | 2085 | 250 | 0.120 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | $E_{(p)}$ | 1, 3 | Min Crossing Time = | 8 | sec GM + | 7 | sec FGM = | 15 | sec |
| | $F_{(p)}$ | 2, 3 | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 | sec |
| | $G_{(p)}$ | 3 | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 | sec |
| | $H_{(p)}$ | 2 | Min Crossing Time = | 11 | sec GM + | 10 | sec FGM = | 21 | sec |

**CM Traffic Flow (pcu/hr)**

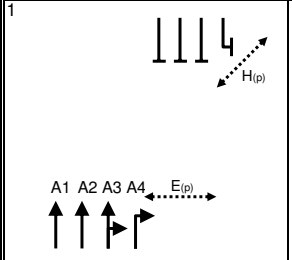
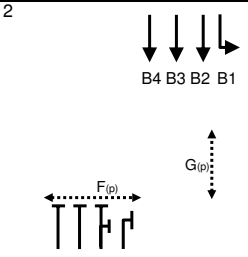



$S = 1940 + 100\ (W-3.25)$ $S_M = S / (1 + 1.5\ f/r)$

$S = 2080 + 100\ (W-3.25)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | CM PEAK HOUR Check 1 | Check 2 | Check 3 |
|---|---|---|---|
| Sum y | 0.282 | | |
| L (s) | 13 | | |
| C (s) | 100 | | |
| Prac. y | 0.783 | | |
| R.C. (%) | 178% | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| CM Peak G = I/G = 10 | G = I/G = 5 | G = I/G = | G = I/G = | G = I/G = |

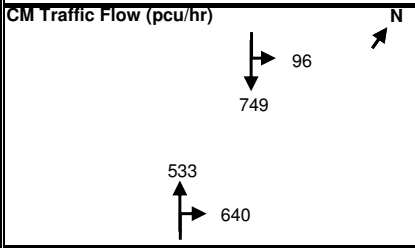
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tsung Tau Ha Road | | | | Job Number: J6746 |
| Scenario: | 2028 With the Post-cut-off Columbarium Fully Occupied | | | | Page 6 |
| Design Year: 2028 | Designed By: HCF | Checked By: WCH | | Date: | 03 July 2018 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | CM Peak Turning % | Sat.Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road WB | SA | A1 | 1 | 3.30 | | | | 1945 | 257 | 0.132 | |
| Fo Tan Road WB | SA | A2 | 1 | 3.30 | | | | 2085 | 276 | 0.132 | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.30 | 22.5 | | 100 | 1955 | 321 | 0.164 | 0.164 |
| Fo Tan Road WB | RT | A4 | 1 | 3.30 | 20.0 | | 100 | 1940 | 319 | 0.164 | |
| | | | | | | | | | | | |
| Fo Tan Road EB | LT | B1 | 2 | 3.30 | 12.5 | | 100 | 1737 | 96 | 0.055 | |
| Fo Tan Road EB | SA | B2 | 2 | 3.30 | | | | 2085 | 249 | 0.119 | |
| Fo Tan Road EB | SA | B3 | 2 | 3.30 | | | | 2085 | 250 | 0.120 | 0.120 |
| Fo Tan Road EB | SA | B4 | 2 | 3.30 | | | | 2085 | 250 | 0.120 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | $E_{(p)}$ | 1, 3 | Min Crossing Time = | 8 | sec GM + | 7 | sec FGM = | 15 | sec |
| | $F_{(p)}$ | 2, 3 | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 | sec |
| | $G_{(p)}$ | 3 | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 | sec |
| | $H_{(p)}$ | 2 | Min Crossing Time = | 11 | sec GM + | 10 | sec FGM = | 21 | sec |

**CM Traffic Flow (pcu/hr)**

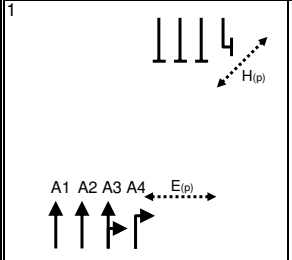
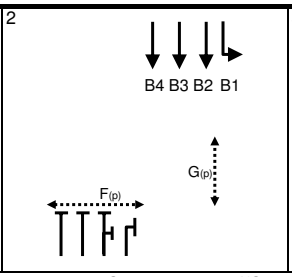



$S = 1940 + 100\ (W-3.25)$ $S_M = S / (1 + 1.5\ f/r)$

$S = 2080 + 100\ (W-3.25)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

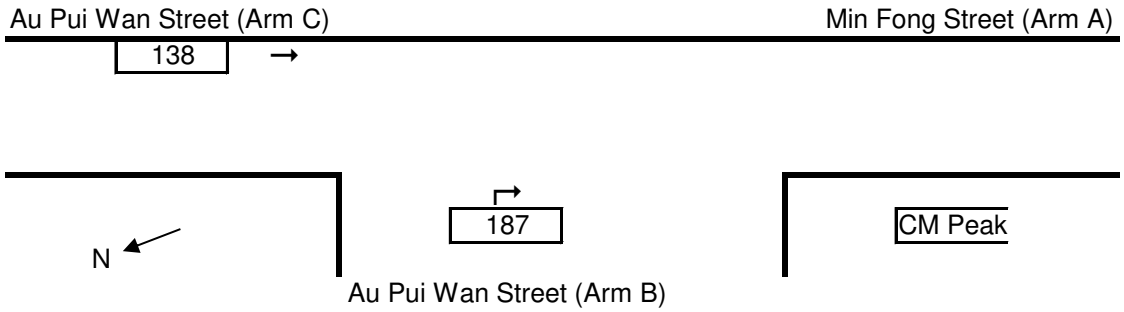
| | CM PEAK HOUR Check 1 | Check 2 | Check 3 |
|---|---|---|---|
| Sum y | 0.284 | | |
| L (s) | 13 | | |
| C (s) | 100 | | |
| Prac. y | 0.783 | | |
| R.C. (%) | 176% | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| CM Peak G = I/G = 10 | G = I/G = 5 | G = I/G = | G = I/G = | G = I/G = |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | | |
| Design Year: | 2018 | Job Number: | J6746 | Date: | 03 July 2018 |
| Scenario: | 2018 Existing Ching Ming Condition | | | | Page 7 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | 0 | w-BA | 3.40 | D | 0.8057 |
| | W-CR | 0.00 | V-lBA | 25 | w-BC | 0.00 | E | 0.5860 |
| | | | V-rBC | 0 | w-CB | 0.00 | F | 0.5860 |
| | | | V-rCB | 0 | | | Y | 0.6585 |

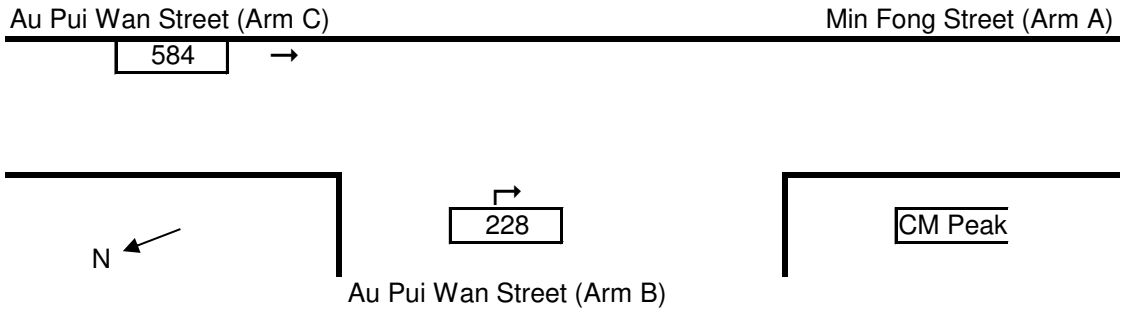
Analysis :

| Traffic Flows, pcu/hr | CM Peak | Capacity, pcu/hr | CM Peak |
|---|---|---|---|
| q-CA | 138 | Q-BA | 488 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 488 |
| q-BA | 187 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | CM Peak | |
|---|---|---|
| B-A | 0.383 | |
| B-C | 0.000 | |
| C-B | 0.000 | |
| B-AC | 0.383 | (for shared lane CA, CB) |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | | |
| Design Year: | 2028 | Job Number: | J6746 | Date: | 03 July 2018 |
| Scenario: | 2028 With Full Occupancy at the Pre-cut-off Columbarium | | | Page | 8 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | 0 | w-BA | 3.40 | D | 0.8057 |
| | W-CR | 0.00 | V-lBA | 25 | w-BC | 0.00 | E | 0.5860 |
| | | | V-rBC | 0 | w-CB | 0.00 | F | 0.5860 |
| | | | V-rCB | 0 | | | Y | 0.6585 |

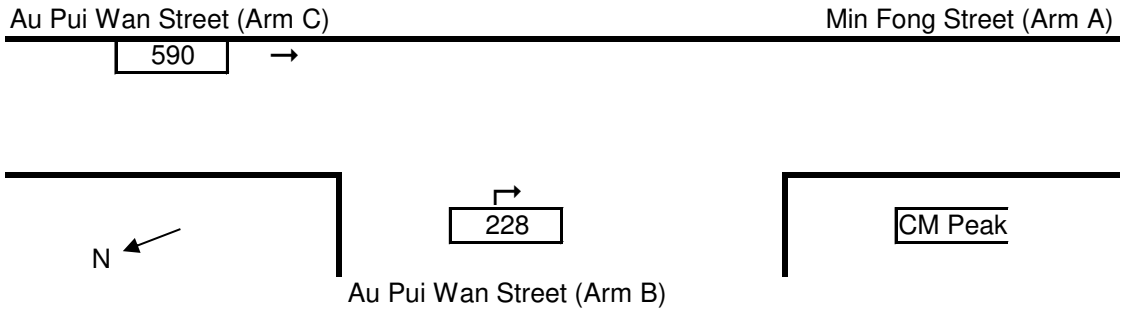
Analysis :

| Traffic Flows, pcu/hr | CM Peak | Capacity, pcu/hr | CM Peak |
|---|---|---|---|
| q-CA | 584 | Q-BA | 434 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 434 |
| q-BA | 228 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | CM Peak | |
|---|---|---|
| B-A | 0.525 | |
| B-C | 0.000 | |
| C-B | 0.000 | |
| B-AC | 0.525 | (for shared lane CA, CB) |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | | |
| Design Year: | 2028 | Job Number: | J6746 | Date: | 03 July 2018 |
| Scenario: | 2028 With the Post-cut-off Columbarium Fully Occupied | | | Page | 9 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | 0 | w-BA | 3.40 | D | 0.8057 |
| | W-CR | 0.00 | V-lBA | 25 | w-BC | 0.00 | E | 0.5860 |
| | | | V-rBC | 0 | w-CB | 0.00 | F | 0.5860 |
| | | | V-rCB | 0 | | | Y | 0.6585 |

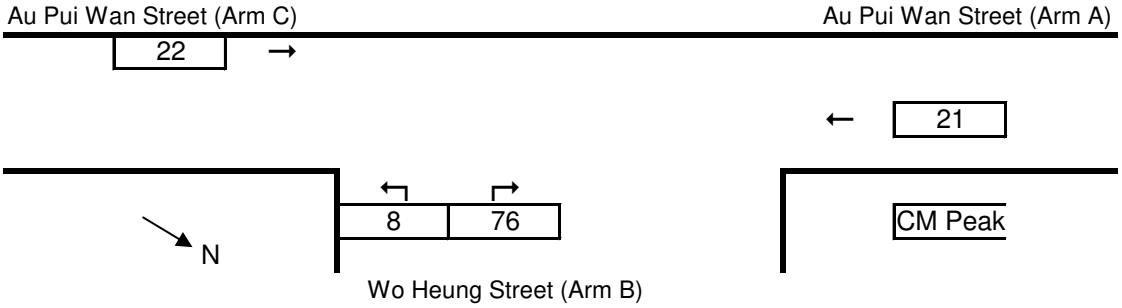
Analysis :

| Traffic Flows, pcu/hr | CM Peak | Capacity, pcu/hr | CM Peak |
|---|---|---|---|
| q-CA | 590 | Q-BA | 434 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 434 |
| q-BA | 228 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | CM Peak | |
|---|---|---|
| B-A | 0.526 | |
| B-C | 0.000 | |
| C-B | 0.000 | |
| B-AC | 0.526 | (for shared lane CA, CB) |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | | |
| Design Year: | 2018 | Job Number: | J6746 | Date: | 03 July 2018 |
| Scenario: | 2018 Existing Ching Ming Condition | | | | Page 10 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 10.20 | V-rBA | 20 | w-BA | 3.60 | D | 0.8378 |
| | W-CR | 0.00 | V-lBA | 25 | w-BC | 4.20 | E | 0.9618 |
| | | | V-rBC | 25 | w-CB | 0.00 | F | 0.5860 |
| | | | V-rCB | 0 | | | Y | 0.6481 |

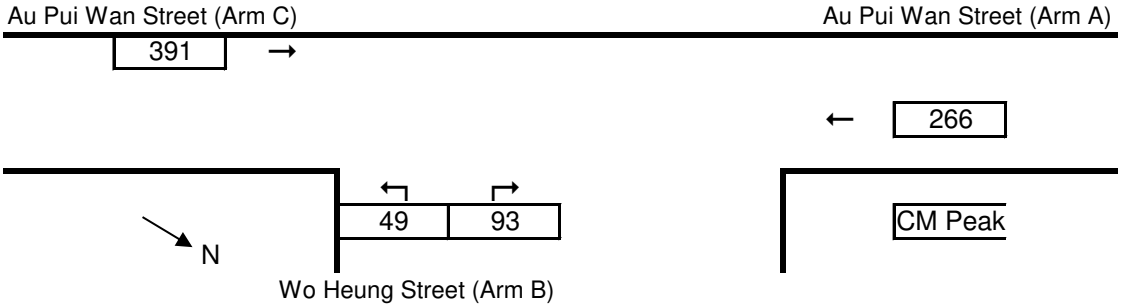
Analysis :

| Traffic Flows, pcu/hr | CM Peak | Capacity, pcu/hr | CM Peak |
|---|---|---|---|
| q-CA | 22 | Q-BA | 518 |
| q-CB | 0 | Q-BC | 712 |
| q-AB | 0 | Q-CB | 434 |
| q-AC | 21 | Q-BAC | 532 |
| q-BA | 76 | | |
| q-BC | 8 | | |
| f | 0.095 | | |

| Ratio-of-flow to Capacity | CM Peak | |
|---|---|---|
| B-A | 0.147 | |
| B-C | 0.011 | |
| C-B | 0.000 | |
| B-AC | 0.158 | (for shared lane CA, CB) |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | | |
| Design Year: | 2028 | Job Number: | J6746 | Date: | 03 July 2018 |
| Scenario: | 2028 With Full Occupancy at the Pre-cut-off Columbarium | | | Page | 11 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 10.20 | V-rBA | 20 | w-BA | 3.60 | D | 0.8378 |
| | W-CR | 0.00 | V-lBA | 25 | w-BC | 4.20 | E | 0.9618 |
| | | | V-rBC | 25 | w-CB | 0.00 | F | 0.5860 |
| | | | V-rCB | 0 | | | Y | 0.6481 |

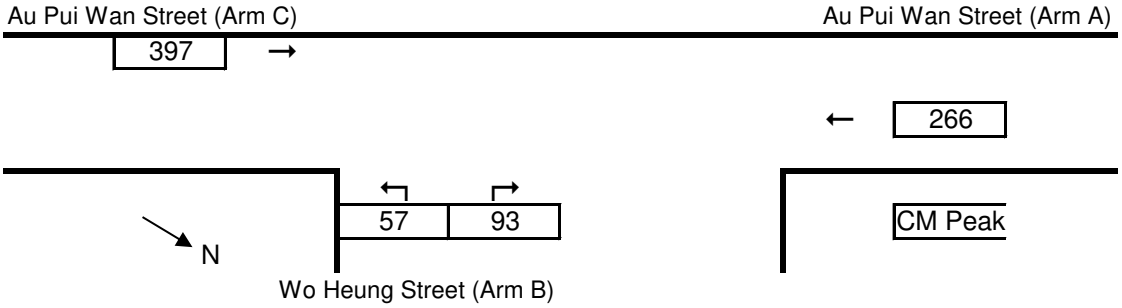
Analysis :

| Traffic Flows, pcu/hr | CM Peak | Capacity, pcu/hr | CM Peak |
|---|---|---|---|
| q-CA | 391 | Q-BA | 424 |
| q-CB | 0 | Q-BC | 656 |
| q-AB | 0 | Q-CB | 400 |
| q-AC | 266 | Q-BAC | 483 |
| q-BA | 93 | | |
| q-BC | 49 | | |
| f | 0.345 | | |

| Ratio-of-flow to Capacity | CM Peak | |
|---|---|---|
| B-A | 0.219 | |
| B-C | 0.075 | |
| C-B | 0.000 | |
| B-AC | 0.294 | (for shared lane CA, CB) |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | | |
| Design Year: | 2028 | Job Number: | J6746 | Date: | 03 July 2018 |
| Scenario: | 2028 With the Post-cut-off Columbarium Fully Occupied | | | Page | 12 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 10.20 | V-rBA | 20 | w-BA | 3.60 | D | 0.8378 |
| | W-CR | 0.00 | V-lBA | 25 | w-BC | 4.20 | E | 0.9618 |
| | | | V-rBC | 25 | w-CB | 0.00 | F | 0.5860 |
| | | | V-rCB | 0 | | | Y | 0.6481 |

Analysis :

| Traffic Flows, pcu/hr | CM Peak | Capacity, pcu/hr | CM Peak |
|---|---|---|---|
| q-CA | 397 | Q-BA | 423 |
| q-CB | 0 | Q-BC | 656 |
| q-AB | 0 | Q-CB | 400 |
| q-AC | 266 | Q-BAC | 489 |
| q-BA | 93 | | |
| q-BC | 57 | | |
| f | 0.380 | | |

| Ratio-of-flow to Capacity | CM Peak | |
|---|---|---|
| B-A | 0.220 | |
| B-C | 0.087 | |
| C-B | 0.000 | |
| B-AC | 0.307 | (for shared lane CA, CB) |

# Appendix IV

# Environmental Assessment Report

# Columbarium Use at Memorial Park Hong Kong (孝思園)
# No. 93 Fo Tan Village, Sha Tin, N.T.

## Application for Licence and Temporary Suspension of Liability for Pre-cut off Columbarium under Private Columbaria Ordinance – Air Pollution Control Information

**Prepared for:**

Memorial Park Hong Kong (孝思園)

**Prepared by:**

Ramboll Hong Kong Limited

**Date:**

7 July 2020

**Project Number:**

328000386

**Report No.:**

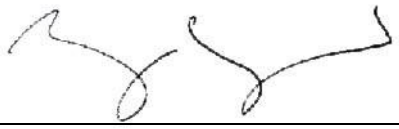
R6287_v1.3_MPHK_Air

Prepared by:

Rachel Wong, et. al.

Assistant Environmental Consultant

Approved by:



Katie Yu

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1.2 Purpose of this Submission ..... 1-1

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2.1 Project Location and the Environ ..... 2-1
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2.3 Air Sensitive Receivers ..... 2-1

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# 1. INTRODUCTION

## 1.1 Background to this Application

1.1.1 The Application Site (or "the Site") – Memorial Park Hong Kong (孝思園) is mainly falls within an area zoned "V" with a minor encroachment onto "GB" zone under the Approved Sha Tin OZP (Statutory plan no.: S/ST/34) and is currently used as a Buddhist and Taoist temple with ancillary columbarium.

1.1.2 Memorial Park Hong Kong (孝思園) is a pre-cut-off columbarium and has ashes interred in niches well before 8 a.m. on the cut-off date on 18 June 2014 referred under Section 20 (1)(d) in the Private Columbaria Ordinance ("PCO").

1.1.3 Memorial Park Hong Kong (孝思園) is located in Fo Tan urban area at an approximately 5-minute walk from Fo Tan MTR Station. The Site is located in Fo Tan Village abutting the Fo Tan Road. It is a tranquil place for spiritual worship and paying tribute to ancestors. See Figure 1.1 for its location and the environ.

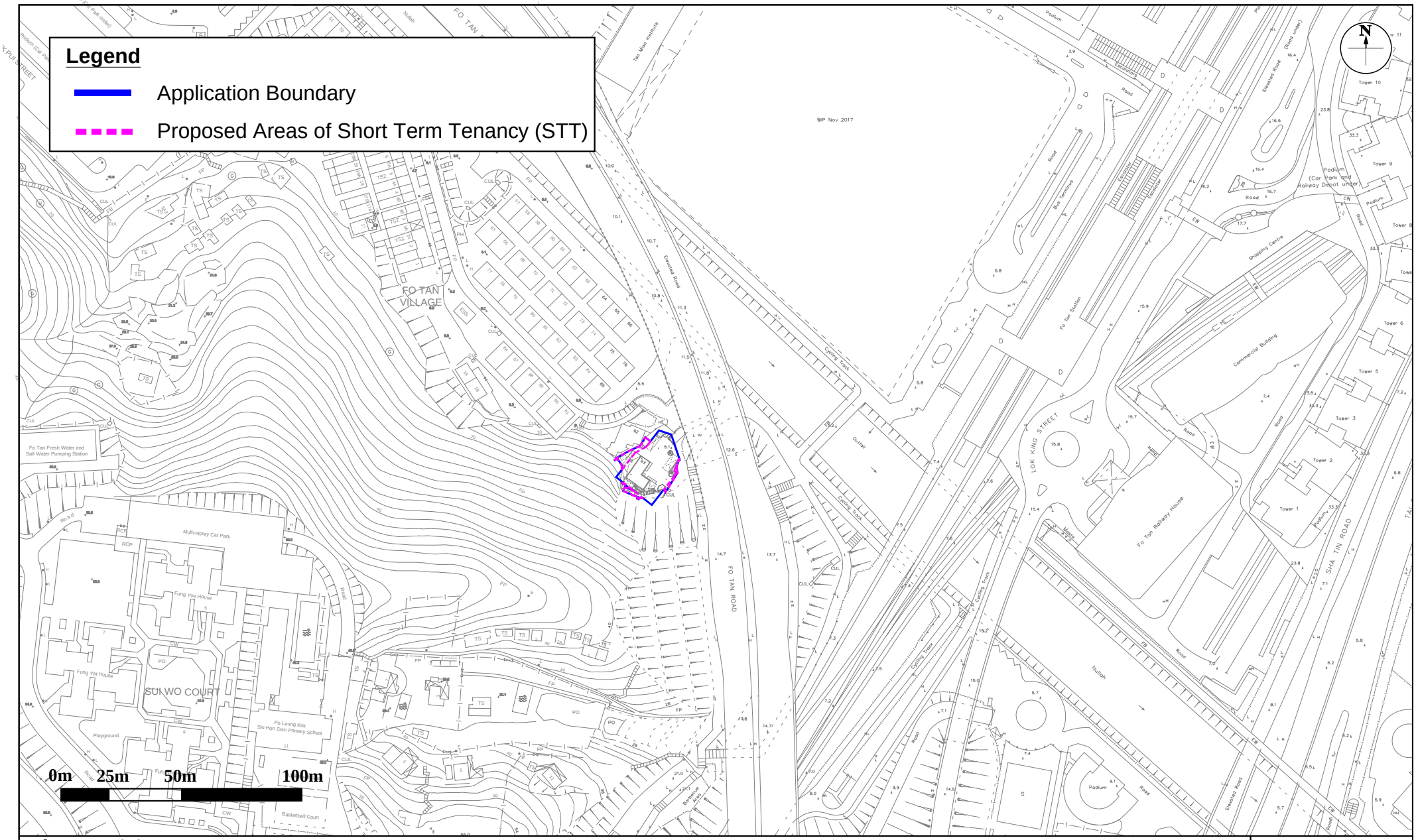
1.1.4 Memorial Park Hong Kong (孝思園) is a 2-storey building comprising worshipping halls, open areas, columbarium (G/F and 1/F) with ancillary office, toilets and fish ponds at G/F. Please see the master layout plan in Figure 1.2 showing general layout of different uses and Figure 1.3 for its outlook.

## 1.2 Purpose of this Submission

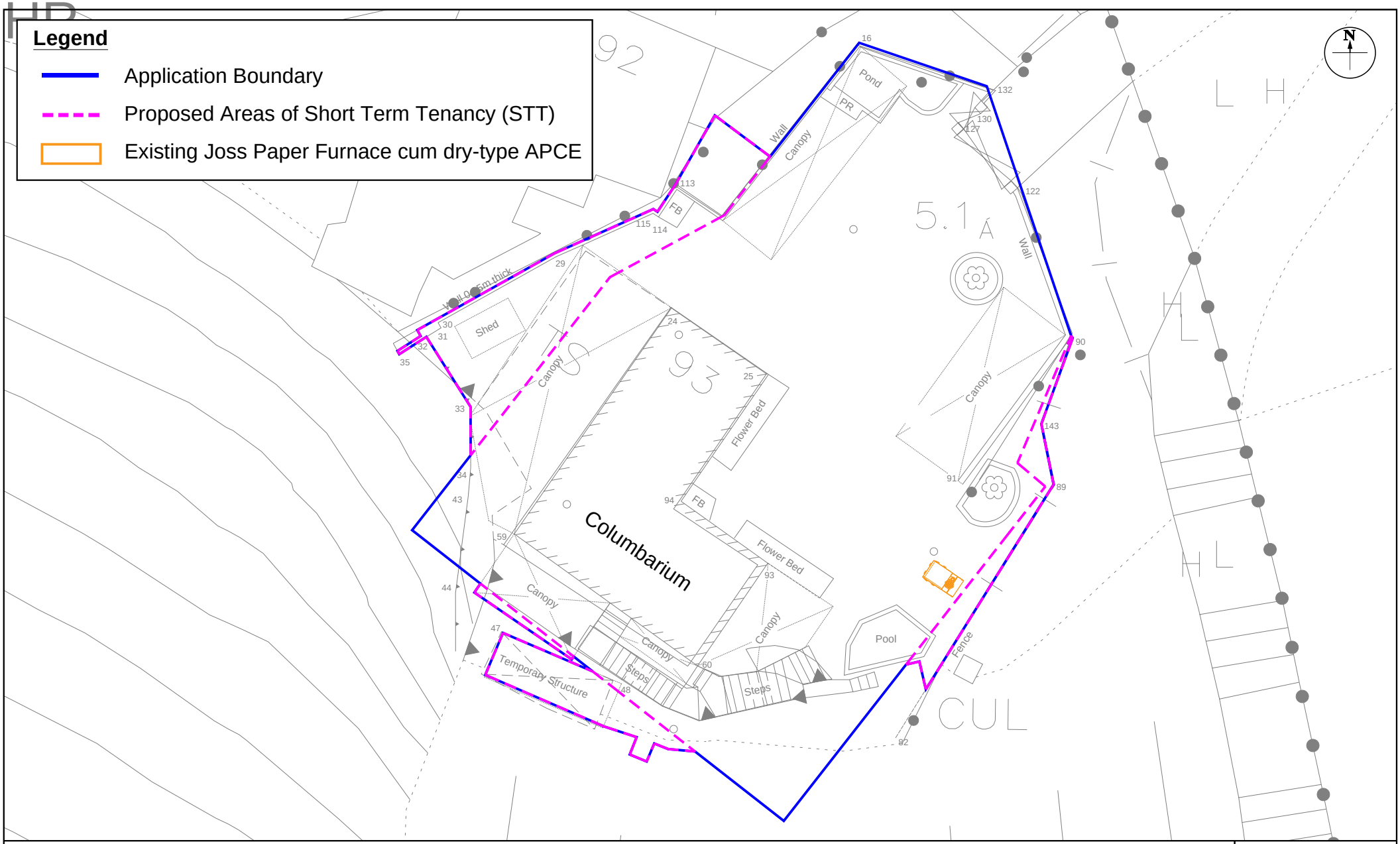
1.2.1 This submission is intended to fulfil EPD's requirements and regulations under Section 22 of the *Private Columbaria Ordinance* in relation to air pollution control, and to support an application for licence/ temporary suspension of liability (TSOL) under PCO as a private columbarium.

1.2.2 Related EPD's requirements are elaborated in Annex 10 of the Application Guide[1] published by the *Private Columbaria Licensing Board*. Other requirements on noise and water quality control have been submitted separately under different covers.

[1] Application Guide for Private Columbarium Licence and Other Specified Instruments




| | |
|---|---|
| **Figure:** 1.1 | RAMBOLL |
| **Title:** Site Location and the Environ | Drawn by: RW |
| | Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2 |
| | Date: Jun 2020 |

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|---|---|
| **Figure:** 1.2 | RAMBOLL |
| **Title:** Master Layout Plan (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

**Figure:** 1.3

**Title:** An Outlook of Memorial Park Hong Kong

**Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

Drawn by: RW

Checked by: RL

Rev.: 1.0

Date: June 2018

# 2. SITE DESCRIPTION AND OPERATIONS

## 2.1 Project Location and the Environ

2.1.1 The Application Site is located at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land). It is situated in Fo Tan urban area bounded by village type developments to the north and Fo Tan Road to the east. It can be accessed on foot by a 5-minute walk from the Fo Tan MTR Station.

2.1.2 The nearest air sensitive receivers include the Fo Tan Railway House, a number of low-rise village houses and scattered houses.

## 2.2 Identification of Air Pollution Sources Related to Columbarium Operations

**Sources On-site**

2.2.1 While there is no naked flame allowed inside columbarium, the burning of paper offerings and incense by visitors are unavoidable. As such, an existing joss paper furnace cum dry-type air pollution control equipment ("APCE") is provided for shared use by general Buddhist and Taoist worshipping activities and columbarium related uses. See Figure 2.1 for locations of the existing joss paper furnace, and Figure 2.2 for the record photo. There is no incense furnace (上香塔) in the Site for columbarium use. Eco-friendly offerings (i.e. electronic incense offering, flower and fruit) are encouraged instead. See Figure 2.3 for the representative image of electronic incense offering. Hence, joss paper furnace is a source of concern requiring mitigation.

**Operating Hours & Arrangements for Burning of Paper Offerings**

2.2.2 Memorial Park Hong Kong (孝思園) opens in the hours of 09:00 - 18:00 daily for worshipping. Shorter worshipping times in the hours of 10:00 – 14:00 would apply during Lunar New Year (from New Year's Eve to the fourth day of Lunar New Year).

2.2.3 From safety considerations, the management of the Columbarium has dedicated trained staff to help visitors to burn offerings in the joss paper furnace in a controlled manner and feeding rate. Wrapping materials, especially plastic ones are to be removed before they are burnt in the furnace. A notice stating that burning of paper offerings must be performed by trained staff has been posted near the APCE to ensure proper control of the joss paper feeding rate. See Figure 2.2 for the record photo of the notice.

## 2.3 Air Sensitive Receivers

**Area of Air Pollution Concern**

2.3.1 The area of air pollution concern is defined within 500m from the Application Site boundary/ sources as shown in Figure 2.4.

**Air Sensitive Receivers (ASRs)**

2.3.2 Air sensitive receivers ("ASRs") are those defined in the HKPSG and fall within the Area of Air Pollution Concern. These include existing, committed and planned uses, if any, at time of submission of this Application based on the best available information from the following sources: -

1. Existing sensitive uses verified by site surveys;
2. Planned sensitive uses demarcated in the Approved Sha Tin OZP (No.: S/ST/34);
3. Known, committed sensitive uses by private or public sectors;
4. Planned sensitive uses as a result of approved planning applications; and

5. Planned sensitive uses arising from approved rezoning requests of plans or approved applications for amendment of plans

2.3.3 After thorough desktop review and ground-truthing, only existing ASRs are identified as shown in Figure 2.5 and listed in Table 2.1. Record photos of these ASRs are shown in Figure 2.6.

**Table 2.1 Horizontal Distances from Source S1 to Representative ASRs off-site**

| ASR Labels | Description | Horizontal Distance from APCE Exhaust Outlet (m) |
|---|---|---|
| A01 | No. 92, Fo Tan Village (Residential) | 21.2 |
| A02 | No. 1, Shek Shui Wan Village (Residential) | 75.5 |
| A03 | Fo Tan Railway House (Commercial) | 177.2 |

**Description of Air Pollution Control Measures**

2.3.4 In order to control air pollution associated with flue gas emission from joss paper burning, Memorial Park Hong Kong (孝思園) is currently using an integrated joss paper furnace cum dry-type APCE to mitigate air pollution impacts, as part of the Application.

2.3.5 The Dry-Type "Bamako Burner™" (Model: FAST-D7) is currently used as the integrated joss paper furnace cum dry-type APCE (cartridge filters) to control the emission of smoke. It is installed at the open area next to the fish pond. The location and image are given in Figure 2.1 and Figure 2.2 respectively.

2.3.6 The treatment of flue gas involves the extraction of fine portion of fly ash and smoke emitted during the burning of joss paper through industrial grade, high-efficiency dry filters driven by an extraction fan. Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance.

2.3.7 The existing joss paper furnace cum APCE is targeted to handle flue gas emissions from burning up to 7 kg/h of joss paper. A catalogue with design drawing are appended in Annex 2.1 for reference.

2.3.8 In order to maintain the operation of joss paper furnace cum APCE, the applicant should follow the operation and maintenance plan given below and the operation manual given in Annex 2.5.

**Operational Plan**

2.3.9 In order to ensure proper use of joss paper furnace with APCE, Memorial Park Hong Kong (孝思園) committed to adopt the following operation and maintenance practices:

1. All joss paper burning is carried out by trained operator to ensure proper operation. Furnace is fenced by wire and turned off when not operating, to prevent visitors burning joss paper without assistance of operator. See Figure 2.2 for the photo record of locked furnace.
2. The operator would make sure the air pollution control equipment has been turned on and running normally.
3. Only paper-made offerings material can be burnt in the furnace. Other wrapping materials, e.g. plastic materials, would be removed before burning.
4. The operator would control the feeding rate of joss paper to the furnace not exceeding the designed capacity. In case visible emissions are observed at the flue gas discharge, the feeding rate should be reduced as appropriate. If the visible

emissions persist, the operator would stop burning activities and call for maintenance.

5. The operator would clean the burning chamber regularly to clear away ash remains inside the burning chamber. The ash would be wetted sufficiently by water spraying during ash clearing process to prevent emission.

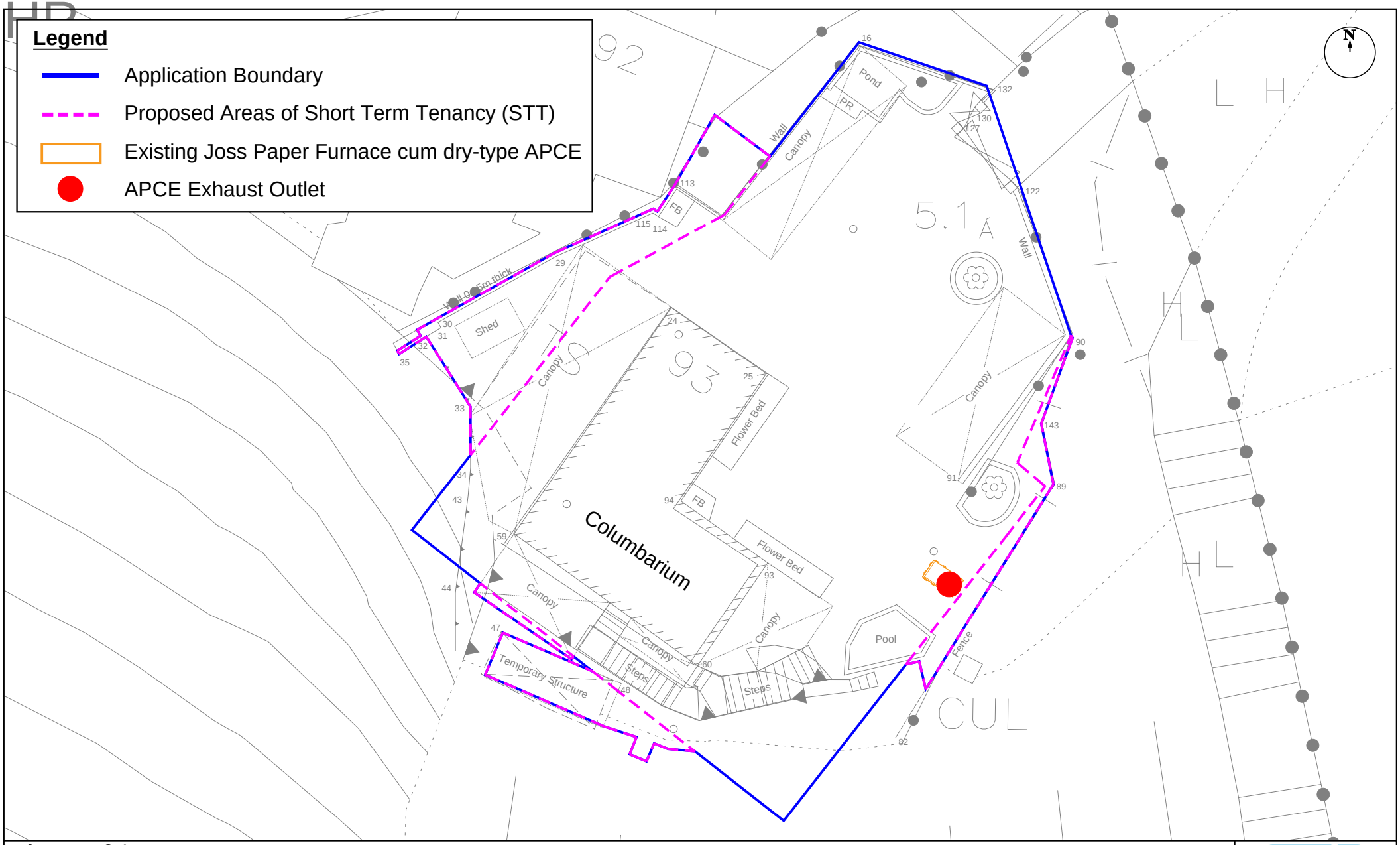
**Maintenance Plan**

2.3.10 Maintenance and repair would be carried out by manufacturer's competent personnel with sufficient training. All components would be inspected, cleaned and serviced regularly. A tentative maintenance plan is shown below:

**Table 2.2 Maintenance Plan for Joss Paper Furnace cum APCE**

| Description | Recommended Schedule |
|---|---|
| Clear the ash from joss paper burner<br>• Open the access door at the bottom of the joss paper burner<br>• Clear the ash from the joss paper burner by using shovel | Daily |
| Check the following items:<br>• The condition of treated flue gas discharge (i.e. the colour and the flow rate)<br>• Running current of blower<br>• Any abnormal noise or vibration during the operation<br>• Performance of back flow function | Monthly |

2.3.11 As per information required in Annex 10 of the Application Guide, layout plans including a Block Plan, a Schematic Diagram (with mitigation) and 3 nos. of Elevation Plans have been duly prepared and signed by a registered professional engineer ("RPE") (mechanical discipline) as given in Annex 2.2 to Annex 2.4.




| | |
|---|---|
| **Figure:** 2.1 | RAMBOLL |
| **Title:** Location of Air Pollution Sources (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

**Existing Joss Paper Furnace cum APCE**

| | | |
|---|---|---|
| **Figure:** | 2.2 | RAMBOLL |
| **Title:** | Image of Existing Joss Paper Furnace cum Dry-type Air Pollution Control Equipment | Drawn by: RW<br>Checked by: RL |
| **Project:** | Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Aug 2018 |

| | |
|---|---|
| **Figure:** 2.3 | RAMBOLL |
| **Title:** Representative Image of Electronic Incense Offering | Drawn by: BL |
| | Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Aug 2018 |

**Legend**

- Representative Air Sensitive Receivers
- Air Pollution Source
- Application Boundary
- Proposed Areas of Short Term Tenancy (STT)
- 500m Assessment Area
- Existing Joss Paper Furnace cum Dry-type APCE

A01

A02

A03

S01

FO TAN ROAD

LOK KING STREET

Cycling Track

Outfall

Nullah

Fo Tan Railway Bridge

Railway House

Tower 1

Masts

FB

Road

FP

PO

CUL

SHR

TS

HE

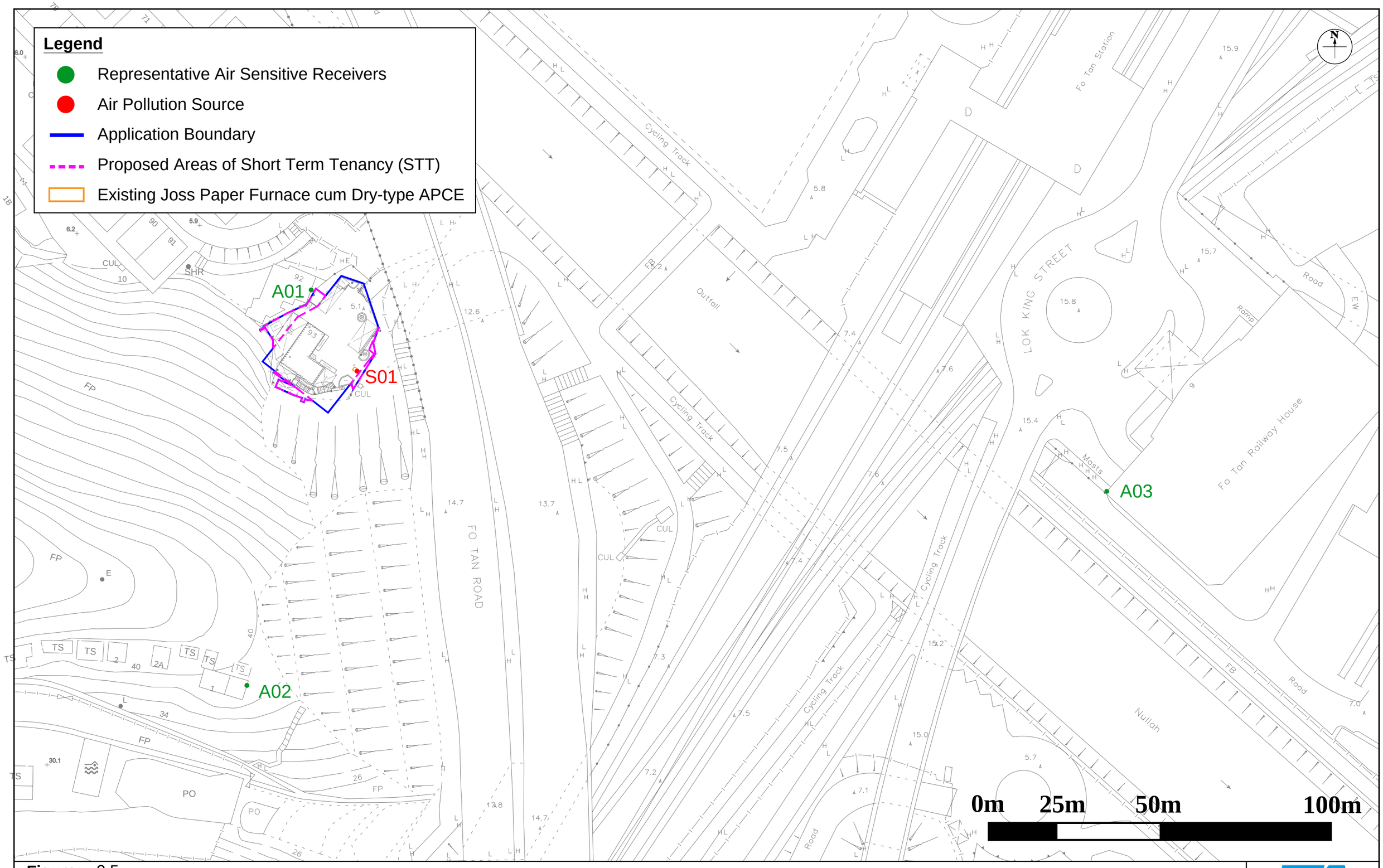
E

D

0m 25m 50m 100m

## BLOCK PLAN

| | |
|---|---|
| **Figure:** 2.4 | RAMBOLL |
| **Title:** Area of Air Pollution Concern | Drawn by: RW |
| | Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2 |
| | Date: Jun 2020 |




| | |
|---|---|
| **Figure:** 2.5 | RAMBOLL |
| **Title:** Location of Major Air Pollution Sources and Air Sensitive Receivers | Drawn by: RW |
| | Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2 |
| | Date: Jun 2020 |

**A01: No. 92, Fo Tan Village**

**A02: No. 1, Shek Shui Wan Village**

**A03: Fo Tan Railway House**

| | |
|---|---|
| **Figure:** 2.6 | RAMBOLL |
| **Title:** Photo Records of Representative Air Sensitive Receivers | Drawn by: RW<br>Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Aug 2018 |

# Annex 2.1

# Catalogue and Design Drawing of the Joss Paper Furnace fitted with Air Pollution Control Equipment

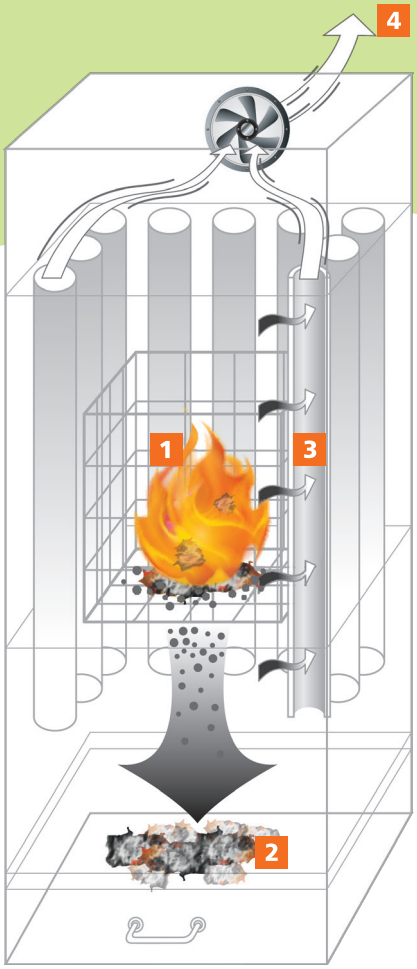
Bamako Burner™
寶潔科　綠化寶系統™

# 乾式「寶潔科　綠化寶系統™」零黑煙排放

## Dry-Type "Bamako Burner™" Zero Black Smoke Emission

升級流動版
Upgraded mobile version

- **革命性除煙塵技術，除煙塵效率 > 90%**
  Revolutionary smoke and fly ash removal technology with > 90% removal rate
- **締造寧靜環境**
  Tranquil environment created
- **適用於各道堂、屋苑、廟宇、骨灰龕場、醫院殮房等**
  Excellent for Taoist Institution, Estates, Temples, Columbaria, Mortuaries, and etc.




## 運作原理 System Schematic

1. 從燃燒爐產生的黑煙及飛灰被抽入系統；
   Black smoke and fly ash from the combustion chamber will be extracted to the treatment system;
2. 較大灰塵會被爐灰盤收集；
   Large smoke particulate matter will be collected by ash tray;
3. 最後，高效乾式濾芯再過濾煙氣中剩下較微細的灰塵；
   The remaining fine ash will be filtered by high efficiency dry filters ;
4. 排出已淨化的空氣。
   The smokeless clean air will be discharged at the air outlet diffuser.

## 產品特點 Product Features

- ✔ 使用工業級乾式濾芯，達致零黑煙排放
- ✔ 高效除煙除塵，可處理2.5μm(PM2.5)微粒
- ✔ 全自動清潔系統
- ✔ 一鍵操作
- ✔ 2 年保養

- ✔ Zero black smoke emission achieved through adoption of industrial grade dry type filter and strictest process
- ✔ Highly efficient treatment system; particulates removed up to 2.5μm (PM2.5)
- ✔ Automatic cleaning system
- ✔ Intuitive single button control
- ✔ Warranty : 2 years

## 產品規格 Product Specifications

| 型號 Model | FAST-D7 | FAST-D20 |
|---|---|---|
| 化寶量 (公斤/小時)<br>Joss Paper Burning Capacity (kg/hr) | 7 | 20 |
| 外形尺寸 (闊x深x高)(毫米)<br>Dimension (W x D x H) (mm) | 800 x 1439 x 1825 | 1950 x 1260 x 2290 |
| 燃燒爐爐口尺寸 (闊x高)(毫米)<br>Opening Dimension (W x H) (mm) | 300 x 370 | 500 x 600 |
| 燃燒倉內部尺寸 (闊x深x高)(毫米)<br>Interior Dimension (W x D x H) (mm) | 400 x 600 x 618 | 600 x 630 x 830 |
| 風量<br>Air Flow Rate | 0.1m³/s | 0.25m³/s |
| 總重量 (噸)<br>Total Weight (ton) | 0.35 | 1.8 |
| 電功率 (千瓦)<br>Rated Power (kW) | 1 | 3.3 |
| 輸入電壓<br>Input Voltage | 220V/1ph/50Hz | |
| 煙塵排放濃度<br>Particulates Matter | 少於 Below 30mg/m³<br>(最佳可達 Optimum result < 5mg/m³) | |
| 除煙塵效率<br>Particulates Matter Removal Efficiency | 高於 Above 90% | |
| 煙氣排放黑度<br>Darkness of Smoke | 低於林格曼黑度1級 (無黑煙)<br>Below Grade 1 of Ringelmann Smoke Scale<br>(No black smoke) | |

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1. On-site Inspection & System Design
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3. Maintenance Service

資料如有更改，恕不另行通知。
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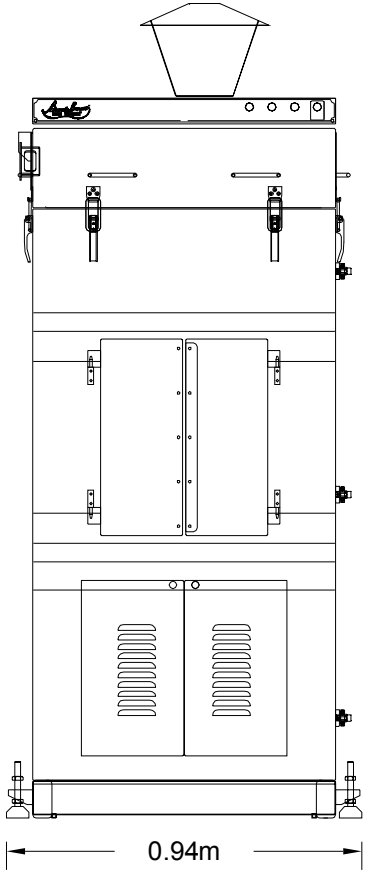
如欲查詢更多「寶潔科 綠化寶系統™」的資訊，歡迎與盈電環保科技有限公司聯絡。
For more information of Bamako Burner™, please contact REC Green Technologies Co., Ltd. via any of the below channels.

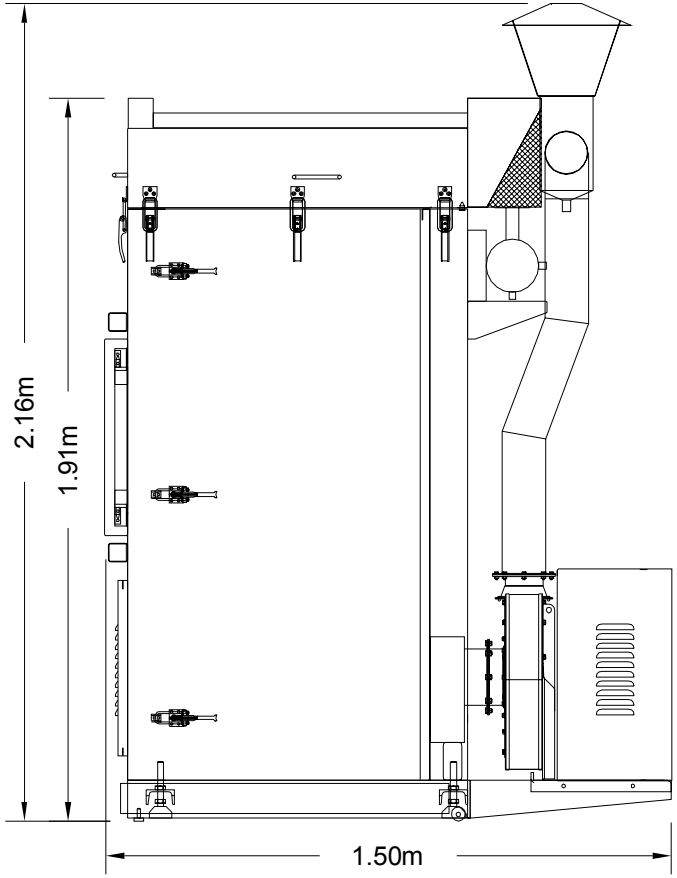
**電話 Tel:** (852) 2619-8817 | **傳真 Fax:** (852) 2481-2870 | **電郵 E-mail:** rgt@rec-eng.com | **網址 Website:** www.rec-gt.com

**地址** ：香港新界葵涌青山道585-609號嘉民葵涌物流中心15樓A-D室
**Address:** Units A-D, 15/F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, N.T., Hong Kong

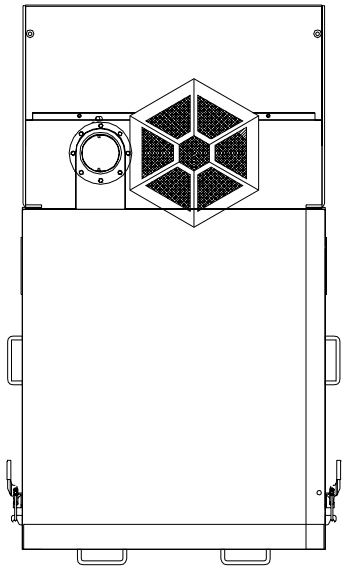

Bamako version D3 06/2016




FRONT VIEW




SIDE VIEW



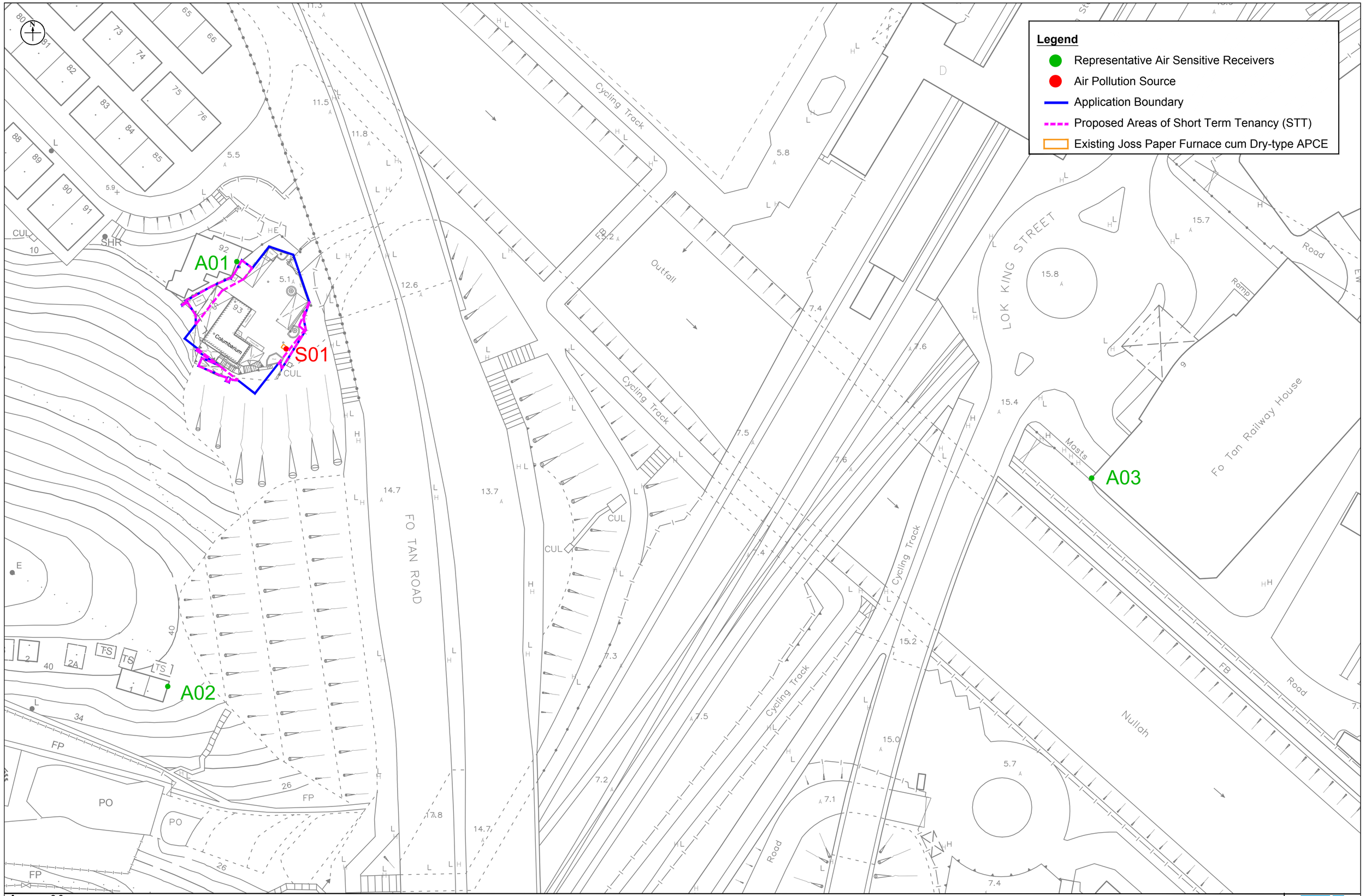
TOP VIEW

# BAMAKO BURNER MODEL: FAST-D7

| | |
|---|---|
| **Annex:** 2.1 | RAMBOLL |
| **Title:** Design Drawings of the Joss Paper Furnace fitted with Air Pollution Control Equipment (Scale of 1:20 on A4) | Drawn by: RW<br>Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: July 2018 |

# Annex 2.2

# Block Plan Showing Location of the Columbarium, Flue Gas Outlet and Neighbouring Environment




**Annex:** 2.2

**Title:** Block Plan in Scale of 1:500 Showing Location of the Columbarium, Flue Gas Outlet and Neighbouring Environment (1:500 when printed on A2 paper)

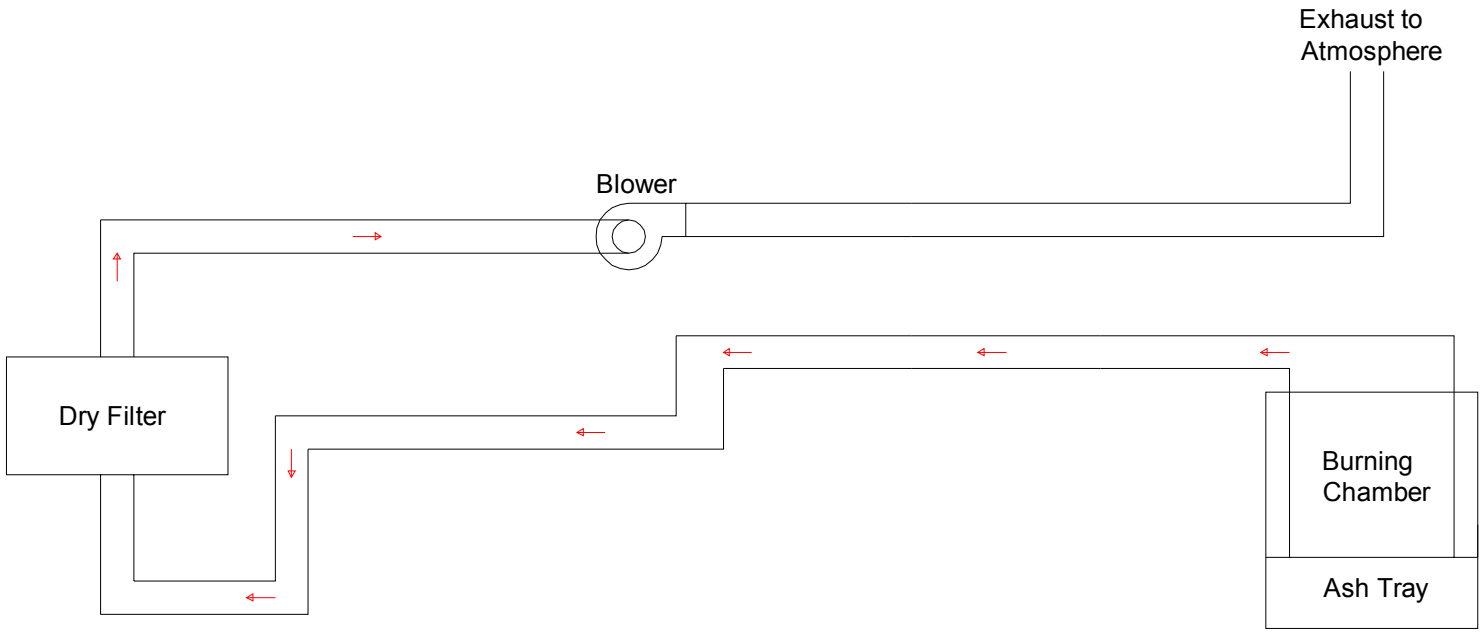
**Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

Drawn by: RW
Checked by: KY
Rev.: 1.2
Date: Jun 2020

# Annex 2.3

# Schematic Diagram showing Emission Route, Treatment Arrangements and Design Specifications

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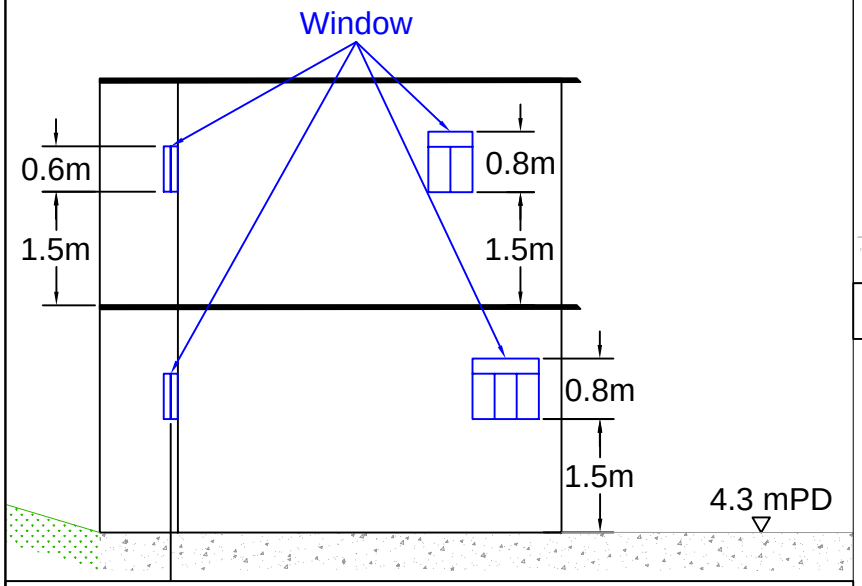
|---|---|---|
| **Annex:** | 2.3 | RAMBOLL |
| **Title:** | Schematic Diagram showing Emission Route, Treatment Arrangements and Design Specifications | Drawn by: RW<br>Checked by: RL |
| **Project:** | Columbarium Use at Memorial Park Hong Kong ( 孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: July 2018 |

# Annex 2.4

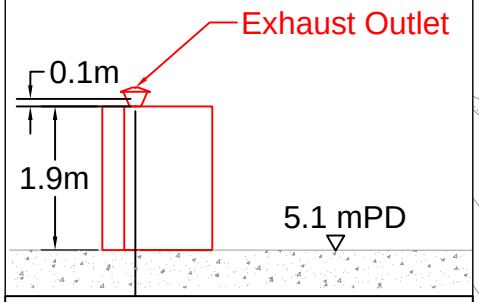
# Elevation Plans Showing Relative Location and Distance between Exhaust Outlet and Neighbouring Environment

## No. 92, Fo Tan Village (A01)




SCALE 1:100 (A4)

## APCE (S01)

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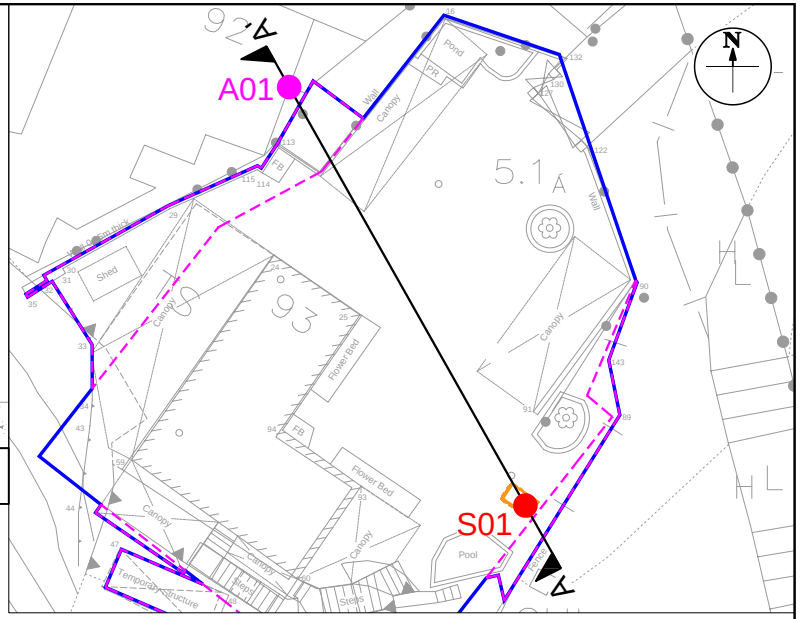
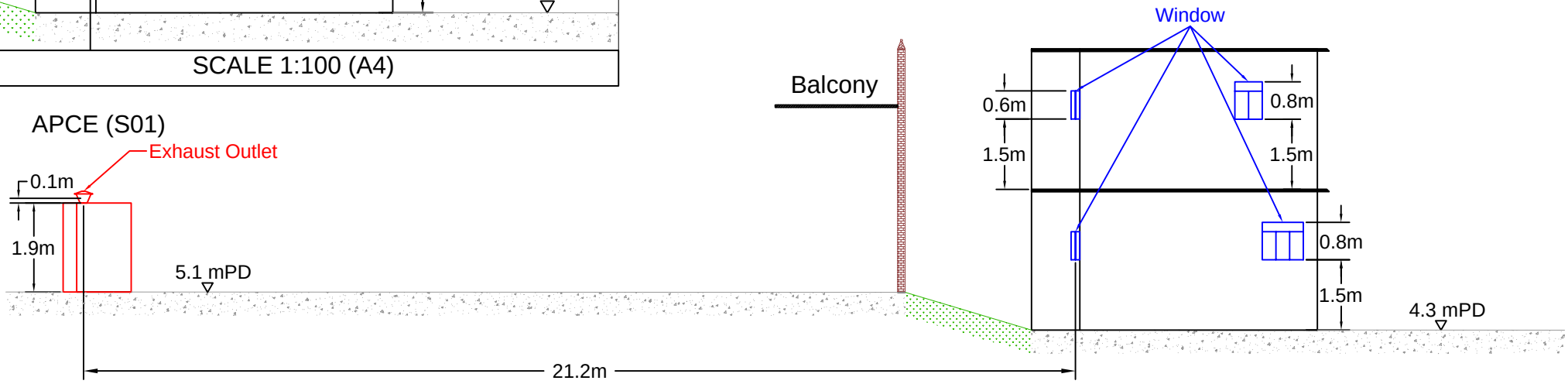


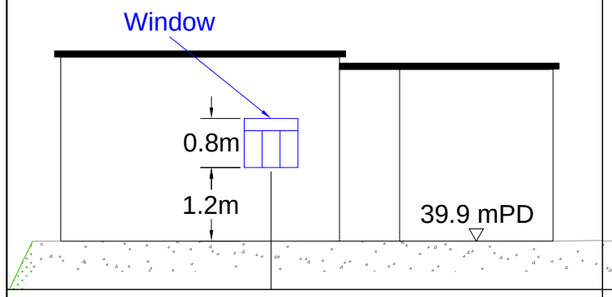

No. 92, Fo Tan Village (A01)




SECTION A-A'

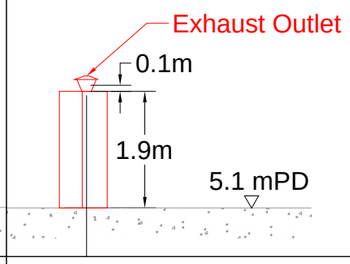
| | |
|---|---|
| **Annex:** 2.4 | RAMBOLL |
| **Title:** Perpendicular Elevation Plan A-A' Showing Relative Location and Distance between Exhaust Outlet of S01 and Neighboring Environment (A01) (Scale 1:125 when printed on A4 paper) | Drawn by: RW<br>Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Aug 2018 |

## No. 1, Shek Shui Wan Village (A02)




SCALE 1:100 (A4)

## APCE (S01)

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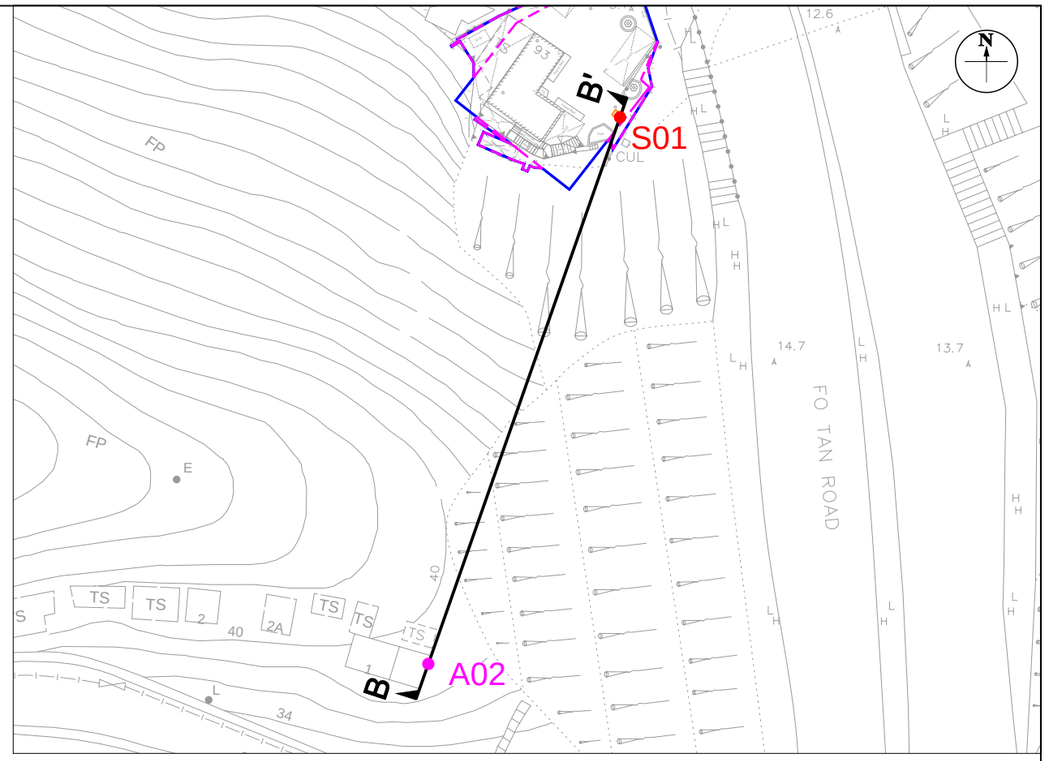
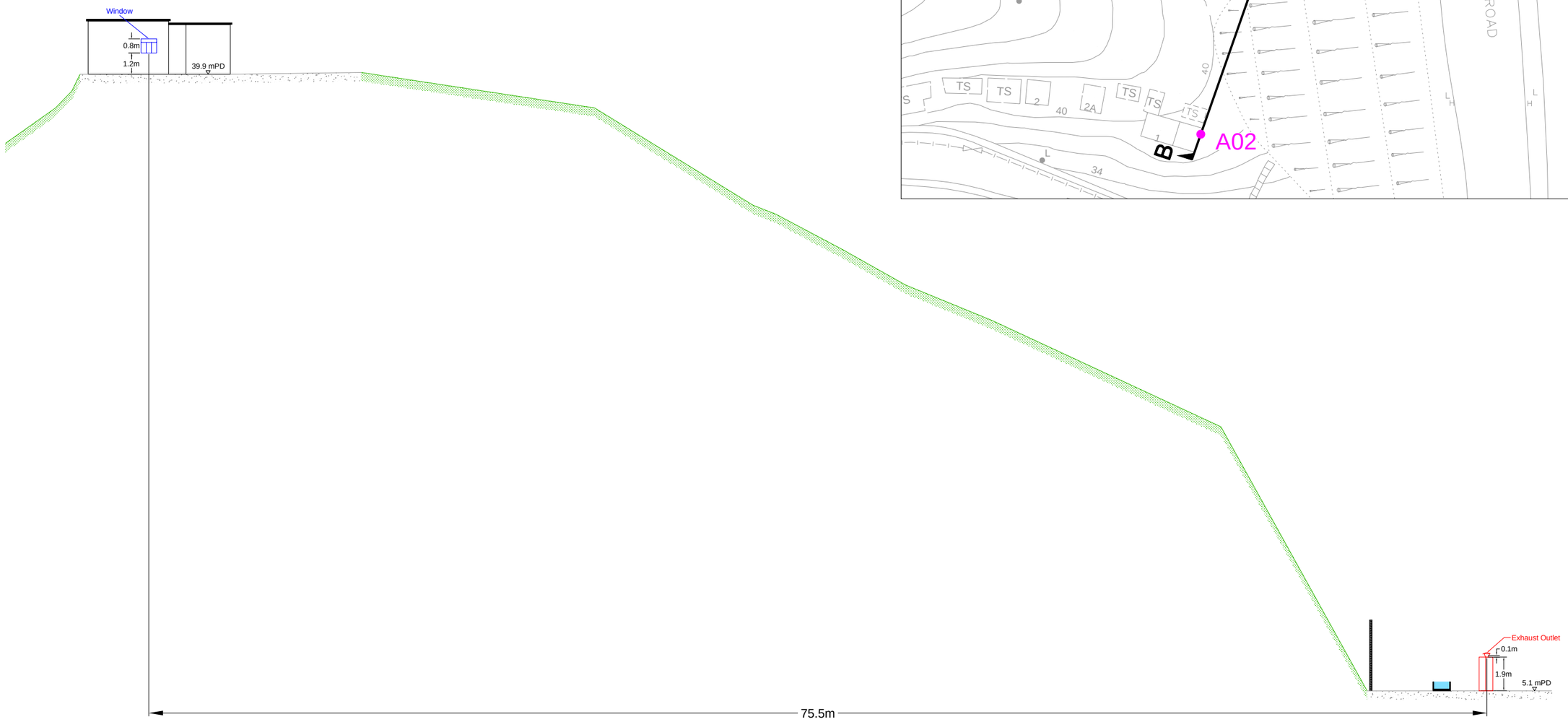
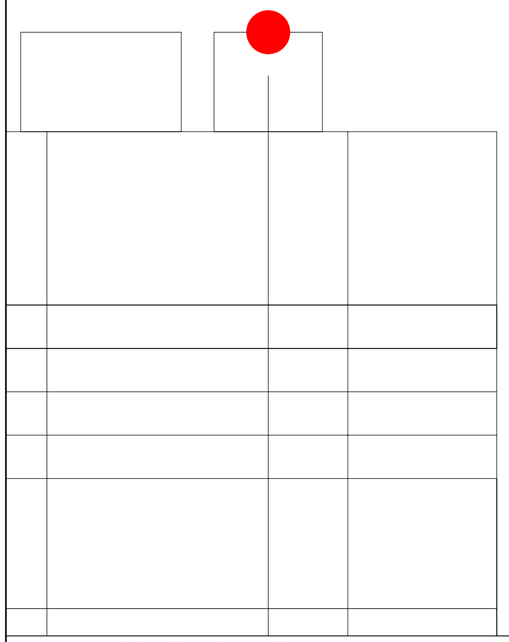


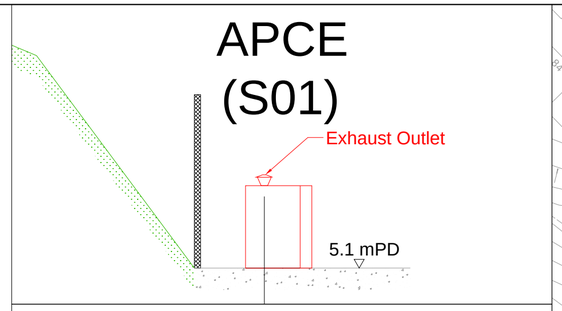

SECTION B-B'

| | | |
|---|---|---|
| **Annex:** | 2.4 | RAMBOLL |
| **Title:** | Perpendicular Elevation Plan B-B' Showing Relative Location and Distance between Exhaust Outlet of S01 and Neighboring Environment (A02)<br>(Scale 1:250 when printed on A3 paper) | Drawn by: RW<br>Checked by: RL |
| **Project:** | Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Aug 2018 |



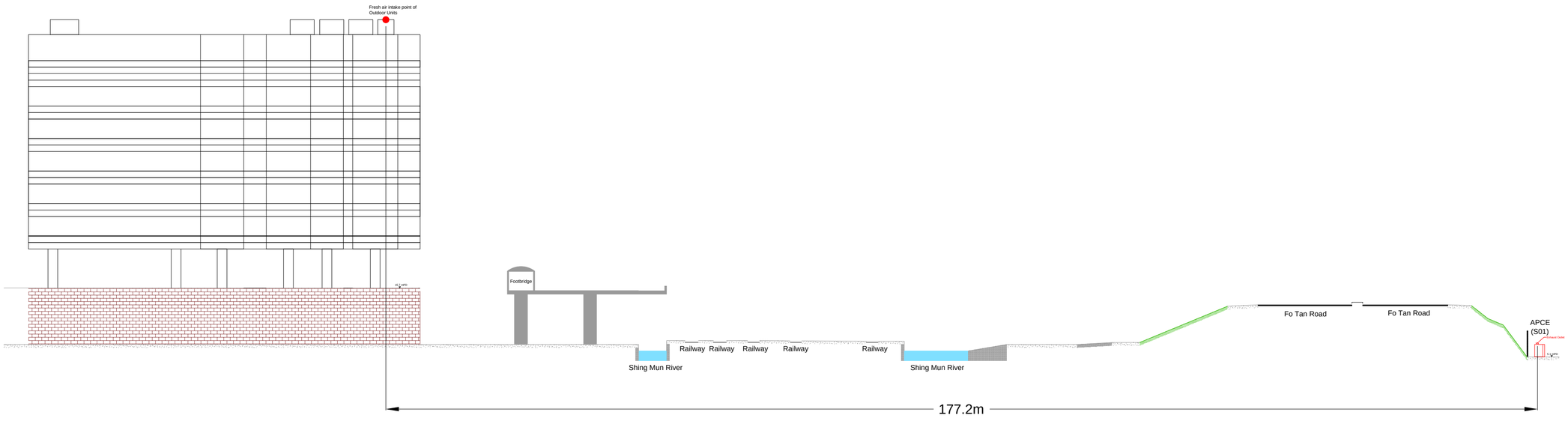

A03: Fo Tan Railway House
(using central AC system)

SCALE 1:100 (A4)




SCALE 1:100 (A4)

Fo Tan Railway House (using central AC system)
(A03)




SECTION C-C'

**Annex:** 2.4

**Title:** Perpendicular Elevation Plan C-C' Showing Relative Location and Distance between Exhaust Outlet of S01 and Neighboring Environment (A03) (Scale 1:500 when printed on A2 paper)

**Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

Drawn by: RW
Checked by: RL
Rev.: 1.0
Date: Aug 2018

# Annex 2.5

# Operation Manual of Dry-Type "Bamako Burner™" (Model: FAST-D7)

盈電環保科技有限公司
REC Green Technologies Co., Ltd.
(A wholly-owned subsidiary of Yau Lee Holdings Limited)

寶潔科　綠化寶系統™

# Dry Type Bamako Burner ™
# Remove Smoke and Ash, Heat Absorption, Full-Featured Burner System

## MODEL：FAST-D7

## User's Guide

**Contents**


1. Introduction
2. Operation
3. Technical Specifications
4. Daily Notification
5. Maintenance
6. Troubleshooting



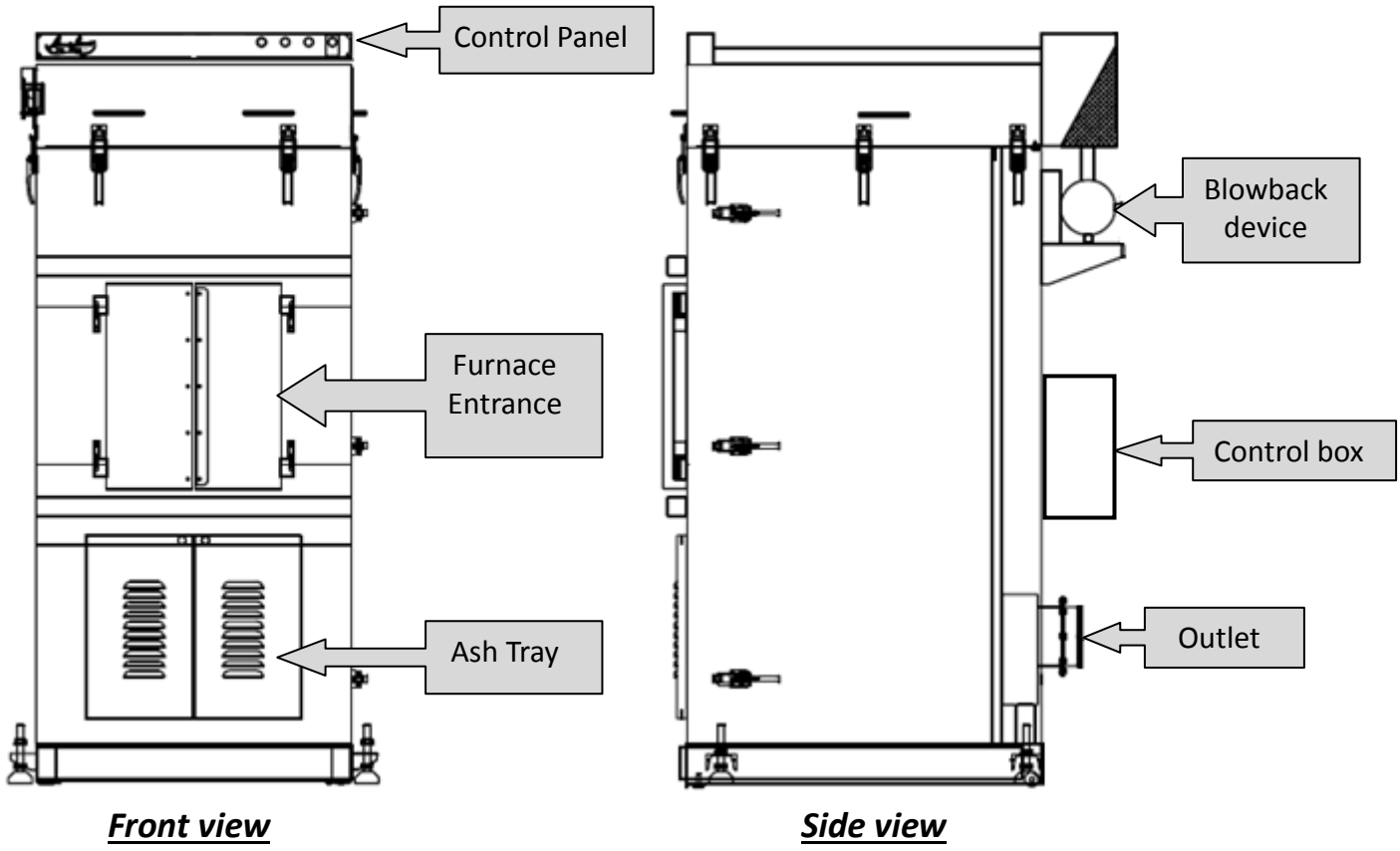
Customer Service Hotline：852-8100-8083

E-mail：rgt@rec-eng.com

Address: Units A-D, 15F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, New Territories, Hong Kong

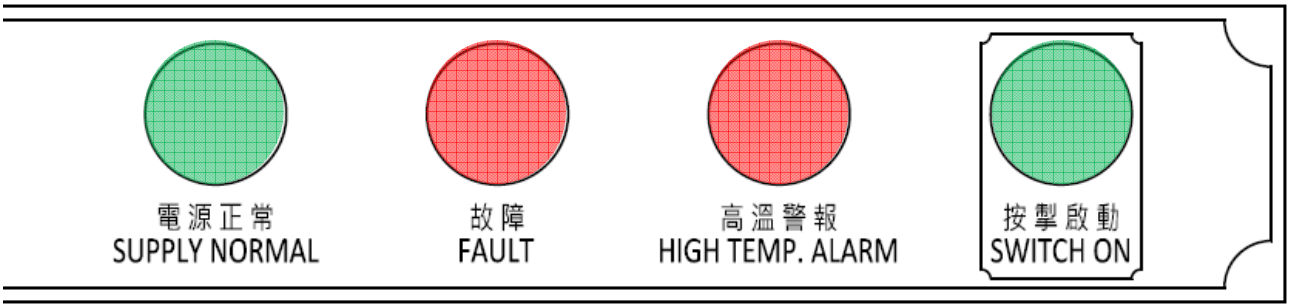
# 1. Introduction

## 1.1. Components




***Front view*** ***Side view***

## 1.2. Control Panel



## 2. Operation

2.1. Operation Instructions

- Press "start" button, system will automatically turn on.
- Open the door, light and put joss paper into the furnace.
- Press "start" button for 5 seconds, the system will be turned off.
- To restart the system, please press the "Start" button again.
- Caution: Do not burn plastic or other substances, otherwise it will block the filter.

2.2. Blowback device

During operation, the system will clean the filter automatically (4 minutes per one) until the system stops. When turn on the system, it will perform a blowback and the “start” button will flash for 4 minutes, and perform the second blowback, which is a cycle of automatic cleaning, "start" button will be non-flash, until the next blowback. Blowback which generates opposite flow will operate. This may raises a small amount of dust.

2.3. High temperature alarm

When temperature is higher than the setting value (200 °C and 300 °C) , an alarm will raise when the temperature reaches 200°C. When the temperature reaches 300°C, the "High Temperature Alarm" will light up. Alarm siren will be turned on. For turn off the alarm siren, users can press the "High Temperature Alarm" once. During high temperature alarm occurs, the system will operate continuously with alarm light. Users should not put joss paper into the furnace. When the temperature drops below the setting temperature, the high temperature alarm will turn off. After 1-2 minutes, users can use the burner again.

## 3. Technical Specifications

| Equipment | Specification | |
|---|---|---|
| System | Total size (mm) (W x D x H) | 800 x 1439 x 1825 |
| | Flow rate | 0.1$m^3$/s |
| | Weight | ~350kg |
| | Power (per unit) | 1kW |
| | Power requirements | 220V/1ph/50Hz |
| Burning Chamber | Furnace Entrance size (mm) (W x D) | 300 x 370 |
| | Furnace size (mm) (W x D x H) | 400 x 400 x 600 |
| Filter | Length | 1.25m |
| | Amount | 18 |

## 4. Daily Notification

4.1. Ashtray Cleansing

Users should clean up the ashtray regularly if this is full.

## 5. Maintenance

5.1. Purchased the Dry Type Bamako Burner™, including the first 24 months of defect liability period.

5.2. Please call our customer service hotline (Tel: 852-8100-8083) for inspection arrangements to repair.

Hotline Duration: Monday to Saturday, 0900-1700

5.3. If the defect liability period expires, please contact us to arrange an extension of maintenance or purchase product accessories.

## 6. Troubleshooting

6.1. The system cannot be turned on

- Check whether the "Supply Normal" light is on. If not, check the power supply is normal, and the power plug is inserted.
- Check the "Fault" light is on. If yes, please refer to item 6.2.

6.2. "Fault" light on

- "Fault" will light up and alarm siren will be turned on.
- Users can press the "Fault" button for turn off the alarm siren
- Disconnect the power supply and reconnect it.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

6.3. Black smoke is discharged

- Check if there is other substance in the furnace, such as plastic, wood, etc. If yes, immediately remove the substance.
- Check whether the filter has broken or not. If yes, please contact our engineering staff.

6.4. Low suction force

- Check whether the air outlet is blocked.
- Check whether blowback has been performed.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

If the problem persists, please contact our engineering staff.
(Customer Service Hotline: 852-8100-8083)

# Columbarium Use at Memorial Park Hong Kong (孝思園)
# No. 93 Fo Tan Village, Sha Tin, N.T.

## Application for Licence and Temporary Suspension of Liability for Pre-cut off Columbarium under Private Columbaria Ordinance - Noise Control Information and Noise Assessment Report

**Prepared for:**

Memorial Park Hong Kong (孝思園)

**Prepared by:**

Ramboll Hong Kong Limited

**Date:**

7 July 2020

**Project Number:**

328000386

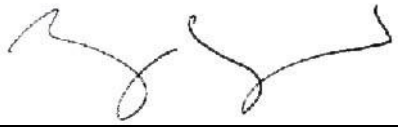
**Report No.:**

R6288_v1.3_MPHK_noise

Prepared by:

Rachel Wong, et. al.

Assistant Environmental Consultant

Approved by: 

Katie Yu

Senior Manager

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Tel: (852) 3465 2888
Fax: (852) 3465 2899
Email: hkinfo@ramboll.com

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1.3 Purpose of this Submission ..... 1-1

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Annex 2.4 Layout Plan in Scale of not less than 1:100 showing Major Noise Generating Facilities related to the Columbarium and their Spatial Relationship and Particulars
Annex 2.5 Prediction of Fixed Noise Source Impact
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Figure 2.3 Location of Fixed Noise Sources
Figure 2.4 Images of Fixed Noise Sources

# 1. INTRODUCTION

## 1.1 Background to this Application

1.1.1 The Application Site (or "the Site") – Memorial Park Hong Kong (孝思園) is mainly falls within an area zoned "V" with a minor encroachment onto "GB" zone under the Approved Sha Tin OZP (Statutory plan no.: S/ST/34) and is currently used as a Buddhist and Taoist temple with ancillary columbarium.

1.1.2 Memorial Park Hong Kong (孝思園) is a pre-cut-off columbarium and has ashes interred in niches well before 8 a.m. on the cut-off date on 18 June 2014 referred under Section 20 (1)(d) in the Private Columbaria Ordinance ("PCO").

1.1.3 Memorial Park Hong Kong (孝思園) is located in Fo Tan urban area at an approximately 5-minute walk from Fo Tan MTR Station. The Site is located in Fo Tan Village abutting the Fo Tan Road. It is a tranquil place for spiritual worship and paying tribute to ancestors. See Figure 1.1 for its location and the environ.

1.1.4 Memorial Park Hong Kong (孝思園) is a 2-storey building comprising worshipping halls, open areas, columbarium (G/F and 1/F) with ancillary office, toilets and fish ponds at G/F. Please see the master layout plan in Figure 1.2 showing general layout of different uses and Figure 1.3 for its outlook.

## 1.2 Site Location and the Environ

1.2.1 The Application Site is located at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land). It is situated in Fo Tan urban area bounded by village type developments to the north and Fo Tan Road to the east. It can be accessed on foot by a 5-minute walk from the Fo Tan MTR Station.

1.2.2 The nearest noise sensitive receivers include the Palazzo (御龍山), a number of low-rise village houses and scattered houses.

1.2.3 Memorial Park Hong Kong (孝思園) opens in the hours of 09:00 - 18:00 daily for worshipping. Shorter worshipping times in the hours of 10:00 – 14:00 would apply during Lunar New Year (from New Year's Eve to the fourth day of Lunar New Year).

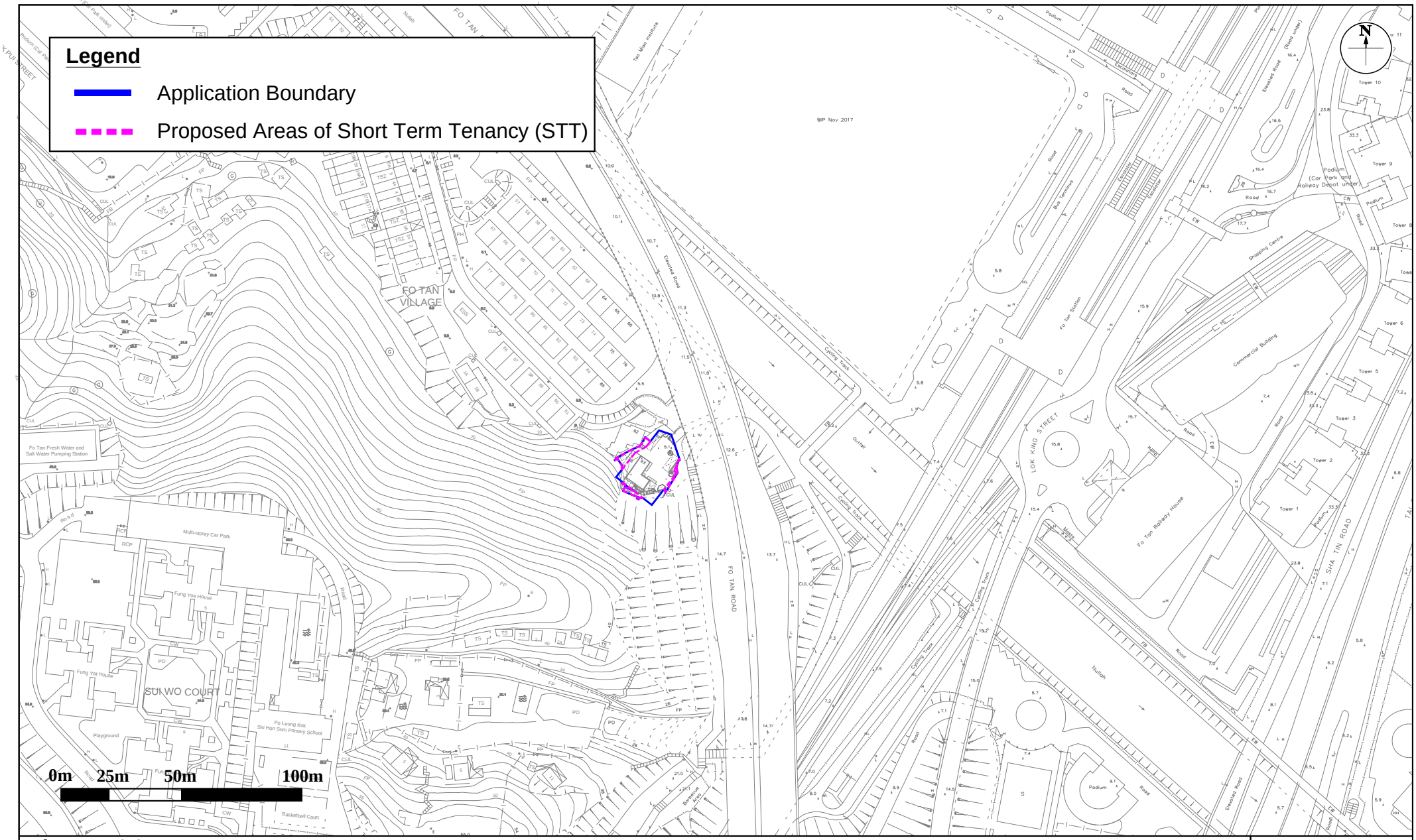
## 1.3 Purpose of this Submission

1.3.1 This submission is intended to fulfil EPD's requirements and regulations under Section 22 of the *Private Columbaria Ordinance* in relation to noise assessment and control, and to support an application for licence/ temporary suspension of liability (TSOL) under PCO as a private columbarium.

1.3.2 Related EPD's requirements are elaborated in Annex 10 of the Application Guide[1] published by the *Private Columbaria Licensing Board*. A noise impact assessment is provided in Section 2 to evaluate if noise sources on-site can be controlled to avoid any noise exceedance at noise sensitive uses around.

1.3.3 Other requirements on air and water quality control have been submitted separately under different covers.

[1] Application Guide for Private Columbarium Licence and Other Specified Instruments

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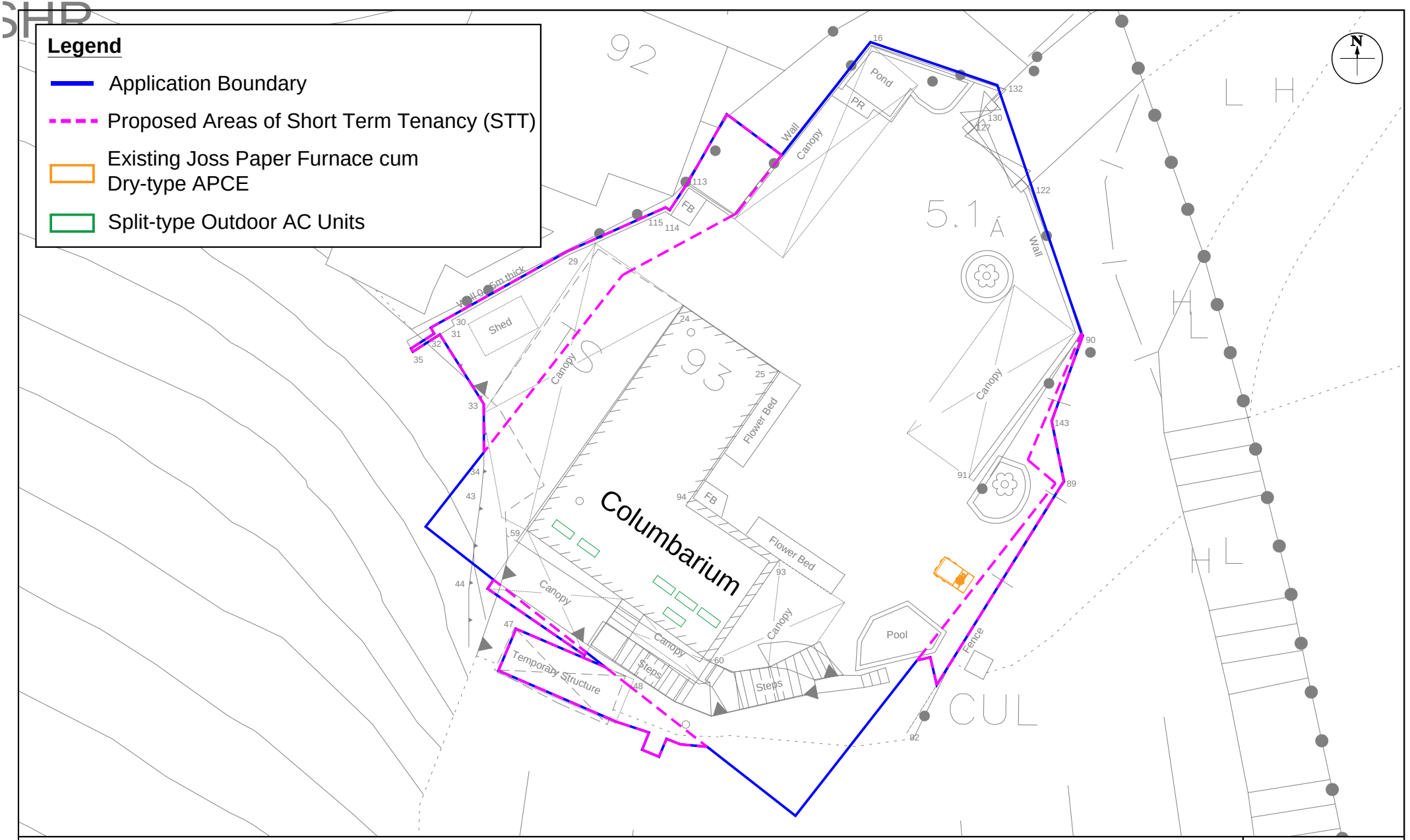
|---|---|
| **Figure:** 1.1 | RAMBOLL |
| **Title:** Site Location and the Environ | Drawn by: RW |
| | Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2 |
| | Date: Jun 2020 |

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| **Figure:** 1.2 | RAMBOLL |
| **Title:** Master Layout Plan (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

**Figure:** 1.3

**Title:** An Outlook of Memorial Park Hong Kong

**Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

Drawn by: RW

Checked by: RL

Rev.: 1.0

Date: June 2018

# 2. NOISE IMPACT ASSESSMENT

## 2.1 Introduction

2.1.1 This section evaluates and summarises the potential off-site noise impacts that could be caused by existing noise sources on-site during operations of the Columbarium and its related activities.

2.1.2 Major existing noise source in relation to operations of the Columbarium include the integrated joss paper furnace cum dry-type APCE.

2.1.3 Other minor existing sources include a few split-type units of air conditioners installed on the roof of the Columbarium, and their contributions to the overall noise impact have been included in the assessment. There is no outdoor public address (PA) system installation in site.

## 2.2 Relevant Legislation, Standards & Guidelines

**Acceptable Noise Levels**

2.2.1 Fixed noise sources impacting on existing uses are regulated under the *Noise Control Ordinance* ("NCO"), which requires that impacts shall comply with the Acceptable Noise Levels ("ANL") laid down in Table 2 of the *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites* ("IND-TM").

2.2.2 In setting the ANL, reference has been made to the *Area Sensitive Rating* ("*ASR*") in Table 1 of IND-TM (reproduced in Table 2.1) reflecting the nature of area where noise sensitive receivers ("NSRs") are situated.

**Table 2.1 Area Sensitivity Ratings (ASRs)**

| Type of Area Containing NSR | Degree to which NSR is affected by Influencing Factor | | |
|---|---|---|---|
| | Not Affected | Indirectly Affected | Directly Affected |
| (i) Rural area, including country parks or village type developments | A | B | B |
| (ii) Low density residential area consisting of low-rise or isolated high-rise developments | A | B | C |
| (iii) Urban area | B | C | C |
| (iv) Area other than those above | B | B | C |

**Source:** Table 1 of Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites

2.2.3 An ASR of "B" is considered representative of NSRs off-site in the vicinity. They are located in an area other than rural area, low density residential area or urban area, and are expected to be indirectly affected by Influencing Factors ("IF") such as the Fo Tan industrial areas. The Site is located between 100m and 250m from the "Industrial" zones.

2.2.4 The appropriate ANLs for NSRs around have been determined as shaded in Table 2.2.

**Table 2.2 Acceptable Noise Levels (ANLs), dB(A)**

| Area Sensitivity Ratings in relevant Time Periods | ASR | | |
|---|---|---|---|
| | A | B | C |
| Day (0700 to 1900 hours) | 60 | 65 | 70 |
| Evening (1900 to 2300 hours) | | | |
| Night (2300 to 0700 hours) | 50 | 55 | 60 |

**Source:** Table 2 of Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites

2.2.5 As there is no evening/ night-time operation at the Columbarium, and as required in Annex 10 to the Application Guide for existing sources, the noise impacts should meet ANL during the daytime periods. The noise criteria involving existing fixed noise sources impacting on existing NSRs off-site are therefore established as $L_{eq}$ (30 min) (0700 to 2300) ≤ 65 dB(A).

## 2.3 Assessment Area

2.3.1 Assessment area for fixed noise sources impact is generally defined within 300m from the Site boundary/ source(s). See Figure 2.1 for details.

## 2.4 Noise Sensitive Receivers

### Noise Sensitive Receivers (NSRs)

2.4.1 Noise sensitive receivers ("NSRs") defined under the HKPSG, and fall within the Assessment Area are considered NSRs of concern. These include existing, committed and planned uses, if any, at time of the submission of this Application based on the best available information including: -

1. Existing sensitive uses verified by site surveys;
2. Planned sensitive uses demarcated in the Approved Sha Tin OZP (No.: S/ST/34);
3. Known, committed sensitive uses by private or public sectors;
4. Planned sensitive uses as a result of approved planning applications; and
5. Planned sensitive uses arising from approved rezoning requests of plans or approved applications for amendment of plans

2.4.2 After thorough desktop review and ground-truthing, the nearest existing sensitive uses are considered relevant and representative for the purpose of assessment. Figure 2.1 shows the first tier of representative NSRs selected in the assessment area by virtue of their being close to the Site. A description of these representative NSRs and their particulars are given in Table 2.3 with their record photos given in Figure 2.2.

**Table 2.3 Representative NSRs Off-site for Assessment**

| NSR Labels | Description | Horizontal Distance from APCE Exhaust Outlet (m) |
|---|---|---|
| N01 | No. 92, Fo Tan Village (Residential) | 21 |
| N02 | No. 1, Shek Shui Wan Village (Residential) | 83 |
| N03 | Tower 1, The Palazzo (Residential) | 246 |

**Note:** The above NSRs rely on opened windows for ventilation

## 2.5 Identification of Noise Sources

2.5.1 In order to control air pollution associated with flue gas emission from joss paper burning, Memorial Park Hong Kong (孝思園) is currently using an integrated joss paper furnace cum dry-type APCE to mitigate air pollution impacts, as part of the Application.

2.5.2 The Dry-Type "Bamako Burner™" (Model: FAST-D7) is currently used as the integrated joss paper furnace cum dry-type APCE (cartridge filters) to control the emission of smoke. It is installed at the open area next to the fish pond. The location and image are given in Figure 2.3 and Figure 2.4 respectively.

2.5.3 The treatment of flue gas involves the extraction of fine portion of fly ash and black smoke emitted during the burning of joss paper through industrial grade, high-efficiency dry filters driven by an extraction fan. Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance.

2.5.4 The existing joss paper furnace cum APCE is targeted to handle flue gas emissions from burning up to 7 kg/h of joss paper. A catalogue with specifications is appended in Annex 2.1.

2.5.5 From safety considerations, the management of the Columbarium has dedicated trained staff to help visitors to burn offerings in the joss paper furnace in a controlled manner and feeding rate. Wrapping materials, especially plastic ones are to be removed before they are burnt in the furnace. A notice stating that burning of paper offerings must be performed by trained staff has been posted near the APCE to ensure proper control of the joss paper feeding rate. See Figure 2.4for the record photo of the notice.

2.5.6 In order to maintain the operation of joss paper furnace cum APCE, the applicant should follow the operation and maintenance plan given below and the operation manual given in Annex 2.6.

**Operational Plan**

2.5.7 In order to ensure proper use of joss paper furnace with APCE, Memorial Park Hong Kong (孝思園) committed to adopt the following operation and maintenance practices:

1. All joss paper burning is carried out by trained operator to ensure proper operation. Furnace is fenced by wire and turned off when not operating, to prevent visitors burning joss paper without assistance of operator. See Figure 2.4 for the photo record of locked furnace.
2. The operator would make sure the air pollution control equipment has been turned on and running normally.
3. Only paper-made offerings material can be burnt in the furnace. Other wrapping materials, e.g. plastic materials, would be removed before burning.
4. The operator would control the feeding rate of joss paper to the furnace not exceeding the designed capacity. In case visible emissions are observed at the flue gas discharge, the feeding rate should be reduced as appropriate. If the visible emissions persist, the operator would stop burning activities and call for maintenance.
5. The operator would clean the burning chamber regularly to clear away ash remains inside the burning chamber. The ash would be wetted sufficiently by water spraying during ash clearing process to prevent emission.

**Maintenance Plan**

2.5.8 Maintenance and repair would be carried out by manufacturer's competent personnel with sufficient training. All components would be inspected, cleaned and serviced regularly. A tentative maintenance plan is shown below:

**Table 2.4 Maintenance Plan for Joss Paper Furnace cum APCE**

| Description | Recommended Schedule |
|---|---|
| Clear the ash from joss paper burner<br>• Open the access door at the bottom of the joss paper burner<br>• Clear the ash from the joss paper burner by using shovel | Daily |
| Check the following items:<br>• The condition of treated flue gas discharge (i.e. the colour and the flow rate)<br>• Running current of blower<br>• Any abnormal noise or vibration during the operation<br>• Performance of back flow function | Monthly |

2.5.9 The existing furnace cum APCE is considered a major noise source on-site and is the focus in the current assessment. Other existing noise sources such as split-type units of air conditioners installed on the roof are also included in the assessment though they are relatively minor. Their locations and images are given in Figure 2.3 and Figure 2.4 respectively. There is however no public address (PA) system installed on-site.

2.5.10 As required in the Application, layout plans in 1:500 and 1:100 showing the location of columbarium in relation to the first layer of NSRs within 300m and location of sources on-site are appended in Annex 2.3 and Annex 2.4 respectively.

## 2.6 Assessment Approach & Methodology

2.6.1 The assessment of noise impact arising from various fixed noise source(s) has been based on standard acoustic principles, and procedures given in the *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites* ("IND-TM") issued under the *NCO*.

2.6.2 Impacts due to individual noise source(s) have been calculated and logarithmically summed at the individual NSRs for calculation of the overall impacts:

$$PNL = \sum [SWL_i + C_{dist} + C_{impulse} + C_{tonality} + C_{barrier} + C_{facade}]$$

Where

| | | |
|---|---|---|
| $PNL$ | = | Overall predicted noise level arising from individual source after various corrections |
| $SWL_i$ | = | Sound power level of individual noise source |
| $C_{dist}$ | = | Correction for distance attenuation |
| $C_{impulse}$ | = | Correction [+3 dB(A)] for impulsive noise in IND-TM, if applicable |
| $C_{tonality}$ | = | Correction [+6 dB(A)] for tonality as in IND-TM, if applicable |
| $C_{barrier}$ | = | Correction [-5 to -10 dB(A)] for barrier effects due to various architectural features/ topography/ obstacles/ purpose-built noise barrier/ parapet wall, if any |
| $C_{facade}$ | = | Correction [+3 dB(A)] for façade reflection at receiver |

2.6.3 The steps of calculations are outlined below:

- Identify the relevant noise source(s) on-site;
- Prepare an inventory of noise source(s) that will impact on the selected representative NSRs in the Assessment Area shown in Figure 2.1;

- Calculate the PNL due to various sources;
- Compare the PNL with the established noise criteria established in paragraph 2.2.5 at any one of the representative NSR after adjustments for various applicable corrections;
- Recommend, as necessary, the appropriate mitigation measures to address/ mitigate the noise impact to ensure no exceedance.

## 2.7 Assessment Results

2.7.1 Without any mitigation, the PNL have been predicted as given in Table 2.5 with details appended in Annex 2.5.

**Table 2.5 Summary of Unmitigated Impacts on Existing NSRs**

| NSR Labels | Description | Daytime/ Evening Period, Leq (30 min), dB(A) Noise criteria ≤ 65 dB(A) |
|---|---|---|
| N01 | No. 92, Fo Tan Village (Residential) | 50 |
| N02 | No. 1, Shek Shui Wan Village (Residential) | 41 |
| N03 | Tower 1, The Palazzo (Residential) | 20 |

**Note:** The above NSRs rely on opened windows for ventilation

**Proposal of Noise Mitigation**

2.7.2 Given full compliance with the established noise criterion for the daytime period, no noise mitigation would be necessary.

## 2.8 Summary & Conclusion

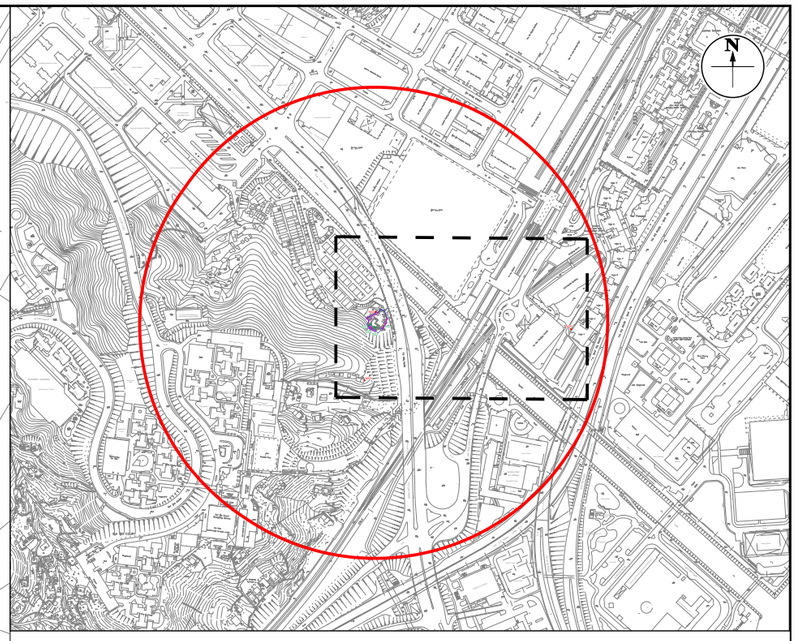
2.8.1 The current assessment has revealed that the only major noise source of concern will be due to the integrated joss paper furnace cum dry-type air pollution control equipment (“APCE”) comprising extraction fans and dry filters. Other minor noise sources include several split-type units of air conditioners.

2.8.2 As the predicted noise level (“PNL”) does not exceed the established noise criteria for daytime/ evening operations, effective noise control on-site is envisaged.

**Legend**

- Representative Noise Sensitive Receivers
- Noise Sources
- Application Boundary
- Proposed Areas of Short Term Tenancy (STT)
- 300m Assessment Area
- Existing Joss Paper Furnace cum Dry-type APCE

N01
N02
N03
S01
S02
S02'
S03



**BLOCK PLAN**

0m 25m 50m 100m

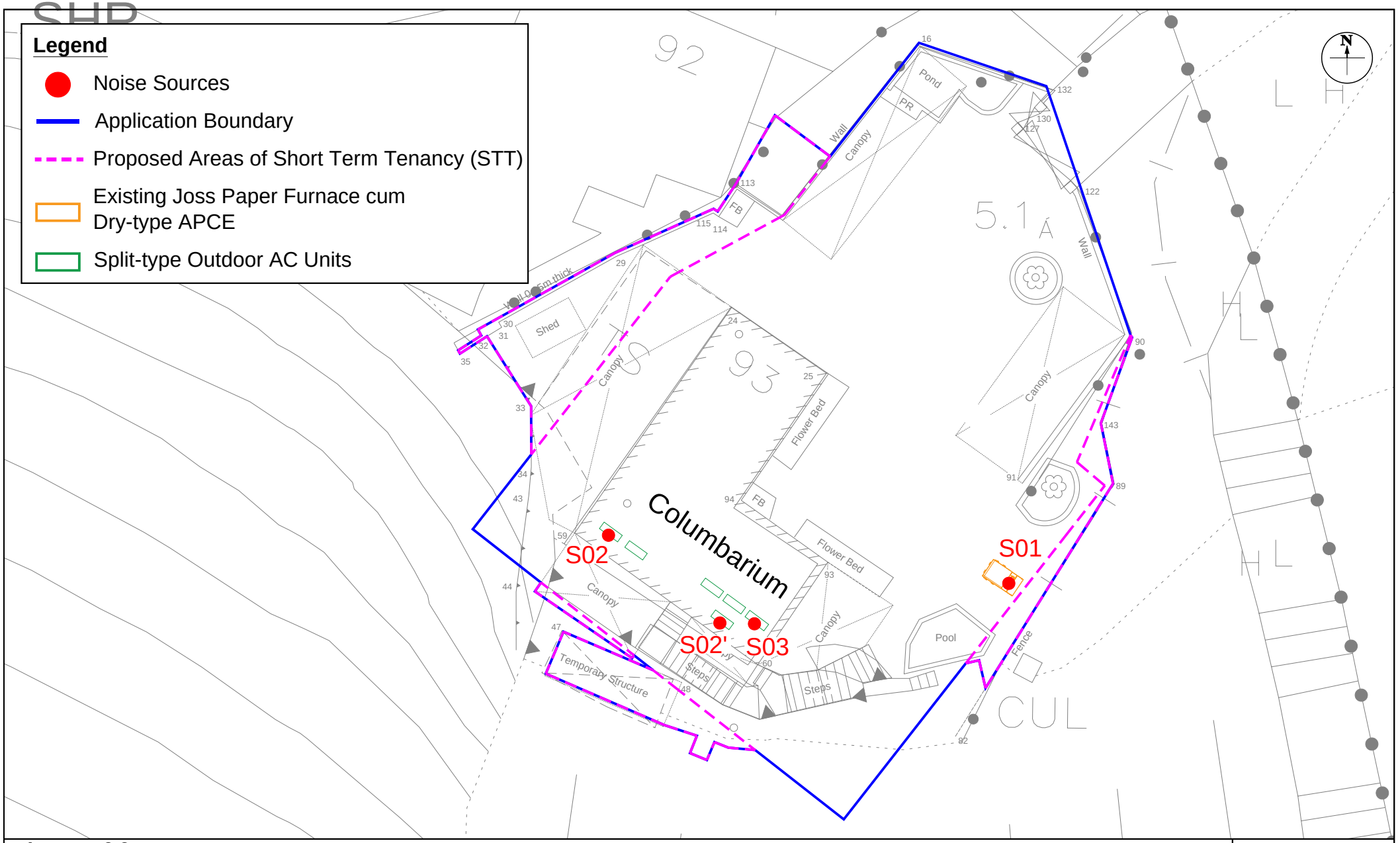
| | |
|---|---|
| **Figure:** 2.1 | RAMBOLL |
| **Title:** Assessment Area for Noise Impact and Representative NSRs Off-site | Drawn by: RW<br>Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

N01: No. 92, Fo Tan Village

N02: No. 1, Shek Shui Wan Village

N03: Tower 1, The Palazzo

| | |
|---|---|
| **Figure:** 2.2 | RAMBOLL |
| **Title:** Photo Records of Representative NSRs | Drawn by: RW |
| | Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: June 2018 |




| | |
|---|---|
| **Figure:** 2.3 | RAMBOLL |
| **Title:** Location of Fixed Noise Sources (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

S1: Existing Joss Paper Furnace cum Dry-type APCE (FAST-D7)

S2: Split-type Outdoor AC Units

S2' and S3: Split-type Outdoor AC Units

| | |
|---|---|
| **Figure:** 2.4 | RAMBOLL |
| **Title:** Images of Fixed Noise Sources | Drawn by: RW |
| | Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Aug 2018 |

# Annex 2.1

# Catalogue of Existing Joss Paper Furnace cum APCE

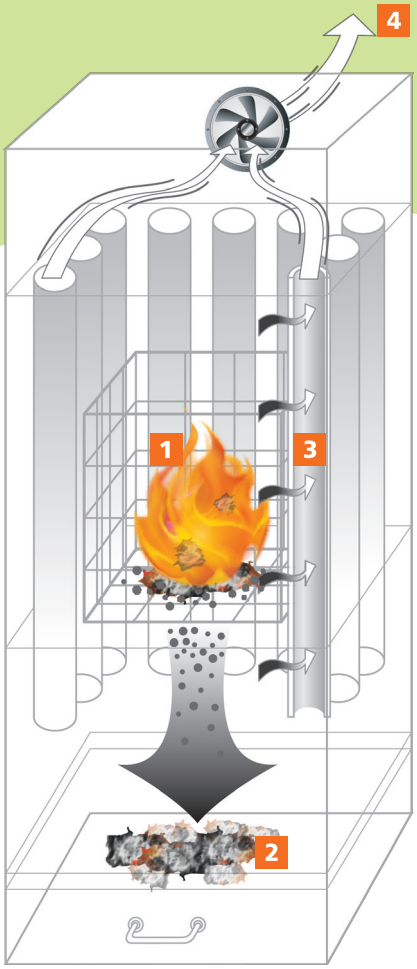
Bamako Burner™
寶潔科　綠化寶系統™

# 乾式「寶潔科　綠化寶系統™」零黑煙排放

## Dry-Type "Bamako Burner™" Zero Black Smoke Emission

升級流動版
Upgraded mobile version

- **革命性除煙塵技術，除煙塵效率 > 90%**
  Revolutionary smoke and fly ash removal technology with > 90% removal rate
- **締造寧靜環境**
  Tranquil environment created
- **適用於各道堂、屋苑、廟宇、骨灰龕場、醫院殮房等**
  Excellent for Taoist Institution, Estates, Temples, Columbaria, Mortuaries, and etc.




## 運作原理 System Schematic

1. 從燃燒爐產生的黑煙及飛灰被抽入系統；
   Black smoke and fly ash from the combustion chamber will be extracted to the treatment system;
2. 較大灰塵會被爐灰盤收集；
   Large smoke particulate matter will be collected by ash tray;
3. 最後，高效乾式濾芯再過濾煙氣中剩下較微細的灰塵；
   The remaining fine ash will be filtered by high efficiency dry filters ;
4. 排出已淨化的空氣。
   The smokeless clean air will be discharged at the air outlet diffuser.

## 產品特點 Product Features

- ✔ 使用工業級乾式濾芯，達致零黑煙排放
- ✔ 高效除煙除塵，可處理2.5μm(PM2.5)微粒
- ✔ 全自動清潔系統
- ✔ 一鍵操作
- ✔ 2 年保養

- ✔ Zero black smoke emission achieved through adoption of industrial grade dry type filter and strictest process
- ✔ Highly efficient treatment system; particulates removed up to 2.5μm (PM2.5)
- ✔ Automatic cleaning system
- ✔ Intuitive single button control
- ✔ Warranty : 2 years

## 產品規格 Product Specifications

| 型號 Model | FAST-D7 | FAST-D20 |
|---|---|---|
| 化寶量 (公斤/小時)<br>Joss Paper Burning Capacity (kg/hr) | 7 | 20 |
| 外形尺寸 (闊x深x高)(毫米)<br>Dimension (W x D x H) (mm) | 800 x 1439 x 1825 | 1950 x 1260 x 2290 |
| 燃燒爐爐口尺寸 (闊x高)(毫米)<br>Opening Dimension (W x H) (mm) | 300 x 370 | 500 x 600 |
| 燃燒倉內部尺寸 (闊x深x高)(毫米)<br>Interior Dimension (W x D x H) (mm) | 400 x 600 x 618 | 600 x 630 x 830 |
| 風量<br>Air Flow Rate | 0.1m³/s | 0.25m³/s |
| 總重量 (噸)<br>Total Weight (ton) | 0.35 | 1.8 |
| 電功率 (千瓦)<br>Rated Power (kW) | 1 | 3.3 |
| 輸入電壓<br>Input Voltage | 220V/1ph/50Hz | |
| 煙塵排放濃度<br>Particulates Matter | 少於 Below 30mg/m³<br>(最佳可達 Optimum result < 5mg/m³) | |
| 除煙塵效率<br>Particulates Matter Removal Efficiency | 高於 Above 90% | |
| 煙氣排放黑度<br>Darkness of Smoke | 低於林格曼黑度1級 (無黑煙)<br>Below Grade 1 of Ringelmann Smoke Scale<br>(No black smoke) | |

## 一站式服務 One-stop Service

盈電環保科技有限公司能為你提供一站式的服務。

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3. Maintenance Service

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如欲查詢更多「寶潔科 綠化寶系統™」的資訊，歡迎與盈電環保科技有限公司聯絡。
For more information of Bamako Burner™, please contact REC Green Technologies Co., Ltd. via any of the below channels.

**電話 Tel:** (852) 2619-8817 | **傳真 Fax:** (852) 2481-2870 | **電郵 E-mail:** rgt@rec-eng.com | **網址 Website:** www.rec-gt.com

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**Address:** Units A-D, 15/F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, N.T., Hong Kong


Bamako version D3 06/2016

# Annex 2.2

# Catalogue of Split-type Air-conditioning Outdoor Unit

# Pair

## Industry leading technology with R-32 delivering optimal efficiency and comfort for commercial applications

- Daikin's Seasonal Smart range is the first R-32 light commercial range available in the European market
- 68% lower GWP compared to R-410A products
- 10% lower refrigerant charge compared to R-410A products
- Minimum 5% more efficient in cooling when compared to R-410A products
- Quiet mode: set via the remote control for example during night time, ...
- The perfect balance in efficiency and comfort thanks to Variable Refrigerant Temperature: top seasonal efficiency throughout most of the year and quick reaction speed on the hottest days.

Variable Refrigerant Temperature

- Re-use of existing R-22 or R-407C technology
- Extended operation range down to -20°C in heating and down to -15°C in cooling

RZQG140L9V1//(L(8)Y1

| Outdoor unit | | | | | RZAG | 71LV1 | 100LV1 | 125LV1 | 140LV1 |
|---|---|---|---|---|---|---|---|---|---|
| Dimensions | Unit | HeightxWidthxDepth | | | mm | 990x940x320 | 1,430x940x320 | | |
| Weight | Unit | | | | kg | 67 | 93 | | |
| Sound power level | Cooling | | | | dBA | 64 | | 66 | 67 |
| Sound pressure level | Cooling | Nom. | | | dBA | 48 | 49 | 51 | 52 |
| | Heating | Nom. | | | dBA | 50 | 51 | 52 | |
| | Night quiet mode | Level 1 | | | dBA | 43 | 45 | | |
| Operation range | Cooling | Ambient | Min.~Max. | | °CDB | -15~50 | | | |
| | Heating | Ambient | Min.~Max. | | °CWB | -20~15.5 | | | |
| Refrigerant | Type | | | | | R-32 | | | |
| | Charge | | | | kg | 2.6 | 3.4 | | |
| | | | | | $TCO_2eq$ | 1.8 | 2.3 | | |
| | GWP | | | | | 675 | | | |
| Piping connections | Liquid | OD | | | mm | 9.52 | | | |
| | Gas | OD | | | mm | 15.9 | | | |
| | Piping length | OU - IU | | Max. | m | 55 | 85 | | |
| | | System | | Equivalent | m | 75 | 100 | | |
| | | | | Chargeless | m | 30 | | | |
| | Additional refrigerant charge | | | | kg/m | See installation manual | | | |
| | Level difference | IU - OU | | Max. | m | 30.0 | | | |
| Power supply | Phase / Frequency / Voltage | | | | Hz / V | 1~ / 50/60 / 220-240 | | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | | A | - | | | |

Contains fluorinated greenhouse gases | Nominal cooling capacities are based on: indoor temperature: 27°CDB, 19°CWB, outdoor temperature: 35°CDB, equivalent refrigerant piping: 5m, level difference: 0m. Data for standard efficiency series | Nominal heating capacities are based on: indoor temperature: 20°CDB, outdoor temperature: 7°CDB, 6°CWB, equivalent refrigerant piping: 5m, level difference: 0m. Data for standard efficiency series | See separate drawing for electrical data

Seasonal Smart

# Pair, Twin, Triple, double twin

## Industry leading technology for commercial applications and even for technical rooms

› Top efficiency:
› energy labels up to A++ in both cooling and heating
› compressor that offers substantial efficiency improvements
› control logic that optimises efficiency at the most frequently encountered operating conditions and that optimises the auxiliary modes (when the unit is not active)
› heat exchangers that optimise the refrigerant flow at the most frequent operating conditions (temperature and load)
› via improved nominal performances
› The perfect balance in efficiency and comfort thanks to Variable Refrigerant Temperature: top seasonal efficiency throughout most of the year and quick reaction speed on the hottest days.

Variable Refrigerant Temperature

› Suits high sensible, infrastructure cooling applications
› Re-use of existing R-22 or R-407C technology

› Extended operation range down to -20°C in heating and down to -15°C in cooling
› With a gas cooled PCB reliable cooling is guaranteed as it is not influenced by ambient temperature

RZQG140L9V1//(L(8)Y1

› Maximum piping length up to 75m, minimum piping length is 5m.
› Outdoor units for pair, twin, triple, double twin application
› Daikin outdoor units are neat, sturdy and can easily be mounted on a roof or terrace or simply placed against an outside wall
› Compatibility with D-BACS
› Units optimized for seasonal efficiency give an indication on how efficient an air conditioner operates over an entire heating or cooling season.

RELIABLE, CONTINUOUS OPERATION 24/7 365



## Twin, triple and double twin application

| | | FCQHG-F | FCQG-F | | | | FFQ-C | | | FDXS-F (9) | | | FBQ-D | | | | FHQ-C | | | | FAQ-C | FUQ-C | FNQ-A | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| capacity class | | 71 | 35 | 50 | 60 | 71 | 35 | 50 | 60 | 35 | 50 | 60 | 35 | 50 | 60 | 71 | 35 | 50 | 60 | 71 | 71 | 71 | 35 | 50 | 60 |
| RZQG71L9V1 | RZQG71L8Y1 | | 2 | | | | 2 | | | 2 | | | 2 | | | | 2 | | | | | | 2 | | |
| RZQG100L9V1 | RZQG100L8Y1 | | 3 | 2 | | | 3 | 2 | | 3 | 2 | | 3 | 2 | | | 3 | 2 | | | | | 3 | 2 | |
| RZQG125L9V1 | RZQG125L8Y1 | | 4 | 3 | 2 | | 4 | 3 | 2 | 4 | 3 | 2 | 4 | 3 | 2 | | 4 | 3 | 2 | | | | 4 | 3 | 2 |
| RZQG140L9V1 | RZQG140LY1 | 2 | 4 | 3 | | 2 | 4 | 3 | | 4 | 3 | | 4 | 3 | | 2 | 4 | 3 | | 2 | 2 | 2 | 4 | 3 | |

| Outdoor unit | | | | RZQG | 71L9V1 | 100L9V1 | 125L9V1 | 140L9V1 | 71L8Y1 | 100L8Y1 | 125L8Y1 | 140LY1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimensions | Unit | HeightxWidthxDepth | | mm | 990x940x320 | 1,430x940x320 | | | 990x940x320 | 1,430x940x320 | | |
| Weight | Unit | | | kg | 69 | 95 | | | 80 | 101 | | |
| Sound power level | Cooling | | | dBA | 64 | 66 | 67 | 69 | 64 | 66 | 67 | 69 |
| Sound pressure level | Cooling | Nom. | | dBA | 48 | 50 | 51 | 52 | 48 | 50 | 51 | 52 |
| | Heating | Nom. | | dBA | 50 | 52 | 53 | | 50 | 52 | 53 | |
| | Night quiet mode | Level 1 | | dBA | 43 | 45 | | | 43 | 45 | | |
| Operation range | Cooling | Ambient | Min.~Max. | °CDB | -15~50 | | | | | | | |
| | Heating | Ambient | Min.~Max. | °CWB | -20~15.5 | | | | | | | |
| Refrigerant | Type/Charge kg-TCO$_2$Eq/GWP | | | | R-410A/2.9/6.1/2,087.5 | R-410A/4.0/8.4/2,087.5 | | | R-410A/2.9/6.1/2,087.5 | R-410A/4.0/8.4/2,087.5 | | |
| Piping connections | Liquid | OD | | mm | 9.52 | | | | | | | |
| | Gas | OD | | mm | 15.9 | | | | | | | |
| | Piping length | OU - IU | Max. | m | 50 | 75 | | | 50 | 75 | | |
| | | System | Equivalent | m | 70 | 90 | | | 70 | 90 | | |
| | | | Chargeless | m | 30 | | | | | | | |
| | Additional refrigerant charge | | | kg/m | See installation manual | | | | | | | |
| | Level difference | IU - OU | Max. | m | 30.0 | | | | | | | |
| | | IU - IU | Max. | m | 0.5 | | | | | | | |
| Power supply | Phase / Frequency / Voltage | | | Hz / V | 1~ / 50 / 220-240 | | | | 3N~ / 50 / 380-415 | | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | A | 20 | 32 | | | 20 | 32 | | |

(1) MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker). For more detailed information on each combination, please refer to the electrical data drawing.

Seasonal Classic

# Pair, Twin, Triple, double twin

## Technology and comfort combined for commercial applications

› Top efficiency:
› Energy labels up to A++ (cooling) /A+ (heating) for RZQG71/100L9V1 + FCQG71/100F
› compressor that offers substantial efficiency improvements
› control logic that optimises efficiency at the most frequently encountered operating conditions and that optimises the auxiliary modes (when the unit is not active)
› heat exchangers that optimise the refrigerant flow at the most frequent operating conditions (temperature and load)
› via improved nominal performances
› Re-use of existing R-22 or R-407C technology

RZQSG100-125L3/9V1/L(8)Y1

› Guarantees operation in both heating and cooling mode down to -15°C
› With a gas cooled PCB reliable cooling is guaranteed as it is not influenced by ambient temperature
› Maximum piping length up to 50m, minimum piping length is 5m.
› Outdoor units for pair, twin, triple, double twin application
› Daikin outdoor units are neat, sturdy and can easily be mounted on a roof or terrace or simply placed against an outside wall
› Compatibility with D-BACS
› Units optimized for seasonal efficiency give an indication on how efficient an air conditioner operates over an entire heating or cooling season.

## Twin, triple and double twin application

| | | FCQHG-F | FCQG-F | | | | FFQ-C | | | FDXS-F(9) | | | FBQ-D | | | | FHQ-C | | | | FAQ-C | FNQ-A | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| capacity class | | 71 | 35 | 50 | 60 | 71 | 35 | 50 | 60 | 35 | 50 | 60 | 35 | 50 | 60 | 71 | 35 | 50 | 60 | 71 | 71 | 35 | 50 | 60 |
| RZQSG71L3V1 | | | 2 | | | | 2 | | | 2 | | | 2 | | | | 2 | | | | | 2 | | |
| RZQSG100L9V1 | RZQSG100L8Y1 | | 3 | 2 | | | 3 | 2 | | 3 | 2 | | 3 | 2 | | | 3 | 2 | | | | 3 | 2 | |
| RZQSG125L9V1 | RZQSG125L8Y1 | | 4 | 3 | 2 | | 4 | 3 | 2 | 4 | 3 | 2 | 4 | 3 | 2 | | 4 | 3 | 2 | | | 4 | 3 | 2 |
| RZQSG140L9V1 | RZQSG140LY1 | 2 | 4 | 3 | | 2 | 4 | 3 | | 4 | 3 | | 4 | 3 | | 2 | 4 | 3 | | 2 | 2 | 4 | 3 | |

| Outdoor unit | | | | RZQSG | 71L3V1 | 100L9V1 | 125L9V1 | 140L9V1 | 100L8Y1 | 125L8Y1 | 140LY1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimensions | Unit | HeightxWidthxDepth | | mm | 770x900x320 | 990x940x320 | | 1,430x940x320 | 990x940x320 | | 1,430x940x320 |
| Weight | Unit | | | kg | 67 | 72 | 74 | 95 | 82 | | 101 |
| Sound power level | Cooling | | | dBA | 65 | 70 | | 69 | | 70 | 69 |
| Sound pressure level | Cooling | Nom./Silent operation | | dBA | 49/47 | 53/- | 54/- | 53/- | | 54/- | 53/- |
| | Heating | Nom. | | dBA | 51 | 57 | 58 | 54 | 57 | 58 | 54 |
| | Night quiet mode | Level 1 | | dBA | - | 49 | | | | | |
| Operation range | Cooling | Ambient | Min.~Max. | °CDB | -15~46 | | | | | | |
| | Heating | Ambient | Min.~Max. | °CWB | -15~15.5 | | | | | | |
| Refrigerant | Type/Charge kg-TCO$^2$Eq/GWP | | | | R-410A/2.75/5.7/2,087.5 | R-410A/2.9/6.1/2,087.5 | | R-410A/4.0/8.4/2,087.5 | R-410A/2.9/6.1/2,087.5 | | R-410A/4.0/8.4/2,087.5 |
| Piping connections | Liquid | OD | | mm | 9.52 | | | | | | |
| | Gas | OD | | mm | 15.9 | | | | | | |
| | Piping length | OU - IU | Max. | m | 50 | | | | | | |
| | | System | Equivalent | m | 70 | | | | | | |
| | | | Chargeless | m | 30 | | | | | | |
| | Additional refrigerant charge | | | kg/m | See installation manual | | | | | | |
| | Level difference | IU - OU | Max. | m | 15 | 30.0 | | | | | |
| | | IU - IU | Max. | m | 0.5 | | | | | | |
| Power supply | Phase / Frequency / Voltage | | | Hz / V | 1~ / 50 / 220-240 | | | | 3N~ / 50 / 380-415 | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | A | 20 | 32 | | | 16 | | 20 |

(1) MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker). For more detailed information on each combination, please refer to the electrical data drawing.

# Pair application

## Ideal solution for busy environments and small shops

- Daikin outdoor units are neat, sturdy and can easily be mounted on a roof or terrace or simply placed against an outside wall
- With a gas cooled PCB reliable cooling is guaranteed as it is not influenced by ambient temperature
- Outdoor units are fitted with either a swing or scroll compressor, renowned for low noise and high energy efficiency
- Exclusively offered for pair applications (capacity from 71 up to 140)
- Units optimized for seasonal efficiency give an indication on how efficient an air conditioner operates over an entire heating or cooling season.

AZQS100-125B8V1/BY1

## Pair application

| | ACQ-D | | | | ABQ-C | | | | AHQ-C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| capacity class | 71 | 100 | 125 | 140 | 71 | 100 | 125 | 140 | 71 | 100 | 125 | 140 |
| AZQS-B(8)V1 | v | v | v | v | v | v | v | v | v | v | v | v |
| AZQS-BY1 | | v | v | v | | v | v | v | | v | v | v |

| **Outdoor unit** | | | | **AZQS** | **71BV1** | **100B8V1** | **125B8V1** | **140B8V1** | **100BY1** | **125BY1** | **140BY1** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimensions | Unit | HeightxWidthxDepth | | mm | 770x900x320 | 990x940x320 | | 1,430x940x320 | 990x940x320 | | 1,430x940x320 |
| Weight | Unit | | | kg | 67 | 72.8 | 74.3 | 94.9 | 82 | | 101 |
| Sound power level | Cooling | | | dBA | 64 | 70 | 71 | 70 | | 71 | 70 |
| Sound pressure level | Cooling | Nom. | | dBA | 48 | 53 | 54 | 53 | | 54 | 53 |
| | Heating | Nom. | | dBA | 50 | 57 | 58 | 54 | 57 | 58 | 54 |
| | Night quiet mode | Level 1 | | dBA | 43 | 49 | | | | | |
| Operation range | Cooling | Ambient | Min.~Max. | °CDB | -5~46 | | | | | | |
| | Heating | Ambient | Min.~Max. | °CWB | -15~15.5 | | | | | | |
| Refrigerant | Type/Charge kg-TCO$^2$Eq/GWP | | | | R-410A/2.75/5.7/2,087.5 | R-410A/2.9/6.1/2,087.5 | | R-410A/4.0/8.4/2,087.5 | R-410A/2.9/6.1/2,087.5 | | R-410A/4.0/8.4/2,087.5 |
| Piping connections | Liquid | OD | | mm | 9.52 | | | | | | |
| | Gas | OD | | mm | 15.9 | | | | | | |
| | Piping length | OU - IU | Max. | m | 50 | | | | | | |
| | | System | Equivalent | m | 70 | | | | | | |
| | | | Chargeless | m | 30 | | | | | | |
| | Additional refrigerant charge | | | kg/m | See installation manual | | | | | | |
| | Level difference | IU - OU | Max. | m | 30.0 | | | | | | |
| | | IU - IU | Max. | m | - | 0.5 | | | | | |
| Power supply | Phase / Frequency / Voltage | | | Hz / V | 1~ / 50 / 220-240 | | | | 3N~ / 50 / 380-415 | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | A | 20 | 32 | | 40 | 16 | 20 | 25 |

(1) MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker). For more detailed information on each combination, please refer to the electrical data drawing.

# Multi model application

› Outdoor units for multi model application.
› Outdoor units are fitted with a swing compressor, renowned for its low noise and high energy efficiency
› Up to 5 indoor units can be connected to 1 multi outdoor unit; all indoor units are individually controllable and do not need to be installed in the same room or at the same time; they operate simultaneously within the same cooling or heating mode
› Different types of indoor units can be connected: e.g. wall mounted, ceiling mounted cassette corner, concealed ceiling unit

3MXS52E/4MXS68E

5MXS90E

2MXS40-50H

| CONNECTABLE INDOOR UNITS | Wall mounted | | | | | | | | | | | | | | | | | | | Floor standing | | | | | | Flexi type | | | | Round flow cassette | | | Fully flat cassette | | | | Concealed ceiling | | | | | | | | Ceiling suspended | | | Concealed floor standing | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FTXG-L | | | | CTXS-K | | FTXS-K | | | | | | FTXS-G | | FTX-J3 | | | FTX-KV | | | FVXG-K | | | FVXS-F | | | FLXS-B(9) | | | | FCQG-F | | | FFQ-C | | | | FDXS-F(9) | | | | FDBQ-B/ FBQ-D | | | | FHQ-C | | | FNQ-A | | | |
| | 20 | 25 | 35 | 50 | 15 | 35 | 20 | 25 | 35 | 42 | 50 | 60 | 71 | 20 | 25 | 35 | 20 | 25 | 35 | 25 | 35 | 50 | 25 | 35 | 50 | 25 | 35 | 50 | 60 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 35 | 50 | 60 | 25 | 35 | 50 | 60 |
| 2MXS40H | ● | ● | ● | | ● | ● | ● | ● | ● | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | | | | | | | | | ● | ● | | | | | | | | | | | | | | |
| 2MXS50H | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | ● | ● | ● | | | | | | | | | | | | | | |
| 3MXS40K | ● | ● | ● | | ● | ● | ● | ● | ● | | | | | | | | | | | ● | ● | | ● | ● | | ● | ● | | | ● | | | ● | ● | | | ● | ● | | | | | ● | ● | | | ● | | | ● | ● | | |
| 3MXS52E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | ● | ● | ● | | ● | ● | ● | | | ● | ● | ● | | ● | ● | ● | ● | ● | ● | |
| 3MXS68G | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 4MXS68F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 4MXS80E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 5MXS90E | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Note : blue cells contain preliminary data

| Outdoor unit | | | | | 2MXS40H | 2MXS50H | 3MXS40K | 3MXS52E | 3MXS68G | 4MXS68F | 4MXS80E | 5MXS90E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimensions | Unit | HeightxWidthxDepth | | mm | 550x765x285 | | 735x936x300 | | | | 770x900x320 | |
| Weight | Unit | | | kg | 38 | 42 | 49 | | 58 | | 72 | 73 |
| Sound power level | Cooling | | | dBA | 62 | 63 | 59 | | 61 | | 62 | 66 |
| | Heating | | | dBA | - | | 60 | | - | | | |
| Sound pressure level | Cooling | Nom. | | dBA | 47 | 48 | 46 | | 48 | | | 52 |
| | Heating | Nom. | | dBA | 48 | 50 | 47 | | 49 | | | 52 |
| Operation range | Cooling | Ambient | Min.~Max. | °CDB | 10~46 | | -10~46 | | | | | |
| | Heating | Ambient | Min.~Max. | °CWB | -15~18 | | | | | | | |
| Refrigerant | Type/Charge kg-TCO$^2$Eq/GWP | | | | R-410A/1.20/ 2.5/2,087.5 | R-410A/1.60/ 3.3/2,087.5 | R-410A/2.0/ 4.2/2,087.5 | | R-410A/2.59/ 5.4/2,087.5 | R-410A/2.6/ 5.4/2,087.5 | R-410A/2.9[illegible]/6.2/2,087.5 | |
| Piping connections | Liquid | OD | | mm | 6.35x2 | | 6.35x3 | | | 6.35x4 | | 6.35x5 |
| | Gas | OD | | mm | 9.52x1 | 12.7x1 | 9.52x3 | 9.52x2 12.7x1 | 9.52x1 12.7x2 | 9.52x2 12.7x2 | 9.52x1 12.7x1 15.9x2 | 9.52x2 12.7x1 15.9x2 |
| | Piping length | OU - IU | Max. | m | 20 | | 25 | | | | | |
| | Additional refrigerant charge | | | kg/m | 0.02 (for piping length exceeding 20m) | | 0.02 (for piping length exceeding 30m) | | | | | |
| | Level difference | IU - OU | Max. | m | 15 | | | | | | | |
| | | IU - IU | Max. | m | 7.5 | | | | | | | |
| Power supply | Phase / Frequency / Voltage | | | Hz / V | 1~ / 50 / 220-240 | | 1~ / 50 / 230 | | | | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | A | 16 | | 20 | | | | | |

# VRV IV S-series compact heat pump

## The most compact VRV

- Compact & lightweight single fan design makes the unit almost unnoticeable
- Covers all thermal needs of a building via a single point of contact: accurate temperature control, ventilation, air handling units and Biddle air curtains
- Wide range of indoor units: either connect VRV or stylish indoor units such as Daikin Emura, Nexura ...
- Incorporates VRV IV standards & technologies: Variable Refrigerant Temperature and full inverter compressors
- 3 steps in night quiet mode: step 1: 47 dBA, step 2: 44 dBA, step 3: 41 dBA
- Possibility to limit peak power consumption between 30 and 80%, for example during periods with high power demand
- Contains all standard VRV features

RXYSCQ-TV1

| CONNECTABLE INDOOR UNITS | Wall mounted | | | | | | | | | | | | Floor standing | | | | | | Flexi type | | | | Round flow cassette | | | Fully flat cassette | | | | Concealed ceiling | | | | | | | | Ceiling suspended | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FTXG-L | | | | CTXS-K | | FTXS-K | | | | | | FVXG-K | | | FVXS-F | | | FLXS-B(9) | | | | FCQG-F | | | FFQ-C | | | | FDXS-F(9) | | | | FDBQ-B /FBQ-D | | | | FHQ-C | | |
| | 20 | 25 | 35 | 50 | 15 | 35 | 20 | 25 | 35 | 42 | 50 | 60 | 71 | 25 | 35 | 50 | 25 | 35 | 50 | 25 | 35 | 50 | 60 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 35 | 50 | 60 |
| RXYSCQ-TV1 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

| Outdoor unit | | | | RXYSCQ | 4TV1 | 5TV1 |
|---|---|---|---|---|---|---|
| Capacity range | | | | HP | 4 | 5 |
| Cooling capacity | Nom. | | | kW | 12.1 | 14.0 |
| Heating capacity | Nom. | | | kW | 12.1 | 14.0 |
| | Max. | | | kW | 14.2 | 16.0 |
| Power input - 50Hz | Cooling | Nom. | | kW | 3.43 | 4.26 |
| | Heating | Nom. | | kW | 3.18 | 3.91 |
| | | Max. | | kW | 4.14 | 5.00 |
| EER | | | | kW | 3.53 | 3.29 |
| COP at nominal capacity | | | | kW | 3.81 | 3.58 |
| COP at maximum capacity | | | | kW | 3.43 | 3.20 |
| Maximum number of connectable indoor units | | | | | 64 (1) | |
| Indoor index connection | Min. | | | | 50 | 62.5 |
| | Nom. | | | | - | |
| | Max. | | | | 130 | 162.5 |
| Dimensions | Unit | HeightxWidthxDepth | | mm | 823x940x460 | |
| Weight | Unit | | | kg | 94 | |
| Fan | Air flow rate | Cooling | Nom. | $m^3$/min | 91 | |
| Sound power level | Cooling | Nom. | | dBA | 68 | 69 |
| Sound pressure level | Cooling | Nom. | | dBA | 51 | 52 |
| Operation range | Cooling | Min.~Max. | | °CDB | -5~46 | |
| | Heating | Min.~Max. | | °CWB | -20~15.5 | |
| Refrigerant | Type | | | | R-410A | |
| | Charge | | | kg | 3.7 | |
| | | | | $TCO_2eq$ | 7.7 | |
| | GWP | | | | 2,087.5 | |
| Piping connections | Liquid | OD | | mm | 9.52 | |
| | Gas | OD | | mm | 15.9 | |
| | Total piping length | System | Actual | m | - | |
| Power supply | Phase/Frequency/Voltage | | | Hz/V | 1~/50/220-240 | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | A | 32 | |

(1) Actual number of units depends on the indoor unit type (VRV DX indoor, RA DX indoor, etc.) and the connection ratio restriction for the system (being; 50% ≤ CR ≤130%).
(2) Contains fluorinated greenhouse gases

| Branch provider | | | BPMKS967B2 | BPMKS967B3 |
|---|---|---|---|---|
| Connectable indoor units | | | 1~2 | 1~3 |
| Max. indoor unit connectable capacity | | | 14.2 | 20.8 |
| Max. connectable combination | | | 71+71 | 60+71+71 |
| Dimensions | Height x Width x Depth | mm | 180x294x350 | |
| Weight | | kg | 7 | 8 |

# VRV IV S-series heat pump

## Space saving solution without compromising on efficiency

- Compact & lightweight single fan design makes the unit almost unnoticeable
- Covers all thermal needs of a building via a single point of contact: accurate temperature control, ventilation, air handling units and Biddle air curtains
- Wide range of indoor units: either connect VRV or stylish indoor units such as Daikin Emura, Nexura ...
- Incorporates VRV IV standards & technologies: Variable Refrigerant Temperature and full inverter compressors
- 3 steps in night quiet mode: step 1: 47 dBA, step 2: 44 dBA, step 3: 41 dBA
- Possibility to limit peak power consumption between 30 and 80%, for example during periods with high power demand
- Contains all standard VRV features

RXYSQ4-6TV1



| CONNECTABLE INDOOR UNITS | Wall mounted | | | | | | | | | | | | Floor standing | | | | | | Flexi type | | | | Round flow cassette | | | Fully flat cassette | | | | Concealed ceiling | | | | | | | | Ceiling suspended | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FTXG-L | | | | CTXS-K | | FTXS-K | | | | | | FTXS-G | | FVXG-K | | | FVXS-F | | | | | FLXS-B(9) | | | | FCQG-F | | | FFQ-C | | | | FDXS-F(9) | | | | FDBQ-B /FBQ-D | | | | FHQ-C | | |
| | 20 | 25 | 35 | 50 | 15 | 35 | 20 | 25 | 35 | 42 | 50 | 60 | 71 | 25 | 35 | 50 | 25 | 35 | 50 | 25 | 35 | 50 | 60 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 25 | 35 | 50 | 60 | 35 | 50 | 60 |
| RXYSQ-TV1 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

| Outdoor unit | | | | | RXYSQ-TV1 | 4TV1 | 5TV1 | 6TV1 |
|---|---|---|---|---|---|---|---|---|
| Capacity range | | | | | HP | 4 | 5 | 6 |
| Cooling capacity | Nom. | | | | kW | 12.1 | 14.0 | 15.5 |
| Heating capacity | Nom. | | | | kW | 12.1 | 14.0 | 15.5 |
| | Max. | | | | kW | 14.2 | 16.0 | 18.0 |
| Power input - 50Hz | Cooling | Nom. | | | kW | 3.03 | 3.73 | 4.56 |
| | Heating | Nom. | | | kW | 2.68 | 3.27 | 3.97 |
| | | Max. | | | kW | 3.43 | 4.09 | 5.25 |
| EER | | | | | kW | 4.00 | 3.75 | 3.40 |
| COP at nominal capacity | | | | | kW | 4.52 | 4.28 | 3.90 |
| COP at maximum capacity | | | | | kW | 4.14 | 3.91 | 3.43 |
| Maximum number of connectable indoor units | | | | | | 64 (1) | | |
| Indoor index connection | Min. | | | | | 50 | 62.5 | 70 |
| | Nom. | | | | | - | | |
| | Max. | | | | | 130 | 162.5 | 182 |
| Dimensions | Unit | HeightxWidthxDepth | | | mm | 1,345x900x320 | | |
| Weight | Unit | | | | kg | 104 | | |
| Fan | Air flow rate | Cooling | Nom. | | $m^3$/min | 106 | | |
| Sound power level | Cooling | Nom. | | | dBA | 68 | 69 | 70 |
| Sound pressure level | Cooling | Nom. | | | dBA | 50 | 51 | |
| Operation range | Cooling | Min.~Max. | | | °CDB | -5~46 | | |
| | Heating | Min.~Max. | | | °CWB | -20~15.5 | | |
| Refrigerant | Type | | | | | R-410A | | |
| | Charge | | | | kg | 3.6 | | |
| | | | | | $TCO_2eq$ | 7.5 | | |
| | GWP | | | | | 2,087.5 | | |
| Piping connections | Liquid | OD | | | mm | 9.52 | | |
| | Gas | OD | | | mm | 15.9 | | 19.1 |
| | Total piping length | System | Actual | | m | - | | |
| Power supply | Phase/Frequency/Voltage | | | | Hz/V | 1N~/50/220-240 | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | | A | 32 | | |

(1) Actual number of units depends on the indoor unit type (VRV DX indoor, RA DX indoor, etc.) and the connection ratio restriction for the system (being; 50% ≤ CR ≤130%).
(2) Contains fluorinated greenhouse gases

| Branch provider | | | BPMKS967B2 | BPMKS967B3 |
|---|---|---|---|---|
| Connectable indoor units | | | 1~2 | 1~3 |
| Max. indoor unit connectable capacity | | | 14.2 | 20.8 |
| Max. connectable combination | | | 71+71 | 60+71+71 |
| Dimensions | Height x Width x Depth | mm | 180x294x350 | |
| Weight | | kg | 7 | 8 |

# Annex 2.3

# Layout Plan in Scale of 1:500 showing Location of the Columbarium in relation to NSRs within 300m

**Legend**

- Noise Sources
- Representative NSRs
- Application Boundary
- Proposed Areas of Short Term Tenancy (STT)
- 300m Assessment Area

N01

S02

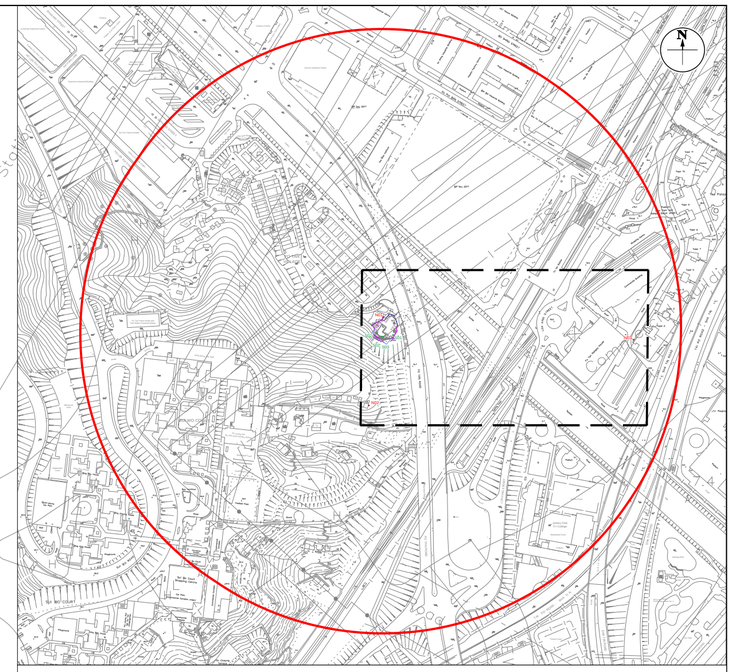
S01

S02'

S03

N02

N03

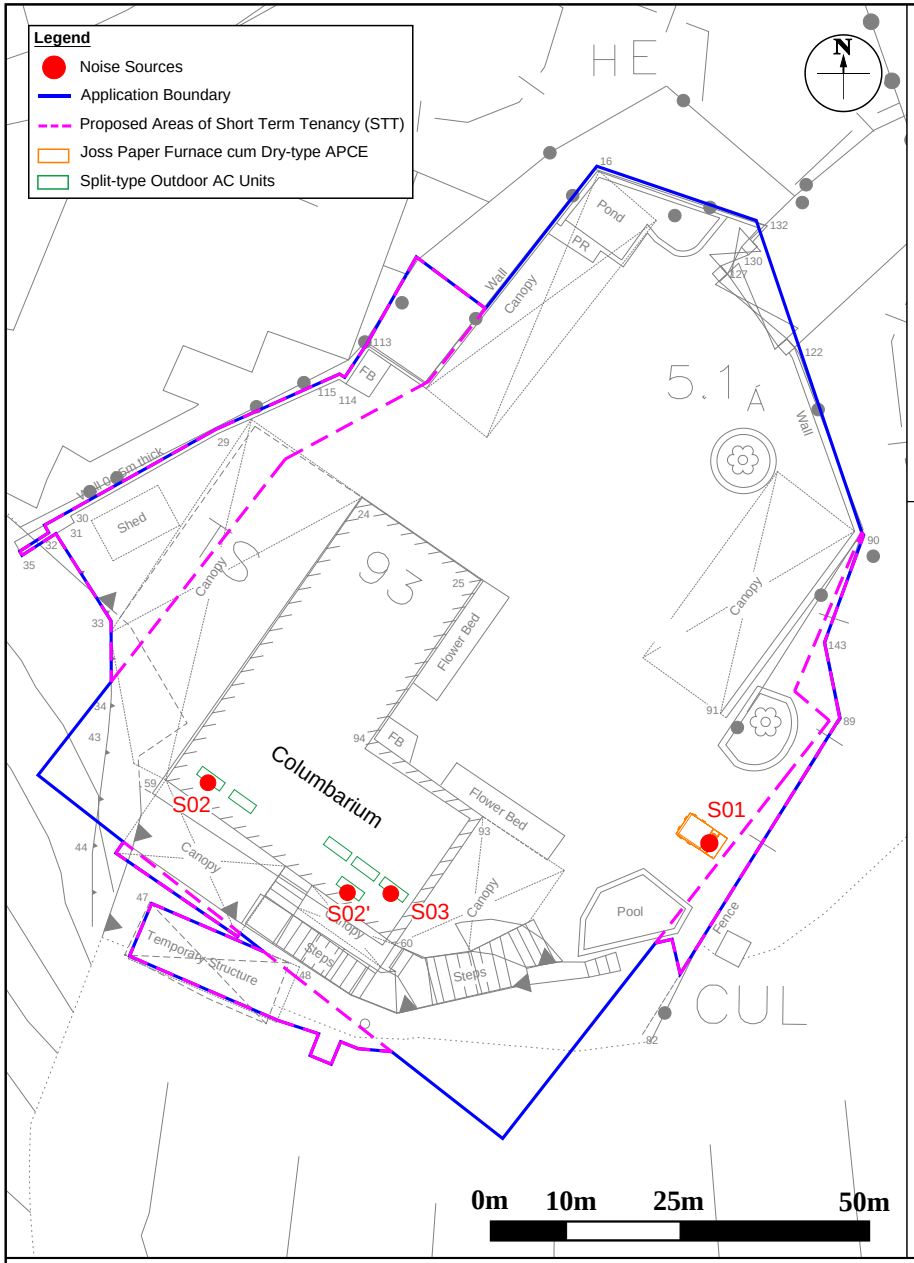


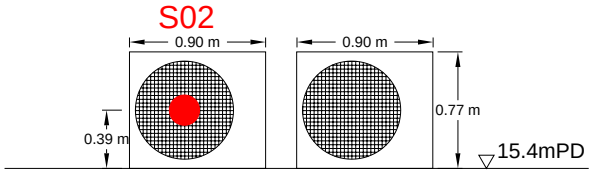
**BLOCK PLAN**

| | |
|---|---|
| **Annex:** 2.3 | RAMBOLL |
| **Title:** Layout Plan in Scale of 1:500 showing Location of the Columbarium in relation to the NSRs within 300m (Printed on A2) | Drawn by: RW |
| | Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2 |
| | Date: Jun 2020 |

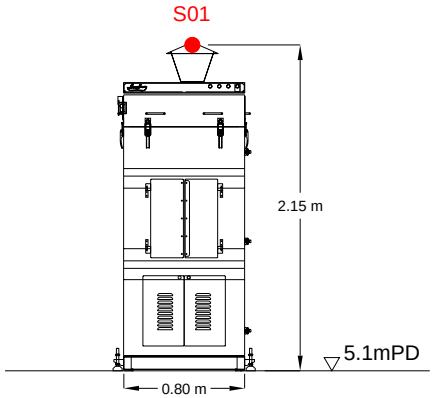
# Annex 2.4

# Layout Plan in Scale of not less than 1:100 showing Major Noise Generating Facilities related to the Columbarium and their Spatial Relationship and Particulars

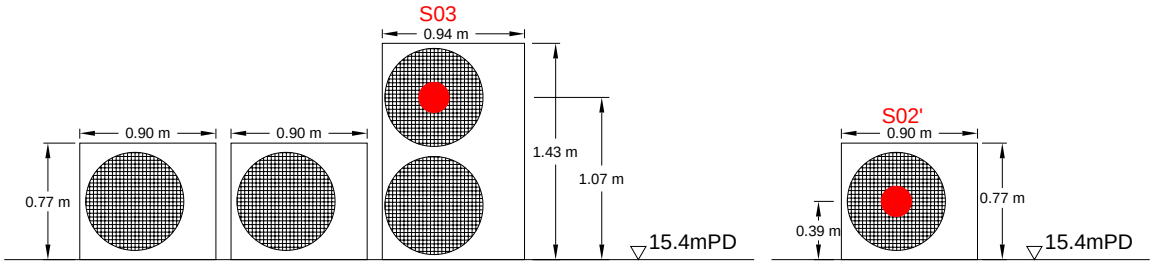



**SCALE 1:50 (A4)**




**SCALE 1:50 (A4)**




**SCALE 1:50 (A4)**

**Annex:** 2.4

**Title:** Layout Plan in Scale of not less than 1:100 showing Major Noise Generating Facilities related to the Columbarium and their Spatial Relationship and Particulars

**Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

Drawn by: RW
Checked by: KY
Rev.: 1.2
Date: Jun 2020

# Annex 2.5

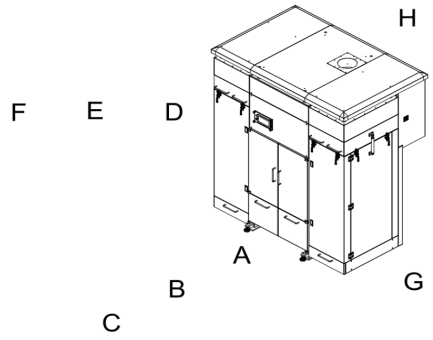
# Prediction of Fixed Noise Source Impact

| NSR Label | Descriptions | Nature of Use | Current zoning | Existing/ Planned Uses | Location | | Local Ground, (mPD) | Selected Floor | Floor Level, (mPD) | Assessment Point, z, (mPD) | ASR | Noise Criteria (ANL), $L_{eq}$ (30 min), dB(A) | | Unmitigated Noise Impact at NSR, $L_{eq}$ (30 min), dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | x Easting | y Northing | | | | | | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) |
| N01 | No.92, Fo Tan Village | Residential | V | Existing | 838269 | 828358 | 4.3 | G/F | 4.3 | 5.5 | B | 65.0 | 55.0 | 50 | N.A. |
| N02 | No.1, Shek Shui Wan Village | Residential | V | Existing | 838255 | 828269 | 39.9 | G/F | 39.9 | 41.1 | B | 65.0 | 55.0 | 41 | N.A. |
| N03 | Tower 1, The Palazzo | Residential | V | Existing | 838523 | 828336 | 33.3 | 1/F | 36.3 | 37.5 | B | 65.0 | 55.0 | 20 | N.A. |

| Noise Source ID | Description of Noise Sources | Sources | Source Location | | | SWL, dB(A) (Leq, 30mins) | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | Tonality |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Planned | X | Y | Z, mPD | Daytime | Nighttime | | | | |
| S01 | Existing Joss Paper Furnace cum Dry-type APCE (FAST-D7) | Existing | 838279 | 828340 | 7.3 | 80.3 | OFF | 2 | 1 | 100.0% | 0 |
| S02 | AC Outdoor Unit | Existing | 838263 | 828342 | 15.8 | 66.0 | OFF | 8 | 5 | 100.0% | 0 |
| S02' | AC Outdoor Unit | Existing | 838267 | 828339 | 15.8 | 66.0 | OFF | 8 | 5 | 100.0% | 0 |
| S03 | AC Outdoor Unit | Existing | 838269 | 828338 | 16.5 | 69.0 | OFF | 8 | 1 | 100.0% | 0 |

**Meaesurement Data of REC_FAST-D20 (Dry-type APCE) @ Wan Fau Sin Koon**

| Sample Point | Measurement Distance from Joss Paper Burner (m) | Measured B/G (dBA) | Measured SPL (dBA) | Q | Corrected SWL (dBA) |
|---|---|---|---|---|---|
| A | 1 | 48.2 | 73.3 | 8 | 75.2 |
| B | 3 | 47.6 | 67.5 | 8 | 79.0 |
| C | 5 | 46.7 | 65.7 | 8 | 81.6 |
| D | 1 | 49.1 | 69.2 | 8 | 71.1 |
| E | 3 | 46.6 | 67.8 | 8 | 79.3 |
| F | 5 | 48.2 | 67.0 | 8 | 82.9 |
| G | 1 | 50.9 | 72.0 | 8 | 73.9 |
| H | 3 | 49.8 | 70.2 | 8 | 81.7 |
| I | 5 | 47.3 | 68.9 | 8 | 84.8 |
| J | 1 | 45.8 | 69.2 | 8 | 71.1 |
| K | 3 | 46.1 | 67.4 | 8 | 78.9 |
| L | 5 | 42.0 | 66.4 | 8 | 82.3 |
| | | | Average SWL (dBA) | | 80.3 |



| Outdoor unit | | | | | 2MXS40H | 2MXS50H | 3MXS40K | 3MXS52E | 3MXS68G | 4MXS68F | 4MXS80E | 5MXS90E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimensions | Unit | HeightxWidthxDepth | | mm | 550x765x285 | | 735x936x300 | | | | 770x990x320 | |
| Weight | Unit | | | kg | 38 | 42 | 49 | | 58 | | 72 | 73 |
| Sound power level | Cooling | | | dBA | 62 | 63 | 59 | | 61 | | 62 | 66 |
| | Heating | | | dBA | - | | 60 | | - | | | |
| Sound pressure level | Cooling | Nom. | | dBA | 47 | 48 | 46 | | 48 | | | 52 |
| | Heating | Nom. | | dBA | 48 | 50 | 47 | | 49 | | | 52 |
| Operation range | Cooling | Ambient | Min.~Max. | °CDB | 10~46 | | -10~46 | | | | | |
| | Heating | Ambient | Min.~Max. | °CWB | -15~18 | | | | | | | |
| Refrigerant | Type/Charge kg-TCO2Eq/GWP | | | | R-410A/1.20/ 2.5/2,087.5 | R-410A/1.60/ 3.3/2,087.5 | R-410A/2.0/ 4.2/2,087.5 | | R-410A/2.59/ 5.4/2,087.5 | R-410A/2.6/ 5.4/2,087.5 | R-410A/2.9/6.2/2,087.5 | |
| Piping connections | Liquid | OD | | mm | 6.35x2 | | 6.35x3 | | | 6.35x4 | | 6.35x5 |
| | Gas | OD | | mm | 9.52x1 | 12.7x1 | 9.52x3 | 9.52x2 12.7x1 | 9.52x1 12.7x2 | 9.52x2 12.7x2 | 9.52x1 12.7x1 15.9x2 | 9.52x2 12.7x1 15.9x2 |
| | Piping length | OU - IU | Max. | m | 20 | | 25 | | | | | |
| | Additional refrigerant charge | | | kg/m | 0.02 (for piping length exceeding 30m) | | 0.02 (for piping length exceeding 30m) | | | | | |
| | Level difference | IU - OU | Max. | m | 15 | | | | | | | |
| | | IU - IU | Max. | m | 7.5 | | | | | | | |
| Power supply | Phase / Frequency / Voltage | | | Hz / V | 1~ / 50 / 220-240 | | 1~ / 50 / 230 | | | | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | A | 16 | | 20 | | | | | |

| Outdoor unit | | | | | RZQG | 71L9V1 | 100L9V1 | 125L9V1 | 140L9V1 | 71L8Y1 | 100L8Y1 | 125L8Y1 | 140LY1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimensions | Unit | HeightxWidthxDepth | | mm | 990x940x320 | 1,430x940x320 | | | | 990x940x320 | 1,430x940x320 | | |
| Weight | Unit | | | kg | 69 | 95 | | | | 80 | 101 | | |
| Sound power level | Cooling | | | dBA | 64 | 66 | 67 | 69 | | 64 | 66 | 67 | 69 |
| Sound pressure level | Cooling | Nom. | | dBA | 48 | 50 | 51 | 52 | | 48 | 50 | 51 | 52 |
| | Heating | Nom. | | dBA | 50 | 52 | 53 | | | 50 | 52 | 53 | |
| | Night quiet mode | Level 1 | | dBA | 43 | 45 | | | | 43 | 45 | | |
| Operation range | Cooling | Ambient | Min.~Max. | °CDB | -15~50 | | | | | | | | |
| | Heating | Ambient | Min.~Max. | °CWB | -20~15.5 | | | | | | | | |
| Refrigerant | Type/Charge kg-TCO2Eq/GWP | | | | R-410A/2.9/6.1/2,087.5 | R-410A/4.0/8.4/2,087.5 | | | | R-410A/2.9/6.1/2,087.5 | R-410A/4.0/8.4/2,087.5 | | |
| Piping connections | Liquid | OD | | mm | 9.52 | | | | | | | | |
| | Gas | OD | | mm | 15.9 | | | | | | | | |
| | Piping length | OU - IU | Max. | m | 50 | 75 | | | | 50 | 75 | | |
| | | System | Equivalent | m | 70 | 90 | | | | 70 | 90 | | |
| | | | Chargeless | m | 30 | | | | | | | | |
| | Additional refrigerant charge | | | kg/m | See installation manual | | | | | | | | |
| | Level difference | IU - OU | Max. | m | 30.0 | | | | | | | | |
| | | IU - IU | Max. | m | 0.5 | | | | | | | | |
| Power supply | Phase / Frequency / Voltage | | | Hz / V | 1~ / 50 / 220-240 | | | | | 3N~ / 50 / 380-415 | | | |
| Current - 50Hz | Maximum fuse amps (MFA) | | | A | 20 | 32 | | | | 20 | 32 | | |

(1) MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker). For more detailed information on each combination, please refer to the electrical data drawing.

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**Prediction of Unmitigated Fixed Noise Source Impact on Existing NSRs**

| NSR Labels | Descriptions | Nature of Use | Existing/ Planned Uses | Location | | | ASR | Noise Criteria (ANL), $L_{eq}$ (30 min) | | Noise Source ID | Description of Noise Sources | Existing/ Planned | SWL, dB(A), $L_{eq}$ (30 min) | | Location | | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | Distance to NSR, d (m) | Correction for, dB(A) | | | | | | | Noise Impact at NSR, dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | X | Y | Z, mPD | | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) | | | | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) | X | Y | Z, mPD | | | | | Distance | No. | % on time (Daytime) | Screening by Features [1], [2] | Barrier Effects [3] | Tonality | Facade | Daytime & Evening Period | Night-time |
| N01 | No.92, Fo Tan Village | Residential | Existing | 838269 | 828358 | 5.5 | B | 65 | 55 | S01 | Existing Joss Paper Furnace cum Dry-type APCE (FAST-D7) | Existing | 80.3 | OFF | 838279 | 828340 | 7.3 | 2 | 1 | 100.0% | 21 | -34.2 | 0 | 0 | -10 | 0 | 0 | 3 | 39.1 | N.A. |
| | | | | | | | | | | S02 | AC Outdoor Unit | Existing | 66.0 | OFF | 838263 | 828342 | 15.8 | 8 | 5 | 100.0% | 20 | -28.1 | 7 | 0 | 0 | 0 | 0 | 3 | 47.9 | N.A. |
| | | | | | | | | | | S03 | AC Outdoor Unit | Existing | 69.0 | OFF | 838269 | 828338 | 16.5 | 8 | 1 | 100.0% | 23 | -29.0 | 0 | 0 | 0 | 0 | 0 | 3 | 43.0 | N.A. |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | Total = | 50 | N.A. |

| NSR Labels | Descriptions | Nature of Use | Existing/ Planned Uses | Location | | | ASR | Noise Criteria (ANL), $L_{eq}$ (30 min) | | Noise Source ID | Description of Noise Sources | Existing/ Planned | SWL, dB(A), $L_{eq}$ (30 min) | | Location | | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | Distance to NSR, d (m) | Correction for, dB(A) | | | | | | | Noise Impact at NSR, dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | X | Y | Z, mPD | | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) | | | | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) | X | Y | Z, mPD | | | | | Distance | No. | % on time (Daytime) | Screening by Features [1], [2] | Barrier Effects [3] | Tonality | Facade | Daytime & Evening Period | Night-time |
| N02 | No.1, Shek Shui Wan Village | Residential | Existing | 838255 | 828269 | 41.1 | B | 65 | 55 | S01 | Existing Joss Paper Furnace cum Dry-type APCE (FAST-D7) | Existing | 80.3 | OFF | 838279 | 828340 | 7.3 | 2 | 1 | 100.0% | 83 | -46.3 | 0 | 0 | 0 | 0 | 0 | 3 | 37.0 | N.A. |
| | | | | | | | | | | S02' | AC Outdoor Unit | Existing | 66.0 | OFF | 838267 | 828339 | 15.8 | 8 | 5 | 100.0% | 75 | -39.5 | 7 | 0 | 0 | 0 | 0 | 3 | 36.5 | N.A. |
| | | | | | | | | | | S03 | AC Outdoor Unit | Existing | 69.0 | OFF | 838269 | 828338 | 16.5 | 8 | 1 | 100.0% | 75 | -39.5 | 0 | 0 | 0 | 0 | 0 | 3 | 32.5 | N.A. |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | Total = | 41 | N.A. |

| NSR Labels | Descriptions | Nature of Use | Existing/ Planned Uses | Location | | | ASR | Noise Criteria (ANL), $L_{eq}$ (30 min) | | Noise Source ID | Description of Noise Sources | Existing/ Planned | SWL, dB(A), $L_{eq}$ (30 min) | | Location | | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | Distance to NSR, d (m) | Correction for, dB(A) | | | | | | | Noise Impact at NSR, dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | X | Y | Z, mPD | | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) | | | | Daytime & Evening Time (0700-2300) | Nighttime (2300-0700) | X | Y | Z, mPD | | | | | Distance | No. | % on time (Daytime) | Screening by Features [1], [2] | Barrier Effects [3] | Tonality | Facade | Daytime & Evening Period | Night-time |
| N03 | Tower 1, The Palazzo | Residential | Existing | 838523 | 828336 | 37.5 | B | 65 | 55 | S01 | Existing Joss Paper Furnace cum Dry-type APCE (FAST-D7) | Existing | 80.3 | OFF | 838279 | 828340 | 7.3 | 2 | 1 | 100.0% | 246 | -55.8 | 0 | 0 | -10 | 0 | 0 | 3 | 17.5 | N.A. |
| | | | | | | | | | | S02' | AC Outdoor Unit | Existing | 66.0 | OFF | 838267 | 828339 | 15.8 | 8 | 5 | 100.0% | 257 | -50.2 | 7 | 0 | -10 | 0 | 0 | 3 | 15.8 | N.A. |
| | | | | | | | | | | S03 | AC Outdoor Unit | Existing | 69.0 | OFF | 838269 | 828338 | 16.5 | 8 | 1 | 100.0% | 255 | -50.1 | 0 | 0 | -10 | 0 | 0 | 3 | 11.9 | N.A. |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | Total = | 20 | N.A. |

**Notes:**

[1] Screening by structures (building/ wall) resulting in rough noise attenuation of 5 to 10 dB(A). The 10dB(A) attenuation has been claimed for situation where source- reciever are substantially blocked by a major obstacle e.g. buildings/ topography, and the 5dB(A) attenuation is claimed for case where the direct line of sight from source is barely blocked by obstable when viewed from the reciever.

[2] It is considered that all noise sources on-site are steady, and will not generate sudden noise impulse. Impulsive noise correction are therefore not applicable in the calculation.

[3] Directivity Factor (Q) is a correction index quantifies the deviation of the sound propagation from unifrom spherical spreading. Q=1 for spherical sound propagation; Q=2 for hemispherical sound propagation; Q=4 for quarter spherical sound propagation and Q=8 for octantspherical sound propagation.

# Annex 2.6

# Operation Manual of Dry-Type "Bamako Burner™" (Model: FAST-D7)

盈電環保科技有限公司
REC Green Technologies Co., Ltd.
(A wholly-owned subsidiary of Yau Lee Holdings Limited)

寶潔科　綠化寶系統™

# Dry Type Bamako Burner ™
# Remove Smoke and Ash, Heat Absorption, Full-Featured Burner System

## MODEL：FAST-D7

## User's Guide

**Contents**


1. Introduction
2. Operation
3. Technical Specifications
4. Daily Notification
5. Maintenance
6. Troubleshooting



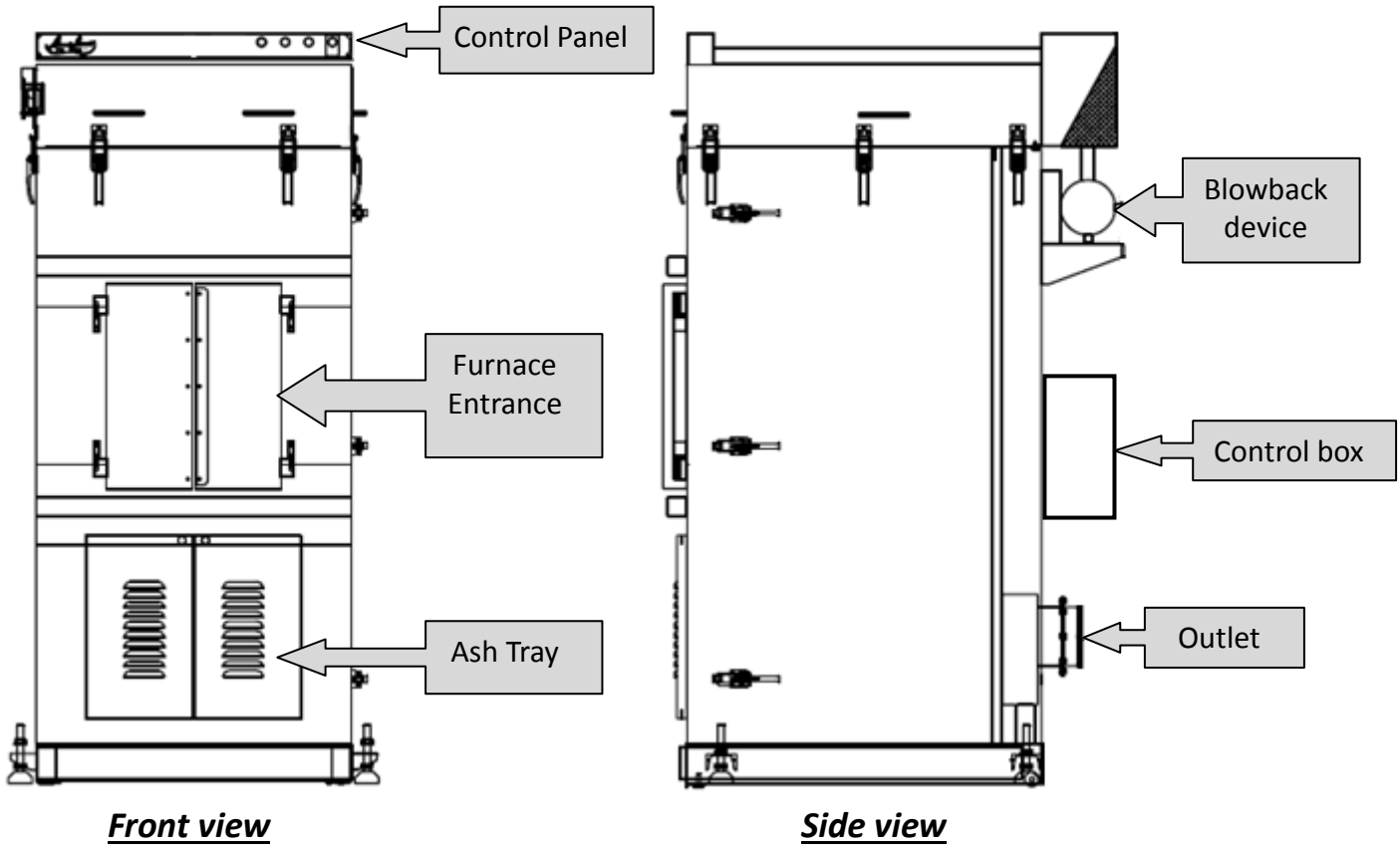
Customer Service Hotline：852-8100-8083

E-mail：rgt@rec-eng.com

Address: Units A-D, 15F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, New Territories, Hong Kong

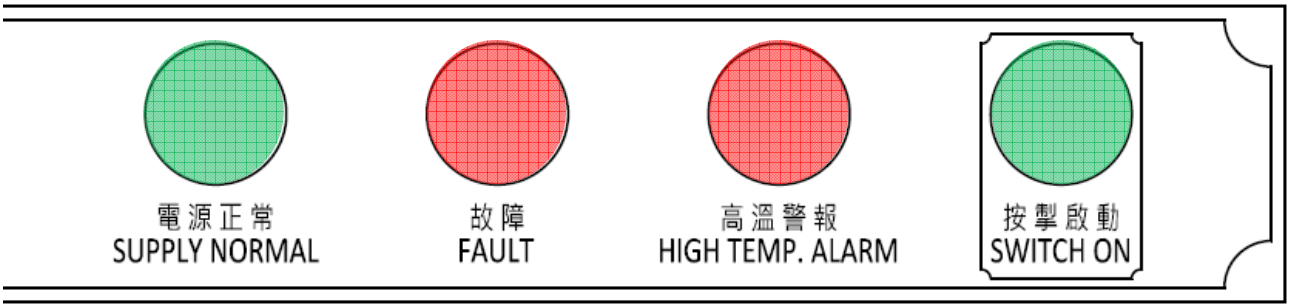
# 1. Introduction

## 1.1. Components




***Front view*** ***Side view***

## 1.2. Control Panel



## 2. Operation

2.1. Operation Instructions

- Press "start" button, system will automatically turn on.
- Open the door, light and put joss paper into the furnace.
- Press "start" button for 5 seconds, the system will be turned off.
- To restart the system, please press the "Start" button again.
- Caution: Do not burn plastic or other substances, otherwise it will block the filter.

2.2. Blowback device

During operation, the system will clean the filter automatically (4 minutes per one) until the system stops. When turn on the system, it will perform a blowback and the “start” button will flash for 4 minutes, and perform the second blowback, which is a cycle of automatic cleaning, "start" button will be non-flash, until the next blowback. Blowback which generates opposite flow will operate. This may raises a small amount of dust.

2.3. High temperature alarm

When temperature is higher than the setting value (200 °C and 300 °C) , an alarm will raise when the temperature reaches 200°C. When the temperature reaches 300°C, the "High Temperature Alarm" will light up. Alarm siren will be turned on. For turn off the alarm siren, users can press the "High Temperature Alarm" once. During high temperature alarm occurs, the system will operate continuously with alarm light. Users should not put joss paper into the furnace. When the temperature drops below the setting temperature, the high temperature alarm will turn off. After 1-2 minutes, users can use the burner again.

## 3. Technical Specifications

| Equipment | Specification | |
|---|---|---|
| System | Total size (mm) (W x D x H) | 800 x 1439 x 1825 |
| | Flow rate | 0.1$m^3$/s |
| | Weight | ~350kg |
| | Power (per unit) | 1kW |
| | Power requirements | 220V/1ph/50Hz |
| Burning Chamber | Furnace Entrance size (mm) (W x D) | 300 x 370 |
| | Furnace size (mm) (W x D x H) | 400 x 400 x 600 |
| Filter | Length | 1.25m |
| | Amount | 18 |

## 4. Daily Notification

4.1. Ashtray Cleansing

Users should clean up the ashtray regularly if this is full.

## 5. Maintenance

5.1. Purchased the Dry Type Bamako Burner™, including the first 24 months of defect liability period.

5.2. Please call our customer service hotline (Tel: 852-8100-8083) for inspection arrangements to repair.

Hotline Duration: Monday to Saturday, 0900-1700

5.3. If the defect liability period expires, please contact us to arrange an extension of maintenance or purchase product accessories.

## 6. Troubleshooting

6.1. The system cannot be turned on

- Check whether the "Supply Normal" light is on. If not, check the power supply is normal, and the power plug is inserted.
- Check the "Fault" light is on. If yes, please refer to item 6.2.

6.2. "Fault" light on

- "Fault" will light up and alarm siren will be turned on.
- Users can press the "Fault" button for turn off the alarm siren
- Disconnect the power supply and reconnect it.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

6.3. Black smoke is discharged

- Check if there is other substance in the furnace, such as plastic, wood, etc. If yes, immediately remove the substance.
- Check whether the filter has broken or not. If yes, please contact our engineering staff.

6.4. Low suction force

- Check whether the air outlet is blocked.
- Check whether blowback has been performed.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

If the problem persists, please contact our engineering staff.
(Customer Service Hotline: 852-8100-8083)

# Columbarium Use at Memorial Park Hong Kong (孝思園)
# No. 93 Fo Tan Village, Sha Tin, N.T.

## Application for Licence and Temporary Suspension of Liability for Pre-cut off Columbarium under Private Columbaria Ordinance - Water Quality Control Information

**Prepared for:**

Memorial Park Hong Kong (孝思園)

**Prepared by:**

Ramboll Hong Kong Limited

**Date:**

7 July 2020

**Project Number:**

328000386

**Report No.:**

R6289_v1.3_MPHK_Water

Prepared by:

Rachel Wong et. al.

Assistant Environmental Consultant

Approved by:

Katie Yu

Senior Manager

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## Annex

Annex 3.1 Catalogue of the Existing Joss Paper Furnace cum dry-type Air Pollution Control Equipment

Annex 3.2 Estimation of Septic Tank Loading under Peak Effluent Flow

## Figures

Figure 1.1 Site Location and the Environ

Figure 1.2 Master Layout Plan

Figure 1.3 An Outlook of Memorial Park Hong Kong

Figure 2.1 Photo Record of Toilets, Fish and Turtle Ponds

Figure 2.2 Location of Existing Joss Paper Furnace cum Dry-type Air Pollution Control Equipment

Figure 2.3 Image of Existing Joss Paper Furnace cum Dry-type Air Pollution Control Equipment

Figure 2.4 Location of Existing Septic/ Soakaway Facilities

Figure 2.5 Manhole Covers of Existing Septic/ Soakaway Facilities

Figure 3.1 Drainage Layout Plan

Figure 3.2 Schematic Design of Existing Air Pollution Control Equipment

# 1. INTRODUCTION

## 1.1 Background to this Application

1.1.1 The Application Site (or "the Site") – Memorial Park Hong Kong (孝思園) is mainly falls within an area zoned "V" with a minor encroachment onto "GB" zone under the Approved Sha Tin OZP (Statutory plan no.: S/ST/34) and is currently used as a Buddhist and Taoist temple with ancillary columbarium.

1.1.2 Memorial Park Hong Kong (孝思園) is a pre-cut-off columbarium and has ashes interred in niches well before 8 a.m. on the cut-off date on 18 June 2014 referred under Section 20 (1)(d) in the Private Columbaria Ordinance ("PCO").

1.1.3 Memorial Park Hong Kong (孝思園) is located in Fo Tan urban area at an approximately 5-minute walk from Fo Tan MTR Station. The Site is located in Fo Tan Village abutting the Fo Tan Road. It is a tranquil place for spiritual worship and paying tribute to ancestors. See Figure 1.1 for its location and the environ.

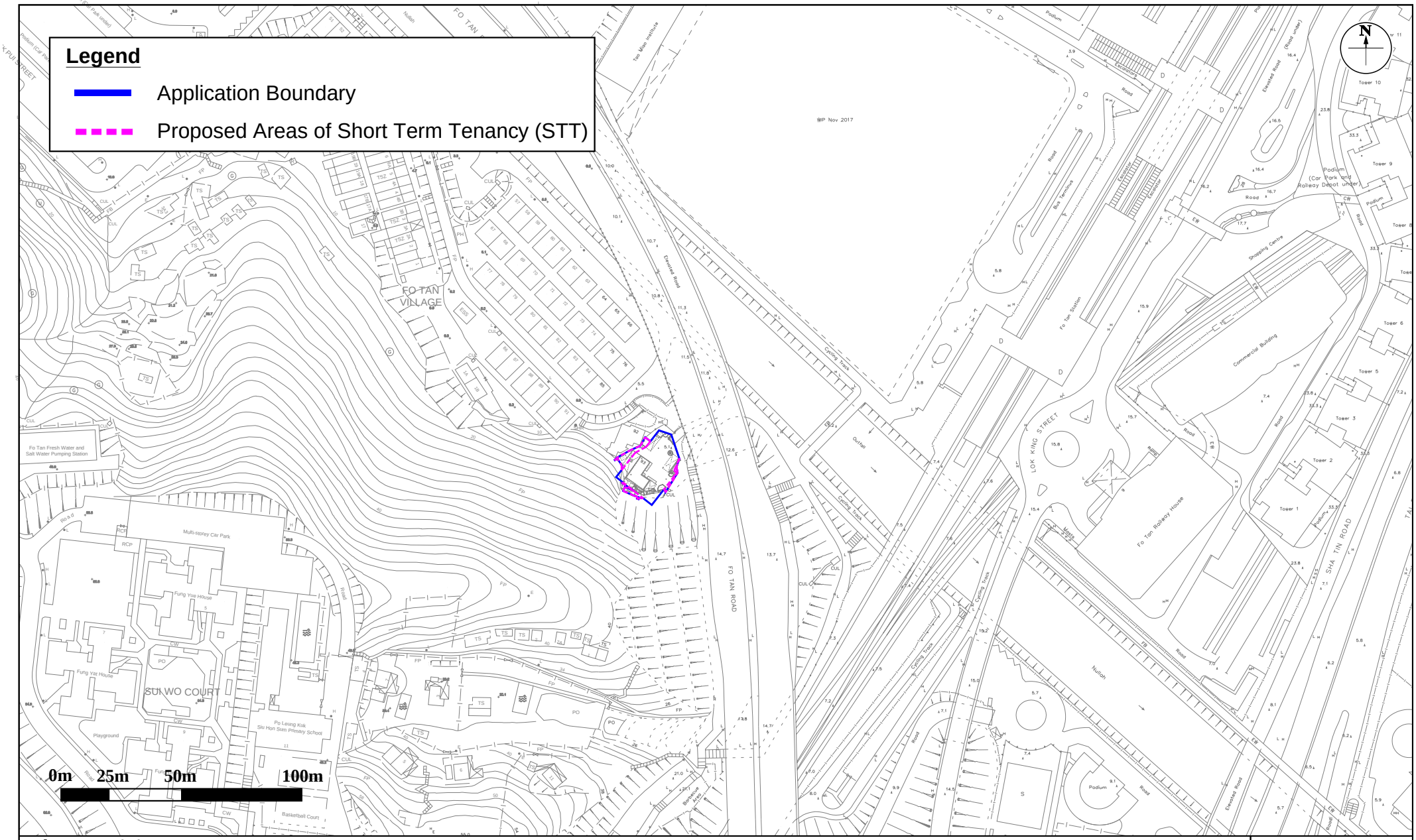
1.1.4 Memorial Park Hong Kong (孝思園) is a 2-storey building comprising worshipping halls, open areas, columbarium (G/F and 1/F) with ancillary office, toilets and fish ponds at G/F. Please see the master layout plan in Figure 1.2 showing general layout of different uses and Figure 1.3 for its outlook.

## 1.2 Purpose of this Submission

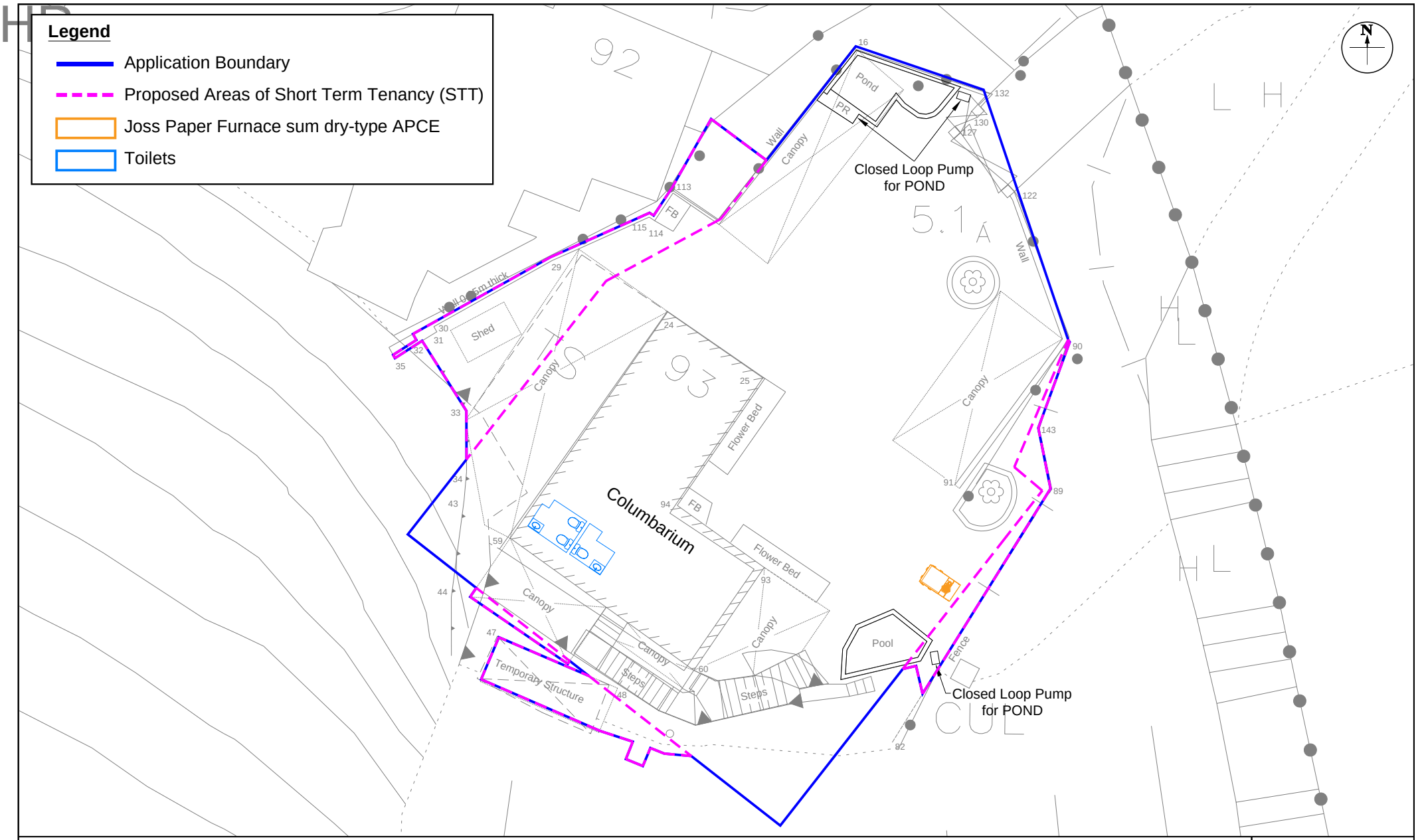
1.2.1 This submission is intended to fulfil EPD's requirements and regulations under Section 22 of the *Private Columbaria Ordinance* in relation to water quality control, and to support an application for licence/ temporary suspension of liability (TSOL) under PCO as a private columbarium.

1.2.2 Related EPD's requirements are elaborated in Annex 10 of the Application Guide[1] published by the *Private Columbaria Licensing Board*. Other requirements on air and noise control have been submitted separately under different covers.

[1] Application Guide for Private Columbarium Licence and Other Specified Instruments




| | |
|---|---|
| **Figure:** 1.1 | RAMBOLL |
| **Title:** Site Location and the Environ | Drawn by: RW |
| | Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2 |
| | Date: Jun 2020 |

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|---|---|
| **Figure:** 1.2 | RAMBOLL |
| **Title:** Master Layout Plan (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

**Figure:** 1.3

**Title:** An Outlook of Memorial Park Hong Kong

**Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

Drawn by: RW

Checked by: RL

Rev.: 1.0

Date: June 2018

# 2. SITE DESCRIPTION AND OPERATIONS

## 2.1 Project Location and the Environ

2.1.1 The Application Site is located at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land). It is situated in Fo Tan urban area bounded by village type developments to the north and Fo Tan Road to the east. It can be accessed on foot by a 5-minute walk from the Fo Tan MTR Station.

2.1.2 Memorial Park Hong Kong (孝思園) opens in the hours of 09:00 - 18:00 daily for worshipping. Shorter worshipping times in the hours of 10:00 – 14:00 would apply during Lunar New Year (from New Year's Eve to the fourth day of Lunar New Year).

## 2.2 Water Pollution Sources and Sewerage Infrastructure

**Water Pollution Sources On-site**

2.2.1 Major existing facilities that generate effluent include the following:

1. Toilets (2 nos. for public and 1 nos. for staff)
2. Hand-washing basins (in total of 2 nos. - 1 nos. in public toilet and 1 nos. in staff toilet)
3. Fish and turtle ponds (3 nos.)

2.2.2 Water contained in all fish and turtle ponds on-site are self-circulated by a closed loop pumping system, and hence no effluent would be generated and discharged. Leaves and trash are sieved out regularly and no detergents are used for pond cleaning process. Please see Figure 2.1 for record photos of these facilities.

2.2.3 There is no open car park on-site. There are existing septic/ soakaway facilities on-site serving the toilets, which is located underneath the open area near the gate.

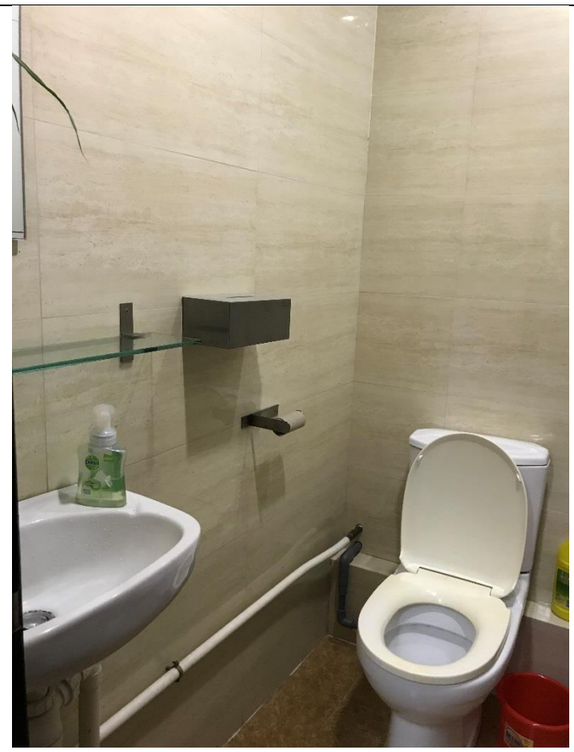
2.2.4 To control air pollution associated with flue gas emission from joss paper burning, Memorial Park Hong Kong (孝思園) is currently using an integrated joss paper furnace cum dry-type air pollution control equipment (“APCE”), as part of the Application, to mitigate air pollution impacts arising from its use. The location and image of the existing joss paper furnace cum dry-type APCE are shown in Figure 2.2 and Figure 2.3 respectively.

2.2.5 This type of APCE has proven success in other applications and is based on use of dry-type cartridge air filters, which is described in more details in Section 3.2. As there is no wet scrubber involved, there is no wastewater generation associated with its use.

**Sewerage Infrastructure**

2.2.6 Wastewater from toilets is collected and treated in septic and soakaway facilities. See Figure 2.4 for locations of these facilities and Figure 2.5 for the manhole covers. They are regularly de-sludged to maintain their optimum use.

Public Toilet: 2 nos. of water closets and 1 nos. of hand-washing basin



Staff Toilet: 1 nos. of water closet and 1 nos. of hand-washing basin

1 nos. of Fish Pond near the stairs

2 nos. of Fish and Turtle Ponds near the gate

**Figure:** 2.1

**Title:** Photo Record of Toilets, Fish and Turtle Ponds

**Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

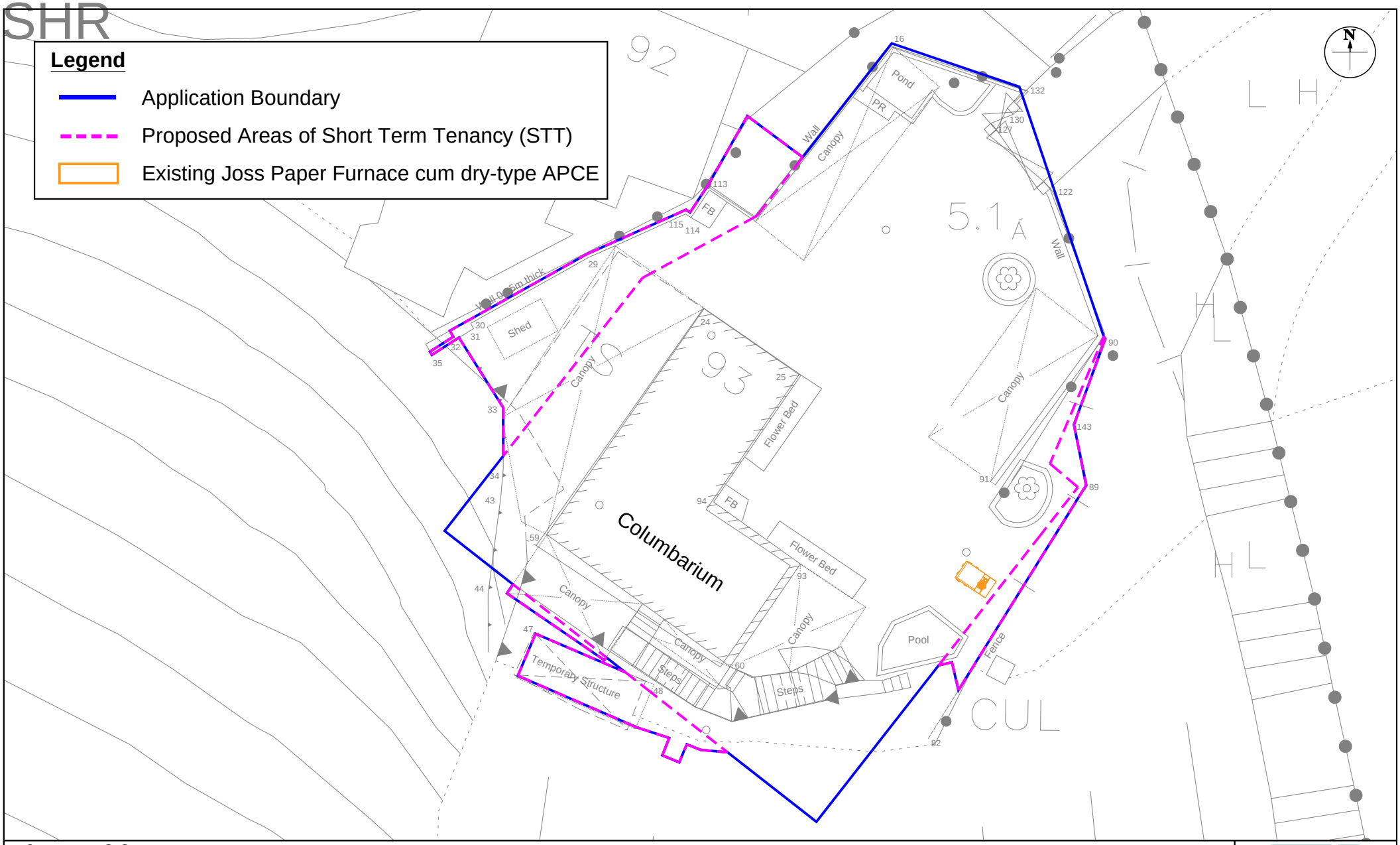
Drawn by: RW

Checked by: RL

Rev.: 1.0

Date: Aug 2018

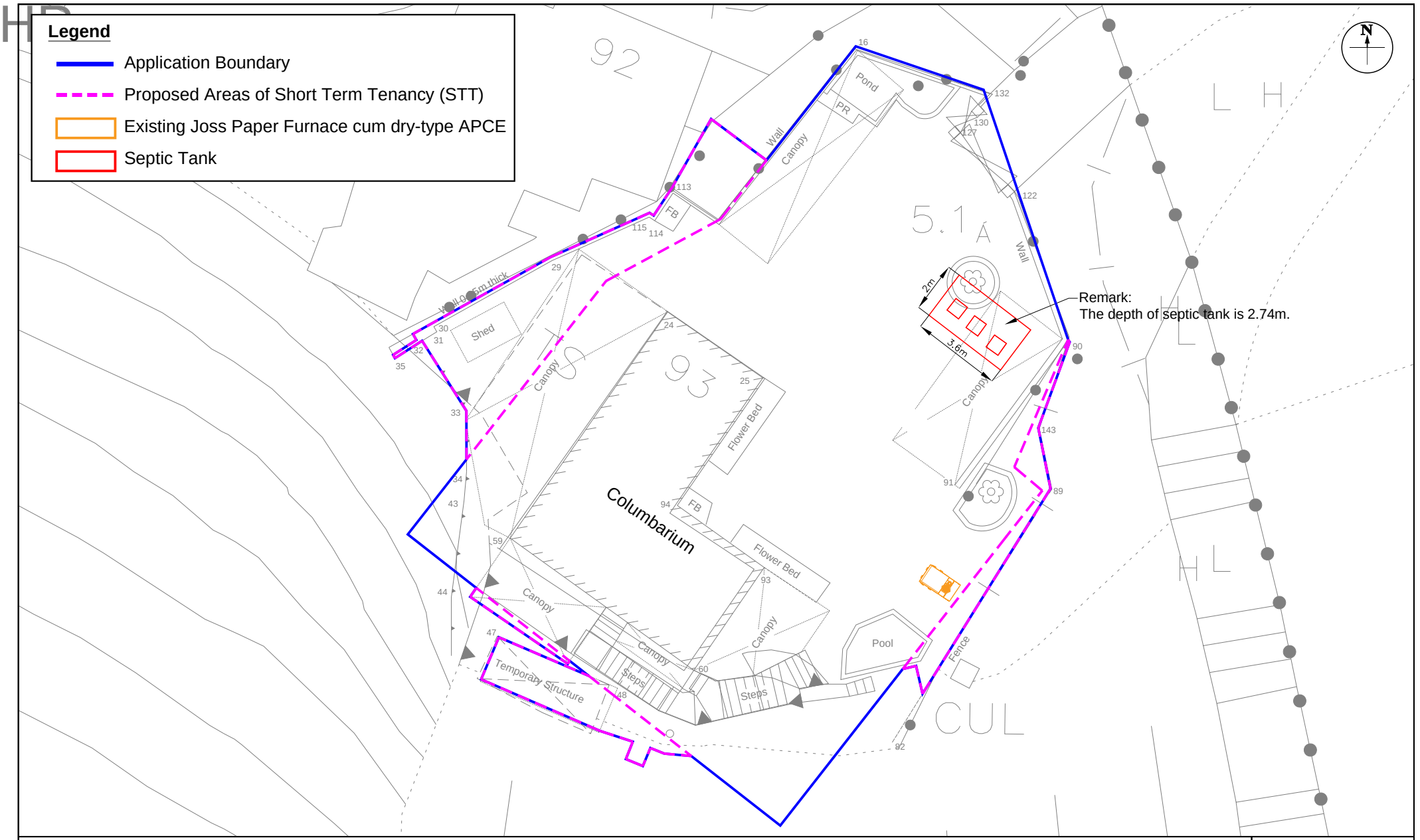
SHR




| | | |
|---|---|---|
| **Figure:** | 2.2 | RAMBOLL |
| **Title:** | Location of Existing Joss Paper Furnace cum Dry-type Air Pollution Control Equipment (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** | Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

**Existing Joss Paper Furnace cum APCE**

| | | |
|---|---|---|
| **Figure:** | 2.3 | RAMBOLL |
| **Title:** | Image of Existing Joss Paper Furnace cum Dry-type Air Pollution Control Equipment | Drawn by: RW<br>Checked by: RL |
| **Project:** | Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Aug 2018 |




| | |
|---|---|
| **Figure:** 2.4 | RAMBOLL |
| **Title:** Location of Existing Septic/ Soakaway Facilities (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2<br>Date: Jun 2020 |

| | | | |
|---|---|---|---|
| **Figure:** | 2.5 | RAMBOLL | |
| **Title:** | Manhole Covers of Existing Septic/ Soakaway Facilities | Drawn by: | RW |
| | | Checked by: | RL |
| **Project:** | Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: | 1.0 |
| | | Date: | Aug 2018 |

# 3. DOCUMENTS FOR SUBMISSION

## 3.1 Drainage Layout Plan

3.1.1 A drainage layout plan has been drawn as shown in Figure 3.1 to present the following key information in connection with this Application:

1. Location of the premises;
2. Main facilities that produce effluent (including toilets and hand-washing basins);
3. Effluent discharge routes; and
4. Location of discharge points (i.e. soakaway pit);

## 3.2 Air Pollution Control Equipment

3.2.1 In order to control air pollution associated with flue gas emission from joss paper burning, Memorial Park Hong Kong (孝思園) is currently using an integrated joss paper furnace cum dry-type APCE to mitigate air pollution impacts, as part of the Application.

3.2.2 The Dry-Type "Bamako Burner™" (Model: FAST-D7) is currently used as the integrated joss paper furnace cum dry-type APCE (cartridge filters) to control the emission of smoke. The treatment of flue gas involves the extraction of fine portion of fly ash and black smoke emitted during the burning of joss paper through industrial grade, high-efficiency dry filters driven by an extraction fan. Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance.

3.2.3 The existing joss paper furnace cum APCE is targeted to handle flue gas emissions from burning up to 7 kg/h of joss paper. An image of it and its location are given in Figure 2.2 and Figure 2.3 respectively. As there is no wet scrubber involved, there is no wastewater generation associated with its use.

3.2.4 Catalogue with general specifications of the joss paper furnace cum dry-type APCE is appended in Annex 3.1. The schematic design is shown in Figure 3.2.

## 3.3 Ancillary Facilities for Visitors to the Columbarium

3.3.1 Memorial Park Hong Kong (孝思園) does not have a kitchen. The toilets and hand-washing basins in the Site are intended for staff and visitors.

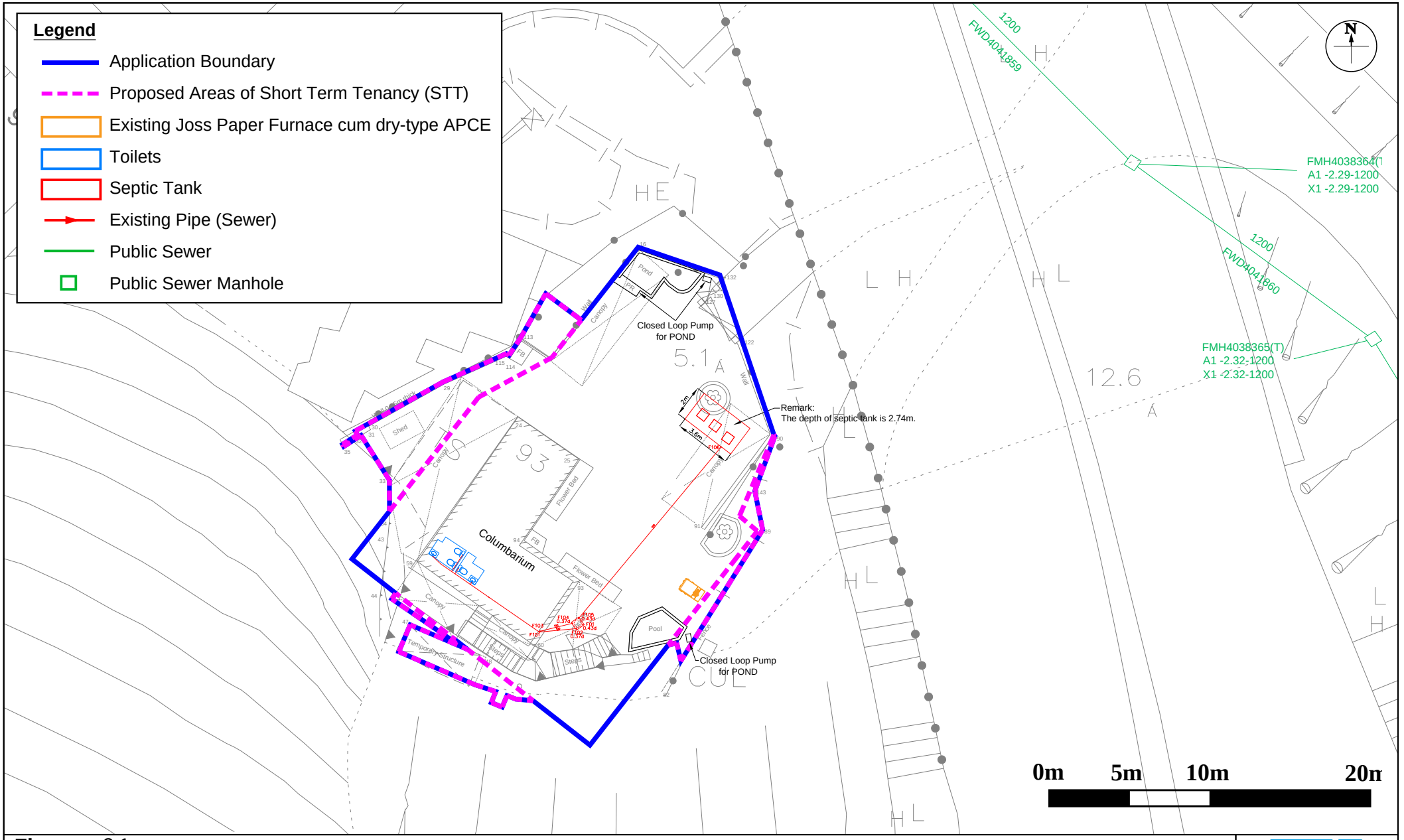
3.3.2 The toilets and hand-washing basins in the toilets are connected to the septic tank/ soakaway facilities as shown in Figure 2.4.

## 3.4 Operation Plan to Address Peak Effluent Flow

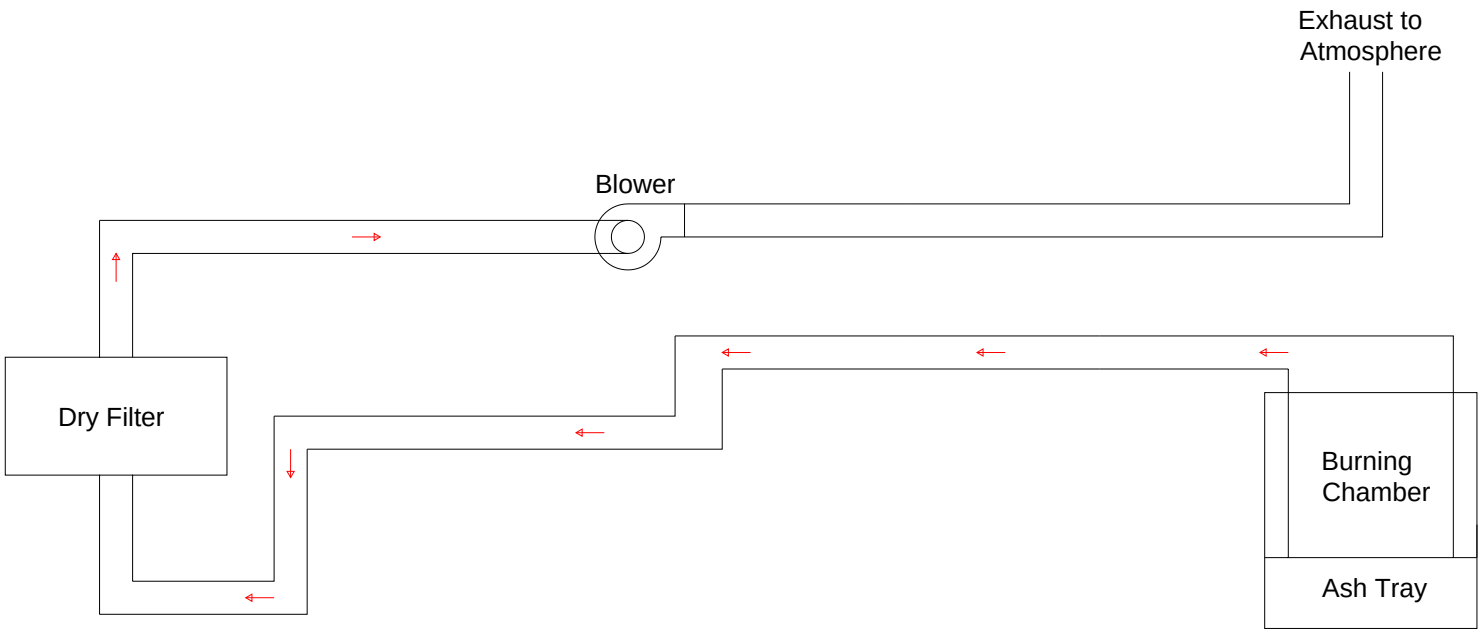
3.4.1 It is envisaged that upon full occupation of the niches, some 1,258 nos. of visitors per day would be an extreme upper estimate when all visitors were assumed to come on the very same day during Ching Ming or Chung Yeung Festivals. From past experience/ observations, visitors usually stay for 30 minutes to an hour, and hence the toilet usage rate is not particularly high. Given the relative short stay, the surge in sewage generation is not envisaged due to a high number of visitors.

3.4.2 Based on the no. of toilets, basins, flow rate and daily use duration/ pattern, the amount of effluent generation from all on-site facilities has been estimated at 1.2 $m^3$/d in Annex 3.2. In other words, the existing septic tank/ soakaway facility has sufficient capacity to cope with peak flows in peak seasons.

3.4.3 Sewage tanker will be hired as necessary to remove some of the sewage collected in the septic tank to relieve loading before and/ or during the busy days. As long as the septic tank is not overloaded, the integral soakaway system would have ample capacity to cater for the treated effluent coming from the septic tank as usual.




| | |
|---|---|
| **Figure:** 3.1 | RAMBOLL |
| **Title:** Drainage Layout Plan | Drawn by: RW |
| | Checked by: KY |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.2 |
| | Date: Jun 2020 |




| | |
|---|---|
| **Figure:** 3.2 | RAMBOLL |
| **Title:** Schematic Design of Existing Air Pollution Control Equipment | Drawn by: RW |
| | Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Aug 2018 |

# Annex 3.1

# Catalogue of the Existing Joss Paper Furnace cum dry-type Air Pollution Control Equipment

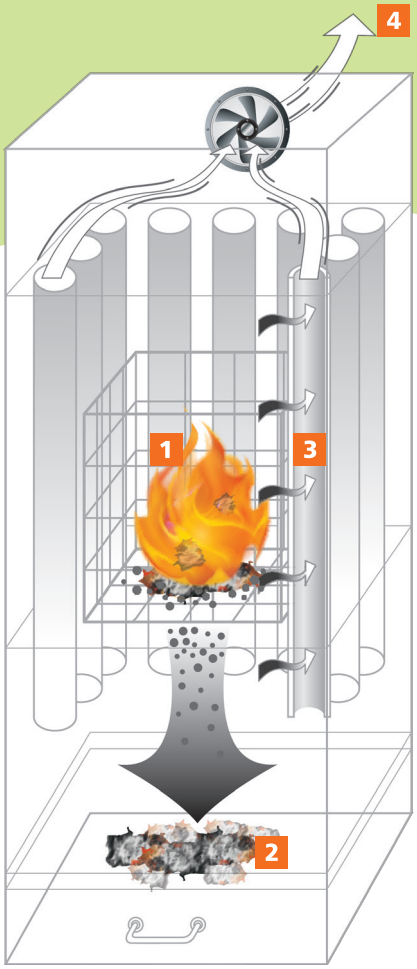
Bamako Burner™
寶潔科　綠化寶系統™

# 乾式「寶潔科　綠化寶系統™」零黑煙排放

## Dry-Type "Bamako Burner™" Zero Black Smoke Emission

升級流動版
Upgraded mobile version

- **革命性除煙塵技術，除煙塵效率 > 90%**
  Revolutionary smoke and fly ash removal technology with > 90% removal rate
- **締造寧靜環境**
  Tranquil environment created
- **適用於各道堂、屋苑、廟宇、骨灰龕場、醫院殮房等**
  Excellent for Taoist Institution, Estates, Temples, Columbaria, Mortuaries, and etc.




## 運作原理 System Schematic

1. 從燃燒爐產生的黑煙及飛灰被抽入系統；
   Black smoke and fly ash from the combustion chamber will be extracted to the treatment system;
2. 較大灰塵會被爐灰盤收集；
   Large smoke particulate matter will be collected by ash tray;
3. 最後，高效乾式濾芯再過濾煙氣中剩下較微細的灰塵；
   The remaining fine ash will be filtered by high efficiency dry filters ;
4. 排出已淨化的空氣。
   The smokeless clean air will be discharged at the air outlet diffuser.

## 產品特點 Product Features

- ✔ 使用工業級乾式濾芯，達致零黑煙排放
- ✔ 高效除煙除塵，可處理2.5μm(PM2.5)微粒
- ✔ 全自動清潔系統
- ✔ 一鍵操作
- ✔ 2 年保養

- ✔ Zero black smoke emission achieved through adoption of industrial grade dry type filter and strictest process
- ✔ Highly efficient treatment system; particulates removed up to 2.5μm (PM2.5)
- ✔ Automatic cleaning system
- ✔ Intuitive single button control
- ✔ Warranty : 2 years

## 產品規格 Product Specifications

| 型號 Model | FAST-D7 | FAST-D20 |
|---|---|---|
| 化寶量 (公斤/小時)<br>Joss Paper Burning Capacity (kg/hr) | 7 | 20 |
| 外形尺寸 (闊x深x高)(毫米)<br>Dimension (W x D x H) (mm) | 800 x 1439 x 1825 | 1950 x 1260 x 2290 |
| 燃燒爐爐口尺寸 (闊x高)(毫米)<br>Opening Dimension (W x H) (mm) | 300 x 370 | 500 x 600 |
| 燃燒倉內部尺寸 (闊x深x高)(毫米)<br>Interior Dimension (W x D x H) (mm) | 400 x 600 x 618 | 600 x 630 x 830 |
| 風量<br>Air Flow Rate | 0.1m³/s | 0.25m³/s |
| 總重量 (噸)<br>Total Weight (ton) | 0.35 | 1.8 |
| 電功率 (千瓦)<br>Rated Power (kW) | 1 | 3.3 |
| 輸入電壓<br>Input Voltage | 220V/1ph/50Hz | |
| 煙塵排放濃度<br>Particulates Matter | 少於 Below 30mg/m³<br>(最佳可達 Optimum result < 5mg/m³) | |
| 除煙塵效率<br>Particulates Matter Removal Efficiency | 高於 Above 90% | |
| 煙氣排放黑度<br>Darkness of Smoke | 低於林格曼黑度1級 (無黑煙)<br>Below Grade 1 of Ringelmann Smoke Scale<br>(No black smoke) | |

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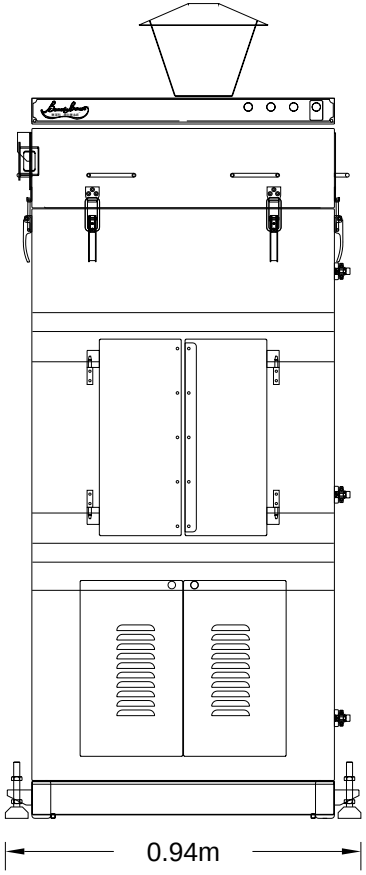
如欲查詢更多「寶潔科 綠化寶系統™」的資訊，歡迎與盈電環保科技有限公司聯絡。
For more information of Bamako Burner™, please contact REC Green Technologies Co., Ltd. via any of the below channels.

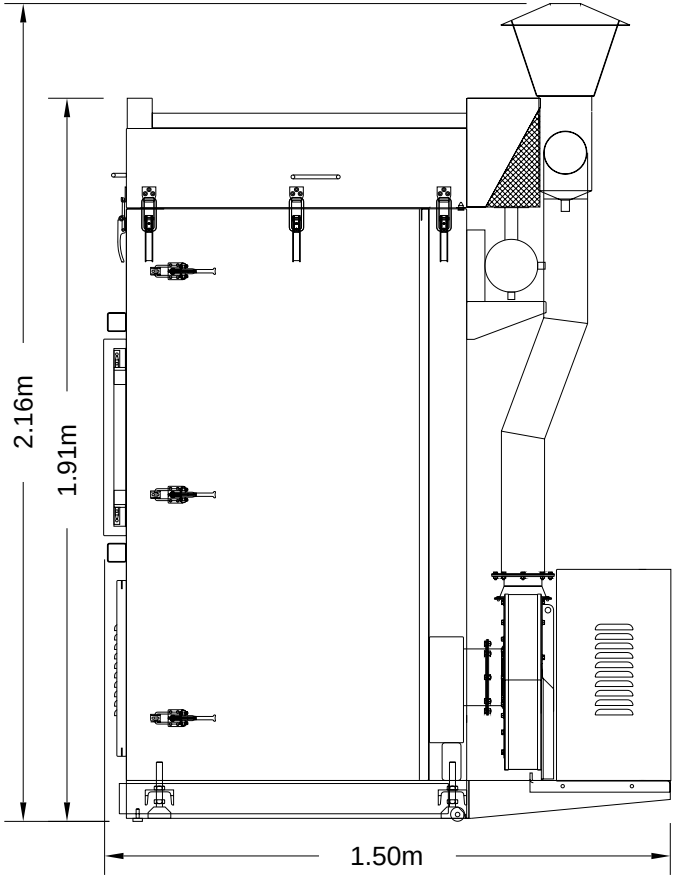
**電話 Tel:** (852) 2619-8817 | **傳真 Fax:** (852) 2481-2870 | **電郵 E-mail:** rgt@rec-eng.com | **網址 Website:** www.rec-gt.com

**地址** ：香港新界葵涌青山道585-609號嘉民葵涌物流中心15樓A-D室
**Address:** Units A-D, 15/F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, N.T., Hong Kong

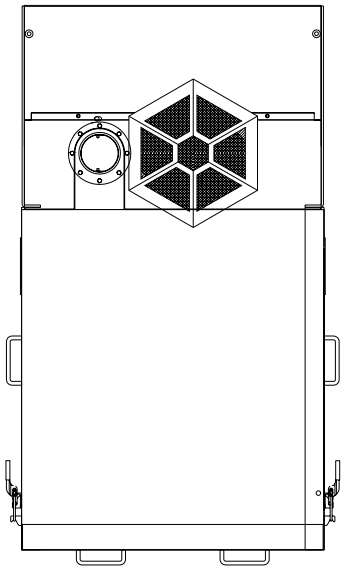

Bamako version D3 06/2016




FRONT VIEW




SIDE VIEW



TOP VIEW

# BAMAKO BURNER MODEL: FAST-D7

| | |
|---|---|
| **Annex:** 3.1 | RAMBOLL |
| **Title:** Design Drawings of the Joss Paper Furnace fitted with Air Pollution Control Equipment (Scale of 1:20 on A4) | Drawn by: RW<br>Checked by: RL |
| **Project:** Columbarium Use at Memorial Park Hong Kong (孝思園), No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Aug 2018 |

# Annex 3.2

# Estimation of Septic Tank Loading under Peak Effluent Flow

## Evaluation of Impact on Septic Tank Capacity

### (a) Design Criteria

Capacity of Septic Tank = Daily Water Consumption (From ProPECC PN 3/95 & From Building (SSFPDW&L) R 65 (2)(a))

Daily Water Consumption = Daily Water Consumption by Basins + Daily Water Consumption by WC

### (b) Analysis for Peak Load

No. of visitors = 1,258 (Predicted no. of visitor based on previous visitor survey data under peak season e.g. Ching Ming Festival & Chung Yeung Festival)

Peak No. of visitors = 665 person/day recorded on 5th April 2018 (Ching Ming Festival)

| | Basin | | Remarks |
|---|---|---|---|
| Nos. of Visitors per Day during high seasons | 1,258 | | Estimated [1] |
| Flowrate (L/s) | 0.15 | | Reference to IoP [2] |
| Duration (s) | 10 | | Reference to BEAM Plus[3] |
| Nos. of Occurrence | 0.1 | | By assumption for visitors staying 1 hour |
| Daily Water Consumption (L) | 189 | | |
| | WC | | |
| | Male | Female | |
| Nos. of Person | 629 | 629 | Estimated [1] |
| Capacity of Flushing Cistern (L) | 7.5 | 7.5 | Waterworks Regulation [4] |
| Nos. of Occurrence | 0.1 | 0.1 | By Assumption |
| Daily Water Consumption (L) | 472 | 472 | |
| | 944 | | |
| | | | |
| Daily Water Consumption by Basin (L) | 189 | | |
| Daily Water Consumption by WC (L) | 944 | | |
| Daily Water Consumption by Urinal (L) | 0 | | No urinal on-site |
| Daily Water Consumption by Pantry Sink (L) | 0 | | No pantry sink on-site |
| Total Daily Water Consumption (L) | **1,132** | | |
| Daily Water Consumption (L) - Adjusted | **1,189** | | An allowance of 5% for uncertainty has been included |
| Daily Water Consumption ($m^3$) - Adjusted | **1.2** | | |
| | | | |
| Total Design Capacity of Septic Tank ($m^3$) | **19.7** | | |
| | **Comply** | | |

**Notes:**

[1] Estimated for peak seasons upon full occupation of all niches

[2] Institution of Plumbing – Table 14 of Plumbing Engineering Services Design Guide (IOP Guide)

[3] The Hong Kong Green Building Council (HKGBC) - BEAM Plus for New Buildings v1.2

[4] HKSAR - CAP 102A Waterworks Regulation

[5] Total no. of niches = 3,499
No. of niches sold up to the day where Peak No. of Visitors was recorded = 1,849.

# Appendix V

# Management Plan

# 私營骨灰安置所

# 《孝思園》管理方案

## (1) 骨灰安置所基本資料

骨灰安置所名稱 ：孝思園

骨灰安置所地址 ：火炭村 93 號

開始營辦年份 ：年代已久

營辦者名稱 ：香港孝思園有限公司

營辦者身分 ：土地擁有人

骨灰安置所所屬宗教 ：佛教及道教 (部份使用者信奉天主教及基督教)

## (2) 場地資料及樓宇排列

骨灰安置所佔地約 522.2 平方米，總樓宇面積約 293.817 平方米，共有：
1 座骨灰安置所大樓及三塊戶外骨灰龕牆
1 個冥鏹爐

**其他支援骨灰安置所運作的必要配套設施建築物**
2 個寫字樓
2 個廁所
2 個儲物室

**其他支援骨灰安置所運作的必要配套設施**
不適用

龕位總數 /安放灰位總數 #牌照申請編號
1849 / 2010 #001 [只包括 2017 年 6 月 30 日前已售出的龕位]
1650 / 1853 #038 [只包括 2017 年 6 月 30 日仍未售出的龕位]

## (3) 可容納的客量及入場管制

**開放時間：**
日常開放時間：週一至週日，上午 9 點至下午 6 點
清明節及重陽節期間的開放時間：週一至週日，上午 9 點至下午 6 點
農曆年開放時間：中國農曆年廿九至年初四，上午 10 點至下午 2 點

骨灰安置所可容納的訪客量：160 人

為確保進場訪客人數不會超出上述可容納訪客量：
為達到人潮分流，每逢清明節及重陽節期間，訪客需事先致電孝思園(或簡稱"本園")預約。訪客須遵循由本園建議或雙方協商之指定日子和時間，方可前來本園拜祭先人。

## (4) 交通及公共運輸安排

本園鄰近各主要公共交通設施

港鐵：東鐵線火炭站，於該站 B 出步行 3 分鐘便可抵達本園

九巴：火炭村站，沿石階而下 1 分鐘便可抵達本園，相關巴士線如下
73A　沙田愉翠苑 至 上水彩園
80M　九龍塘 / 鐵路站 至 穗禾苑
81K　沙田新田圍 至 穗禾苑
82K　沙田美林 至 火炭火車站
85　九龍城碼頭 至 火炭山尾街
280P　尖沙咀中間道 至 穗禾苑

小巴：火炭村站，沿石階而下 1 分鐘便可抵達本園，相關小巴線如下
60K　沙田火車站平台 至 火炭平房區
62K　沙田火車站平台 至 沙田山莊
481　荃灣街市街 至 山尾街 (城門隧道 特快線)

本園鼓勵訪客乘搭以上公共交通工具往來，從而減少訪客乘坐私家車或的士前來本園，以助降低區內行車道路之負荷。

本園區內外均沒有泊車設施。

## (5) 人流管理

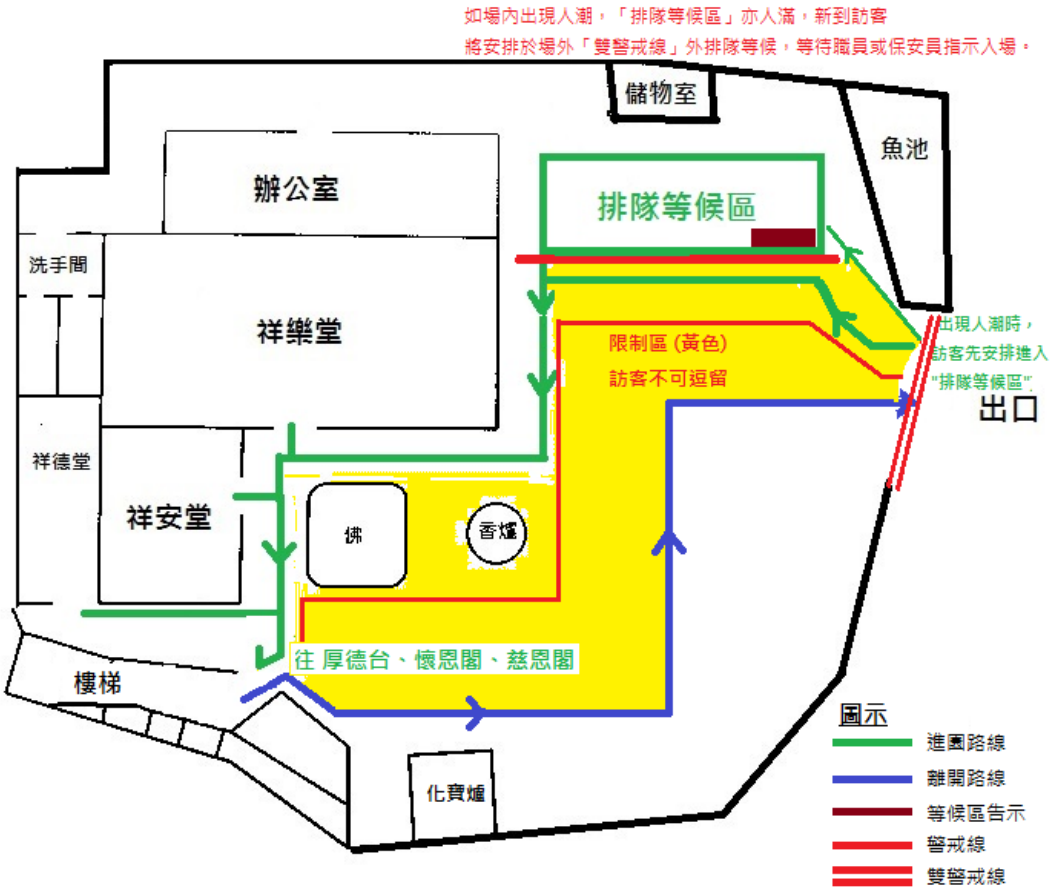
在掃墓高峰日子或期間，本園就場內之人流管理所訂的人手調配計劃

### i. 派員監察訪客人流數目

### ii. 定期向警方通報場內情況

每小時與警方聯絡，會報場內情況，包括現場訪客人數等資料。**此措施自本園 2008 年營運以來實施至今持之有效，期間從未發生任何意外事故。**

### iii. 本園範圍之佈局與人流方向特別安排




### iv. 急救當值服務

聯絡香港聖約翰救傷隊等急救服務組織，或調配足夠專業具認可資格急救員派駐本園以提供急救服務。

**(6) 保安管理**

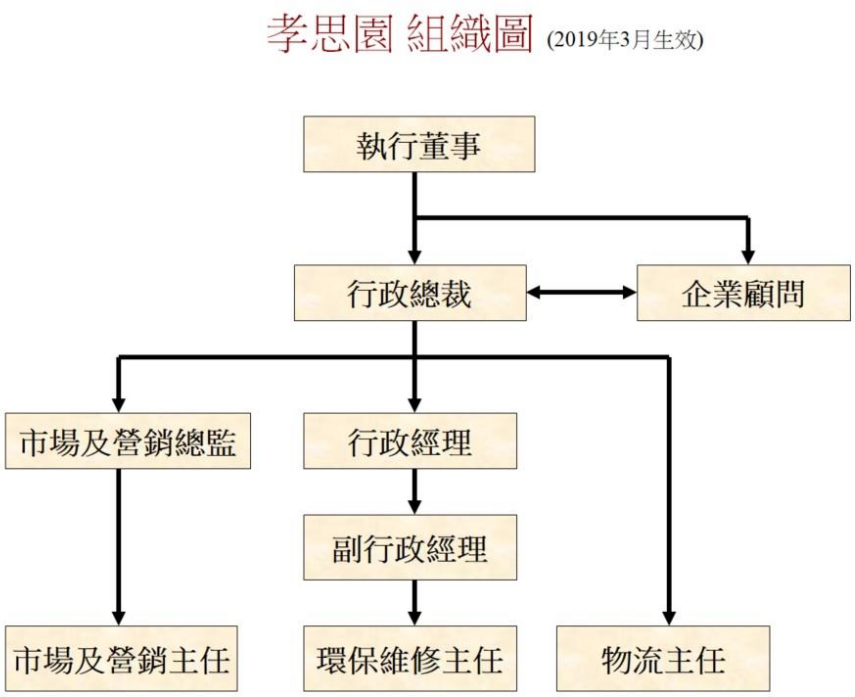
場內各龕堂及主要通道，恒常設有閉路電視(CCTV)，以便職員監察場內具體狀況，包括訪客流量等。

在掃墓高峰日子，派員巡視各龕堂及主要通道，以了解實際情況和保障公眾安全。遇有緊急問題，即與警方聯絡。

在掃墓高峰日子，調配足夠專業保安員，以便在掃墓高鋒時段以應每突然增多之掃墓人潮。

**(7) 人手調配**

本園共僱用 12 名員工



# 重要人士和管理人員資料

## 執行董事 (3 名)

- 孝思園由執行董事掌管。
- 負責監督本園日常運作，因應社會和市場變遷，以及客戶訴求和期望而提供優質服務，包括售後服務。
- 其下有 1 名企業顧問，1 名行政總裁，1 名行政經理，1 名副行政經理，1 名市場及營銷總監，2 名市場及營銷主任，1 名環保維修主任和 1 名物流主任。

## 企業顧問

- 接受執行董事委託，向公司主管級和以上之管理團隊提供專業諮詢。
- 就本園申請牌照程序上提供專業意見。
- 就特別事項，與行政總裁共同策劃及處理事務。

## 行政總裁

- 逾 10 年行政管理經驗，於本園擁有 2 年工作經驗。
- 統籌本園申請牌照事宜，致力優化園內設施和管理以符合相關牌照要求。
- 制定及推行行政管理與規範。
- 制定本園之銷售產品和服務範疇。
- 為本園銷售團隊定下銷售方針和目標。
- 致力開拓與長者市場相關之服務，公益活動，推動生命教育。
- 與中外同業協會聯繫，致力提昇香港殯葬業專業技術和服務水平。
- 負責本園人事任免。
- 其下有 1 名行政經理，1 名行政經理，1 名副行政經理，1 名市場及營銷總監，2 名市場及營銷主任，1 名環保維修主任和 1 名物流主任。

## 行政經理

- 於本園擁有 9 年工作經驗
- 確保園內設施合符食環署私營骨灰安置所之牌照要求，包括維修保養，消防安全，急救裝備齊全，環保和衛生範疇等。
- 負責策劃、監督和實施本園日常管理工作。
- 在”春秋二祭”等拜祭高峰期時確保園內訪客安全，並與有關政府部門，包括警方等緊密聯繫。
- 提供客戶服務，包括銷售和售後服務。
- 農曆每月初一和十五於園內舉辦佛道義講，參加者多為長者，屬區內居民和客戶。會後向善信免費派發米包等禮品，目的為促進社區和諧和關愛長者。
- 其下有 1 名副行政經理及 1 名環保維修主任。

## 副行政經理

- 於本園擁有 7 年工作經驗。
- 確保園內設施合符食環署私營骨灰安置所之牌照要求，包括維修保養，消防安全，急救裝備齊全等。
- 輔助行政經理策劃、監督和實施本園日常管理工作，包括環保和衛生範疇。
- 在”春秋二祭”等拜祭高峰期時確保園內訪客安全，並與有關政府部門，包括警方等緊密聯繫。
- 提供客戶服務，包括銷售和售後服務。
- 農曆每月初一和十五於園內舉辦佛道義講，參加者多為長者，屬區內居民和客戶。會後向善信免費派發米包等禮品，目的為促進社區和諧和關愛長者。
- 其下有 1 名環保維修主任。

## 市場及營銷總監

- 於本園擁有 2 年工作經驗。
- 就申請牌照，向行政總裁提供文書處理和對外聯絡等支援。
- 市場及營銷總監策劃、監督和實施市場宣傳、營銷業務和品牌形象。
- 制定本園之銷售產品和服務。
- 為其下銷售團隊提供相關銷售訓練。
- 提供客戶服務，包括銷售和售後服務。
- 負責籌劃，推動社區、慈善公益活動。策劃如何實踐企業社會責任（CSR, Corporate Social Responsibility）精神（ 詳見附件 ）。

- 負責特別工程或項目。
- 其下有 2 名市場及營銷主任。

## 市場及營銷主任 (2 名)

- 輔助市場及營銷總監策劃、監督和實施市場宣傳、營銷業務和品牌形象。
- 為其下銷售團隊提供相關銷售訓練。
- 提供客戶服務，包括銷售和售後服務。
- 負責推行社區、慈善公益活動 (詳見附件)
- 與香港知名及規模之慈善或教育機構，包括善寧會，香港賽馬會善寧之家，沙田婦女會，香港公開進修大學等緊密聯繫，與前者們一起宣傳公益服務。
- 在香港推動生命教育、善終服務和社區義工服務等，體現企業社會責任 ( CSR, Corporate Social Responsibility ) 精神。

## 環保維修主任

- 於本園擁有約 9 年工作經驗。
- 負責園內空氣、噪音、廢物和水質處理等各設施之運作和保養。
- 對上述設施作不定期評估，必要時向副行政經理提交改善建議。
- 負責園內衛生，綠化和動植物護理。

## 物流主任

- 負責執行董事車輛的日常駕駛任務，嚴格遵守交通法規。
- 如時間許可，負責行政總裁和企業顧問之開會，客戶接待以及辦理公務的駕駛任務。
- 服從公司調配，定期匯報車輛的運行情況，以保證車輛在安全情況下使用。

**(8) 應對火警或其他緊急情況的應變方案**

消防安全主任
由部門主管委任，負責協調及統籌單位內有關消防安全事宜

#防火設備
在園內指定地點設置滅火筒及滅火毯。
相關設備由合資格之消防顧問作年檢，並簽發證書。

#走火路線
在主要通道設有緊急逃生指示牌，並在當眼處，張貼走火路線圖 (以下為參考圖)

#火警演習
每年進行至少 2 次火警演習，走火路線及安全集合地點如下

火警演習 – 程序指引
由消防安全主任擬定可能發生火警的地方及火勢。

通知各相關人士、服務對象及單位等，有關火警演習的日子，時間及安排。

演習當日，消防安全主任指導有關人士儘快依照走火路線圖離開現場，並前往安全地點集合。

待所有人士到達集合地點後，替各人點名並登紀時間。

演習完成後，於內部會議中報告演習結果，並提出檢討事項。

填寫「火警演習紀錄表」記下演習日子和時間，演習結果，包括所須時間，檢討事項等。

#附註：有關詳情請參閱：

**Appendix VI**

附件六

**Guidelines on "Fire Safety Plan" for Memorial Park Hong Kong ( MPHK )**

<孝思園>「消防安全計劃」指引

## (9) 遵從發牌委員會訂明的發牌條件、指引及業務守則

以下為本園之部份業務守則，包括福位、場內設施使用方法、製造碑石及上位規則。有關守則張貼在辦公室，接代顧客之當眼處，務求便利前線工作人員及顧客去遵從守則內容，符合發牌條件所須。

福位及場內設施使用規則

i. 每個福位只可安放已安排之先人遺物，不得隨意變更，也不可以阻礙他人之福位。先人遺物包括：先人之靈灰或其他紀念品（違禁品及爆炸品除外）-

ii. 單人福位只可存放 1 位先人之遺物，雙人福位及側式福位最多可 2 位先人之遺物。

iii. 所有碑石必須經由本園司負責安裝，刻未式樣及未數必須依照本園之統一規定。

iv. 訪客須遵守消防條例，所有寶帛、衣紙、冥嫌、紙扎祭品，必須在指定設置之聚寶爐(化寶爐)內焚化，嚴禁焚燒真衣。

v. 請保持各靈堂整潔，福位外壁及碑面，不得裝置各類貢物和易燃物品，以免引致火警發生。

vi. 香燭必須使用指定設置的貢台、燭台、香爐和用具，以策安全。

## (10) 投訴處理

本園會致力達到所訂下的服務承諾和目標，但有時或受本園控制能力以外之因素影響，而未能達標。

在此情況下，申訴人可透過以下聯絡方法，與本園當值之負責人了解詳情

香港沙田火炭村 93 號
電話：(852) 2145 4825 (辦公時間)
電郵：info@memorialpark.hk

在收到投訴後，本園將於 30 日曆天內給予實質回覆。

如申訴人認為個案未獲妥善處理，可向本園 行政經理 聯絡

香港沙田火炭村 93 號
電話：(852) 2145 4825 (辦公時間)
電郵：info@memorialpark.hk

**(11) 管理方案的執行人及批准人**

執行管理方案的負責人
行政經理

批准管理方案的負責人
執行董事

代表上述骨灰安置所提交本管理方案的人員資料

執行董事
日期：2017 年 12 月 12 日

# Appendix VI

# Fire Safety Arrangement

# Guidelines on "Fire Safety Plan" for Memorial Park Hong Kong ( MPHK )

<孝思園>「消防安全計劃」指引

A "Fire Safety Plan" includes (A) Fire Safety Instructions and (B) Fire / Emergency Evacuation Route Plan as follows ：

「消防安全計劃」包括下述 (A) 消防安全指引 及 (B) 火警／緊急事故疏散路線圖 ：

(A) Fire Safety Instructions – outline the actions to be taken by staff of MPHK upon on discovery of fire, notice of fire signal or evacuation during an emergency.
消防安全指引 – 概述當發現火警、察覺火警訊號或緊急疏散時，<孝思園>職員應採取的行動

Appendix 1 : Fire Safety Instructions – for Staff of MPHK
附錄1：消防安全指引 – <孝思園>職員適用1份

(B) Fire/Emergency Evacuation Route Plan – The MPHK layout plans showing escape routes to the designated safe assembly point(s) upon discovery of fire or emergency
火警／緊急事故疏散路線圖 – 以<孝思園>平面圖顯示出在發現火警、察覺火訊號或緊急疏散時，可依循往指定的安全集合地點之路線。

Appendix 2 : MPHK Guidelines on the Fire / Emergency Evacuation Route Plan
附錄2：<孝思園>「火警/緊急事故疏散路線圖」的指引

MPHK Evacuation Route Plan, total 1 set
<孝思園>「疏散路線圖」1套

MPHK Fire Safety Evacuation "Designated Assembly Point" Location
<孝思園>「火警/緊急事故疏散「指定集合地點」1份

**Fire Safety Instructions – for staff of Memorial Park Hong Kong ( MPHK )**

「消防安全指引」- <孝思園>職員適用

When you discover a fire ……
當你發現火警時 …

1. Alert others by shouting "Fire";
高聲警告其他人士有火警發生。

2. Report the fire by dialing 999 and give the following name and address.
致電 999 報警及提供本私營骨灰安置所名稱及地址。

Memorial Park Hong Kong, 93 Fo Tan Village, Fo Tan, Shatin, N.T.
<孝思園> 新界沙田火炭火炭村 93 號

3. If it is safe to do so, remove combustibles away from fire.
在安全情況下，把所有可燃物品移離火源。

4. When the magnitude of fire is small and it is safe to do so, use fire extinguisher or fire blanket to put out the fire.
在火勢不大及在安全情況下，使用滅火筒或滅火毯滅火。

5. If the magnitude of fire is large or uncontrollable, evacuate all visitors out of the fire compartment/floor.
如火勢太大或不能控制時，將所有訪客疏散離開火警單位/樓層。

6. After all personnel have been evacuated, close the door of fire compartment/ floor and evacuate all visitors to the designated assembly point.
當所有人員撤離後，關上火警單位大門及將所有訪客撤往指定集合地點。

7. Contact/approach the attending fire-fighters to providing information and assistance.
聯絡到場之消防人員，以提供資料及協助。

Remarks:
附註：

(i) Staff should be conversant with …
職員必須熟悉 …

1. The complete fire safety plan of MPHK.
<孝思園>之整體消防安全計劃。

2. All evacuation routes from MPHK to the designated assembly point.
所有由<孝思園>前往指定集合地點之逃生路線。

3. Location and operation of the following fire service installations:
以下消防裝置的位置及操作：

3.1 Fire extinguisher and fire blanket;
滅火筒及滅火毯；

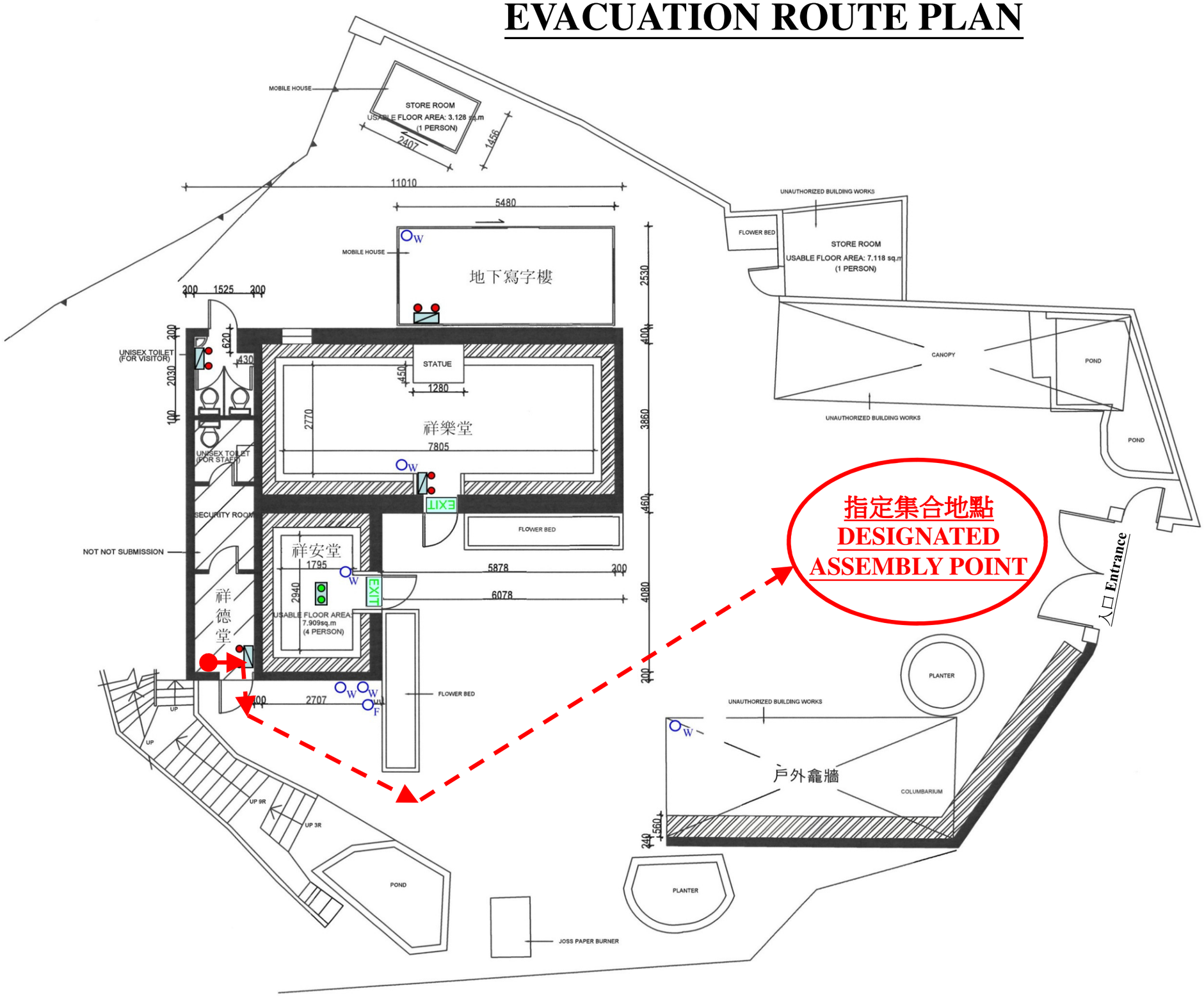
4. This instruction is for reference by the staff of MPHK only, there is no need to be posted in public.
本指引只為<孝思園>職員作參考，無須公開張貼。

Appendix 2 : MPHK Guidelines on the Fire / Emergency Evacuation Route Plan
附錄2：<孝思園>「火警/緊急事故疏散路線圖」的指引

MPHK Evacuation Route Plan, total 1 set
<孝思園>「疏散路線圖」1套

MPHK Fire Safety Evacuation “Designated Assembly Point” Location
<孝思園>「火警/緊急事故疏散「指定集合地點」1份

# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN




GROUND FLOOR PLAN

## 圖例
## LEGEND:

- 閣下在此 / You Are Here
- 路線 / Route
- 9升水劑滅火筒 / 9 Litre Water Fire Extinguisher
- 9升泡沫滅火筒 / 9 Litre Foam Fire Extinguisher
- 掛牆式緊急照明燈 / Emergency Lighting (Surface Mounted Type)
- 天花式緊急照明燈 / Emergency Lighting (Ceiling Mounted Type)
- 出口指示牌 / EXIT Sign

# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN

GROUND FLOOR PLAN

## 圖例
## LEGEND:

- 閣下在此 / You Are Here
- 路線 / Route
- 9升水劑滅火筒 / 9 Litre Water Fire Extinguisher
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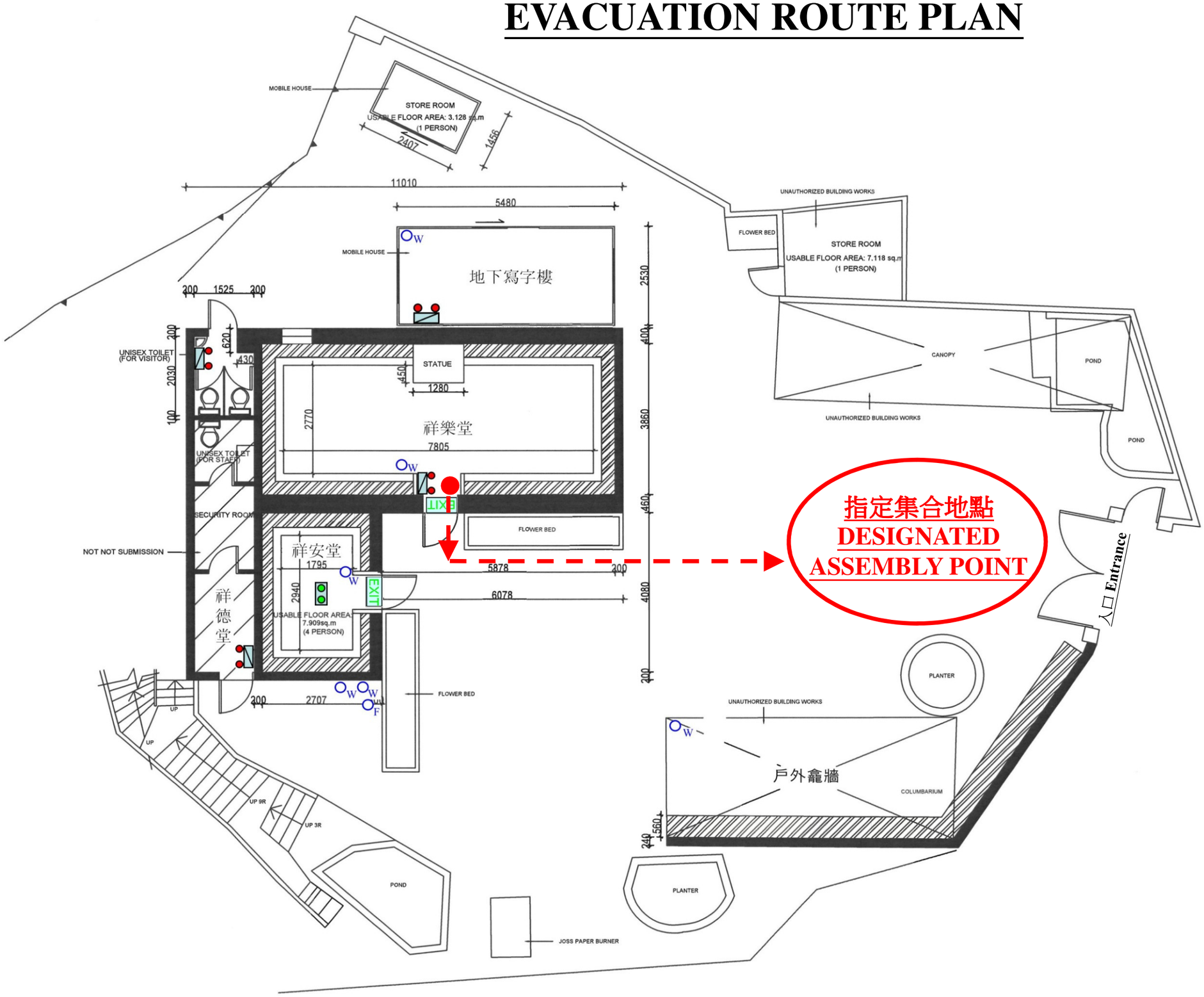
- 掛牆式緊急照明燈 / Emergency Lighting (Surface Mounted Type)
- 天花式緊急照明燈 / Emergency Lighting (Ceiling Mounted Type)
- 出口指示牌 / EXIT Sign

# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN

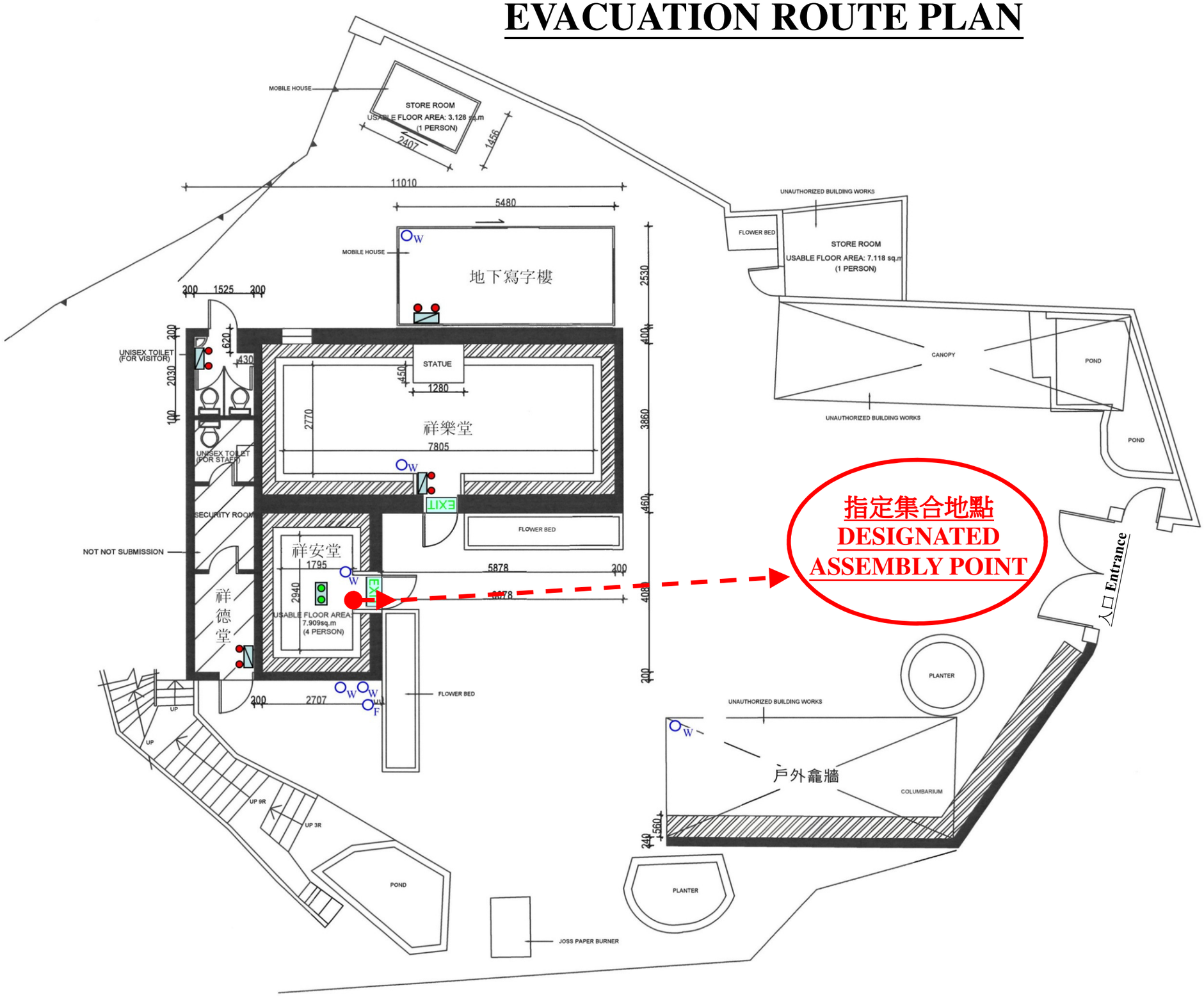



GROUND FLOOR PLAN

## 圖例
## LEGEND:

- 閣下在此 / You Are Here
- 路線 / Route
- 9升水劑滅火筒 / 9 Litre Water Fire Extinguisher
- 9升泡沫滅火筒 / 9 Litre Foam Fire Extinguisher
- 掛牆式緊急照明燈 / Emergency Lighting (Surface Mounted Type)
- 天花式緊急照明燈 / Emergency Lighting (Ceiling Mounted Type)
- 出口指示牌 / EXIT Sign

# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN




GROUND FLOOR PLAN

## 圖例
## LEGEND:

- 閣下在此 / You Are Here
- 路線 / Route
- 9升水劑滅火筒 / 9 Litre Water Fire Extinguisher
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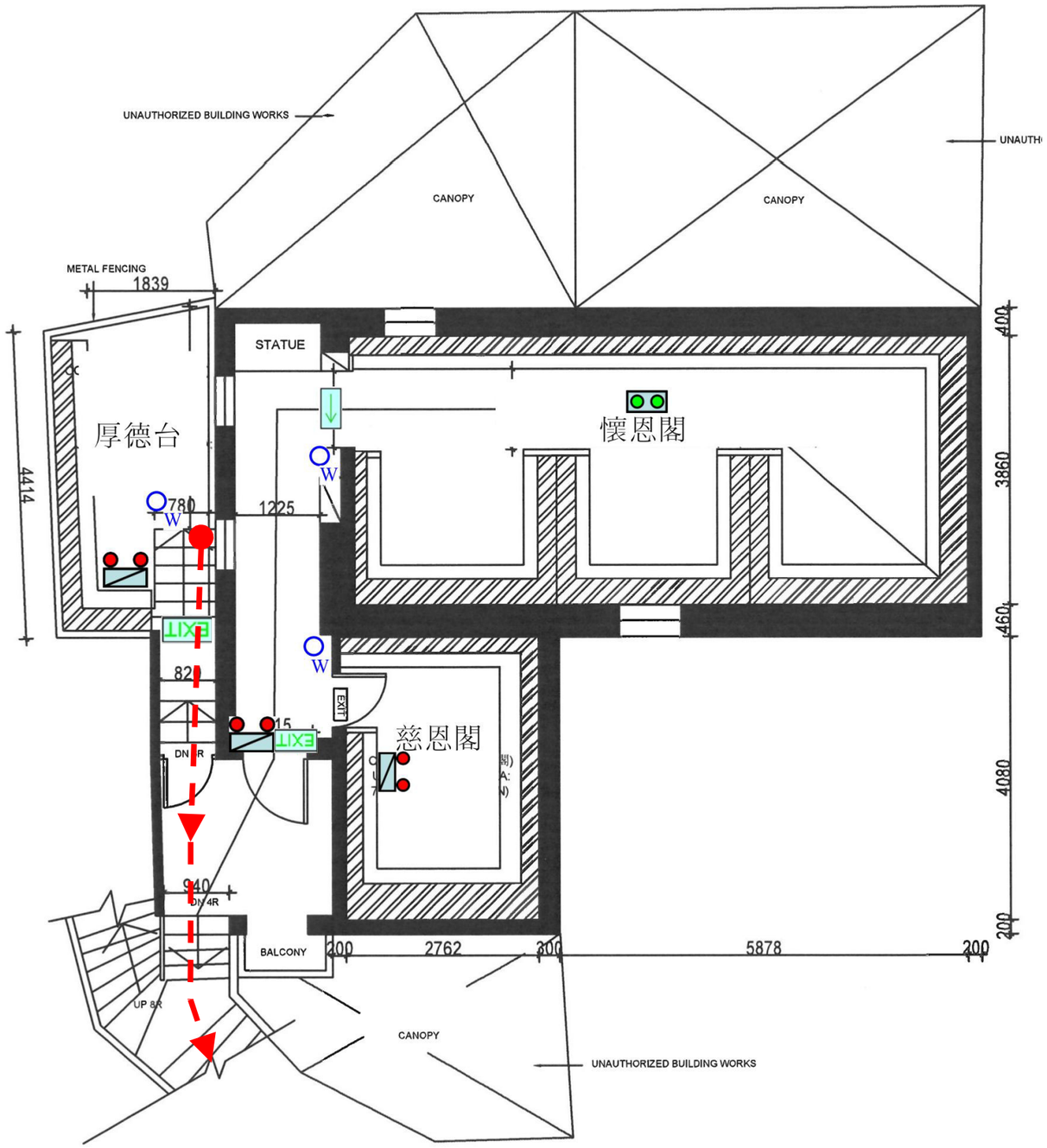
# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN

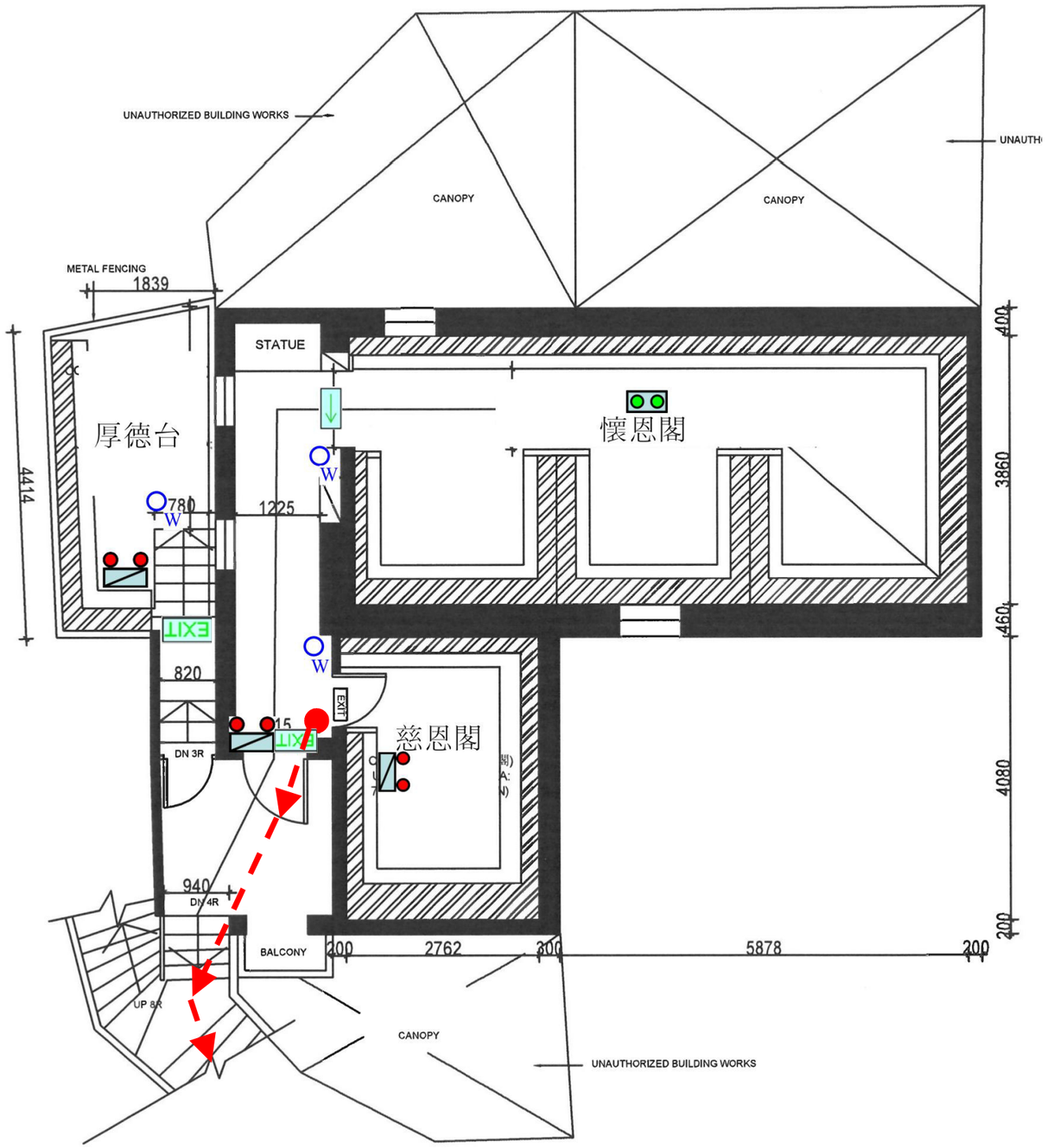



FIRST FLOOR PLAN

## 圖例
## LEGEND:

- 閣下在此 / You Are Here
- 路線 / Route
- W — 9升水劑滅火筒 / 9 Litre Water Fire Extinguisher
- F — 9升泡沫滅火筒 / 9 Litre Foam Fire Extinguisher
- 掛牆式緊急照明燈 / Emergency Lighting (Surface Mounted Type)
- 天花式緊急照明燈 / Emergency Lighting (Ceiling Mounted Type)
- EXIT — 出口指示牌 / EXIT Sign
- 方向指示牌 / Direction Sign

# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN

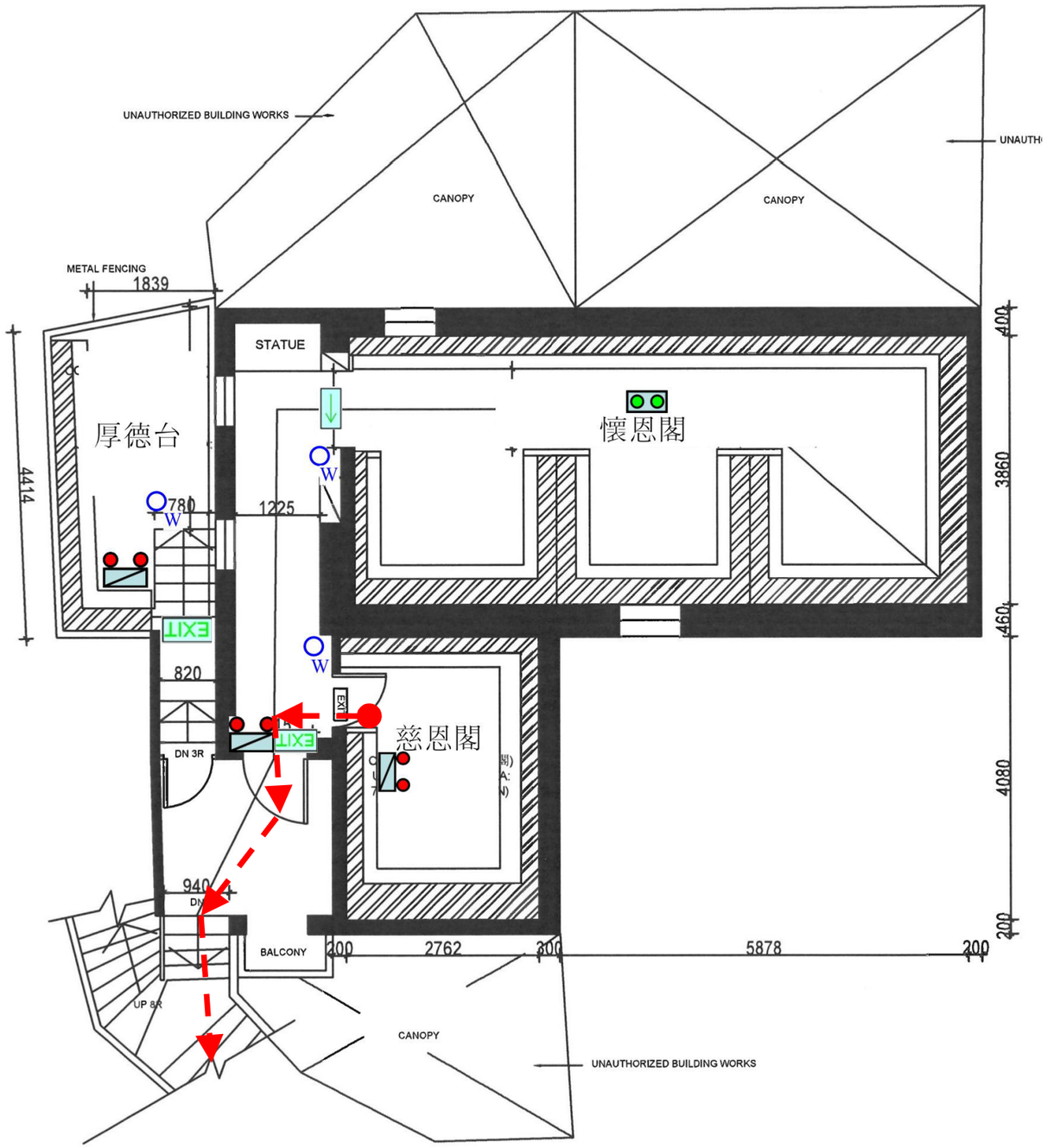



FIRST FLOOR PLAN

## 圖例
## LEGEND:

- 閣下在此 / You Are Here
- 路線 / Route
- W 9升水劑滅火筒 / 9 Litre Water Fire Extinguisher
- F 9升泡沫滅火筒 / 9 Litre Foam Fire Extinguisher
- 掛牆式緊急照明燈 / Emergency Lighting (Surface Mounted Type)
- 天花式緊急照明燈 / Emergency Lighting (Ceiling Mounted Type)
- EXIT 出口指示牌 / EXIT Sign
- 方向指示牌 / Direction Sign

# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN

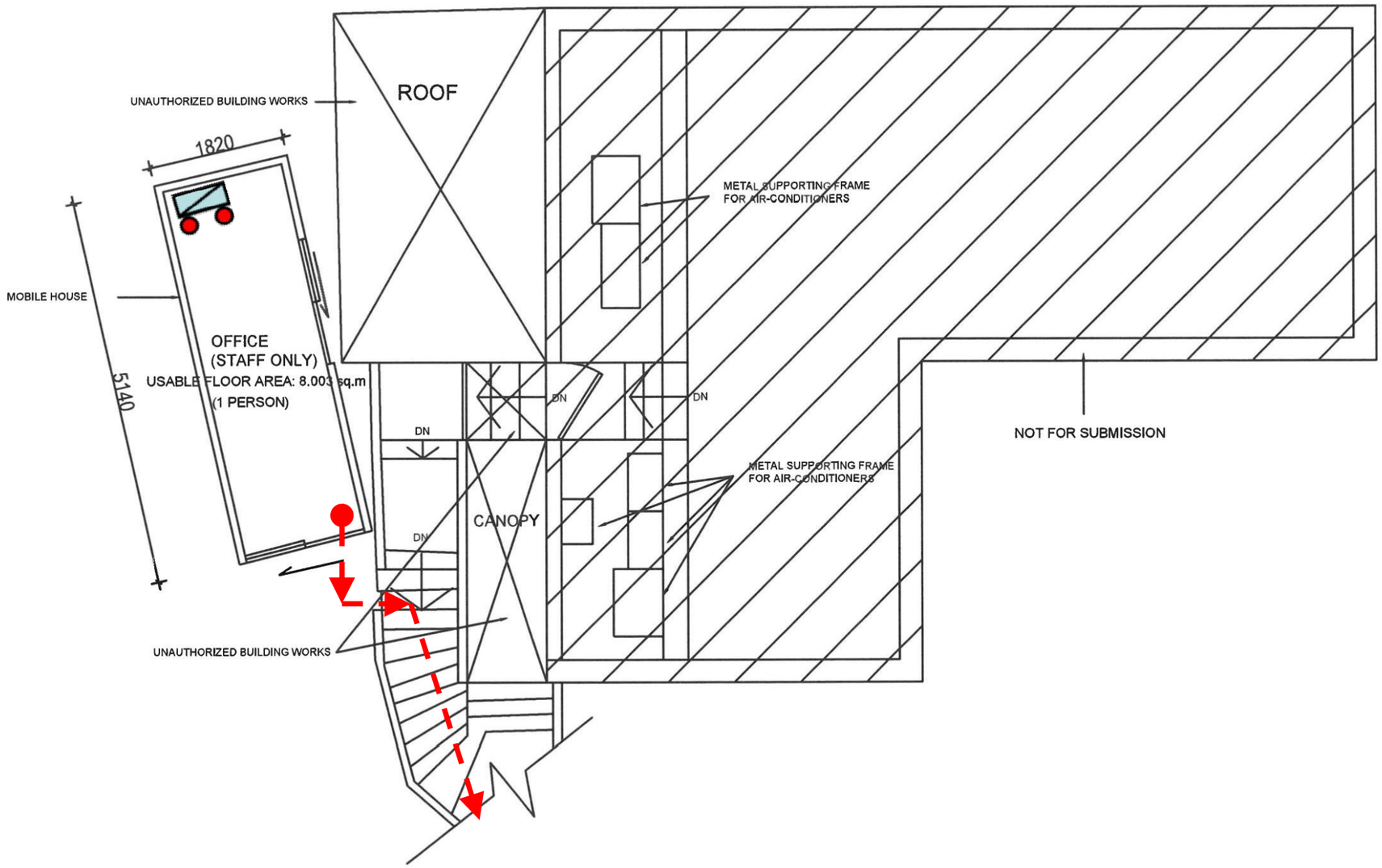



FIRST FLOOR PLAN

## 圖例
## LEGEND:

- 閣下在此 / You Are Here
- 路線 / Route
- W 9升水劑滅火筒 / 9 Litre Water Fire Extinguisher
- F 9升泡沫滅火筒 / 9 Litre Foam Fire Extinguisher
- 掛牆式緊急照明燈 / Emergency Lighting (Surface Mounted Type)
- 天花式緊急照明燈 / Emergency Lighting (Ceiling Mounted Type)
- EXIT 出口指示牌 / EXIT Sign
- 方向指示牌 / Direction Sign

# <孝思園>逃生路線圖
# EVACUATION ROUTE PLAN




ROOF PLAN

**圖例**
**LEGEND:**

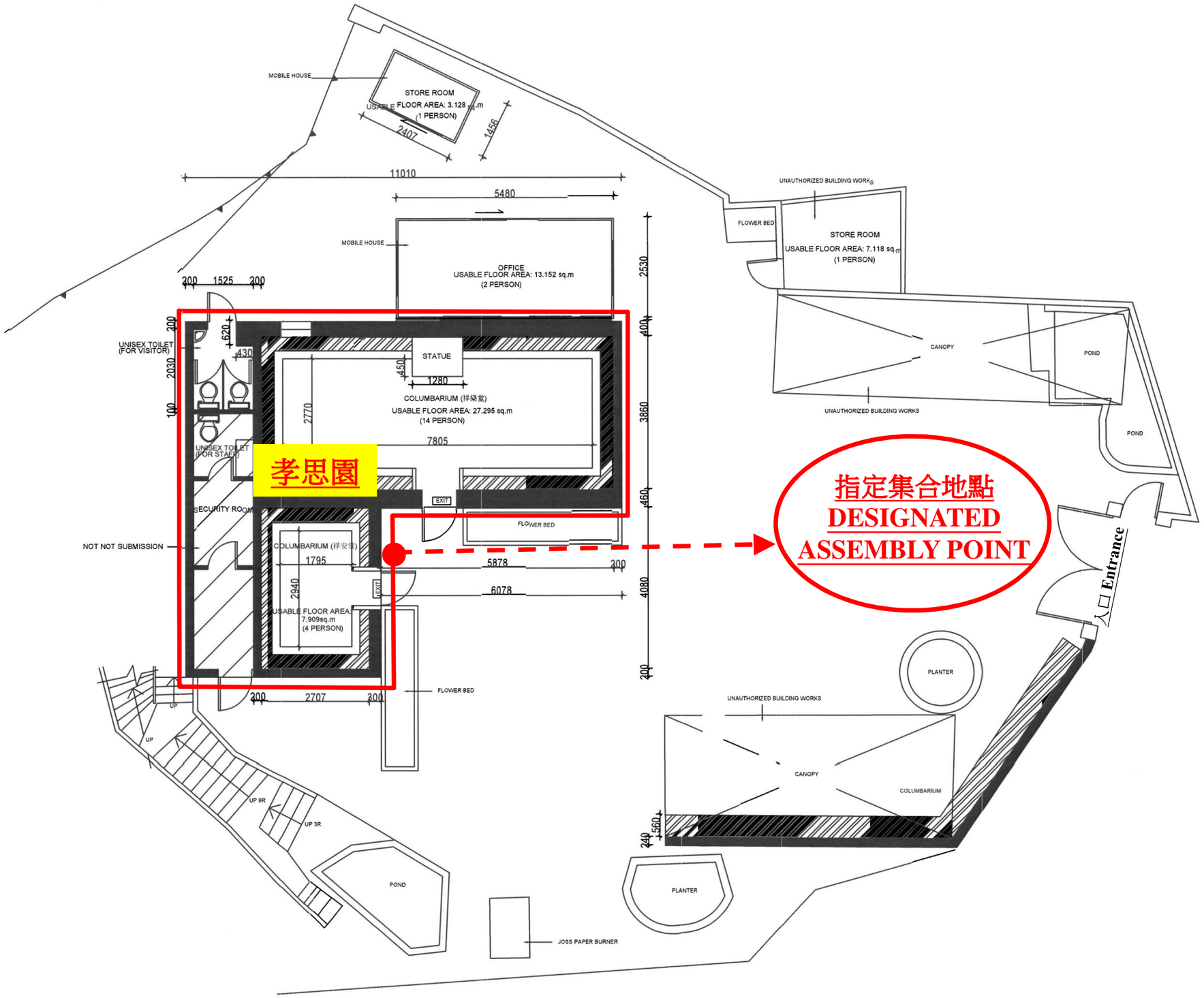
閣下在此
You Are Here

路線
Route

掛牆式緊急照明燈
Emergency Lighting
(Surface Mounted Type)

# <孝思園>消防安全疏散“指定集合地點”位置

# FIRE SAFETY EVACUATION “DESIGNATED ASSEMBLY POINT” LOCATION




GROUND FLOOR PLAN

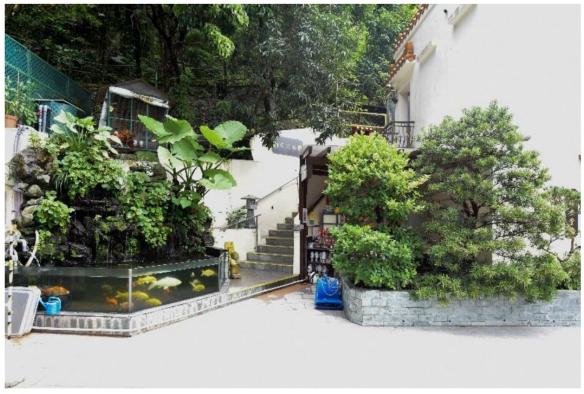
**圖例**
**LEGEND:**

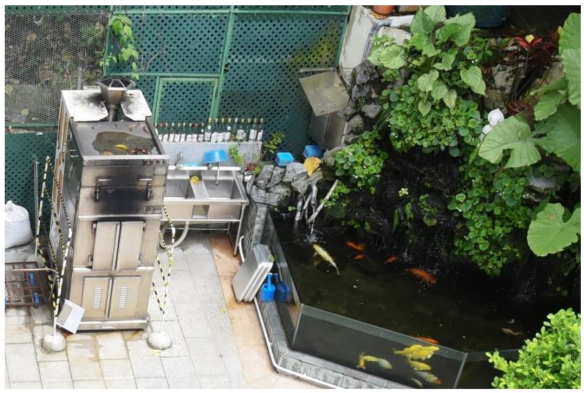
前往指定集合地點路線
Route to Designated Assembly Point

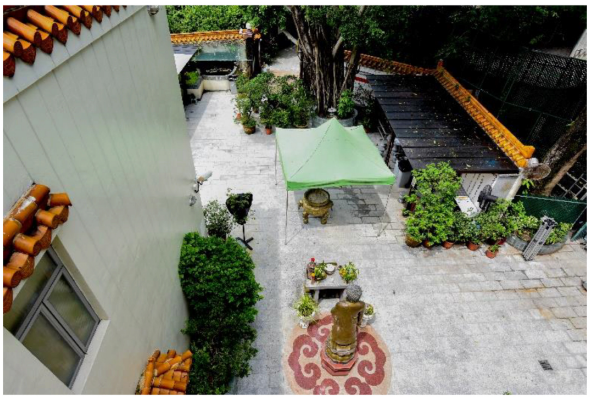
# Appendix VII

# Photos of Landscaping in the Application Site

# Photos of Landscaping in Memorial Park Hong Kong







Your Ref: TPB/Y/ST/47
Our Ref: LAS/AC/CK/TT (19-21788)

The Secretary
Town Planning Board
15/F North Point Government Offices
333 Java Road, North Point
Hong Kong

1 April 2021

**By Hand and Email (tpbpd@pland.gov.hk)**

Dear Sirs

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

We refer to the captioned planning application No. Y/ST/47.

Further to our original submission made to the Town Planning Board ("TPB") via letter dated 16 October 2020, we enclose a set of further information comprising the following:

**Attachment I** Responses-to-Comments table addressing comments from the Civil Engineering and Development Department, Environmental Protection Department and Food and E Environmental Hygiene Department

**Attachment II** Responses-to-Comments table addressing comments from the Public

**Attachment III** 35 hardcopies and 35 softcopies of the Revised Environmental Assessment ("EA") Report superseding the previous EA

**Attachment IV** 35 hardcopies and 35 softcopies of the Revised Management Plan ("MP") superseding the previous MP

1 April 2021
Town Planning Board
Attention: Secretary, Town Planning Board

**Attachment V** 35 hardcopies and 35 softcopies of the Geotechnical Planning Review Report

The above information is submitted to address departmental and public comments received and constitutes no material change to the application. Should there be any queries, please feel free to contact the undersigned or our Ms Tammy Tam at 2846 7483.

Yours faithfully
For and on behalf of
Knight Frank Petty Limited

**Calvin Kan** MHKIP RPP
Senior Manager, Planning & Development
Land Advisory Services
calvin.kan@hk.knightfrank.com
D +852 2846 7429

| | | |
|---|---|---|
| cc | Client | (By email) |
| | Sha Tin, Tai Po and North District Planning Office, (Attn: Miss Hannah Yick / Mr Derek Wong) | (By email) |

# Attachment I

# Responses-to-Comments table addressing comments from Government Departments

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information March 2021

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| Comments | Response(s) |
|---|---|
| **Head of Geotechnical Engineering Office, Civil Engineering and Development**<br>**received on 8 January 2021**<br>**(Contact: Mr. Jason Chan \| Tel: 2762 5390)** | |
| The site meets Criteria 1(ii) in the GEO advice Note for Planning Applications under Town Planning Ordinance (CAP.131). The applicant is required to submit a Geotechnical Planning Review Report (GPRR) in supporting of the planning application. The essential contents of a GPRR are given in the attached GEO Advice Note. | Noted. A Geotechnical Planning Review Report is prepared and can be seen in **Attachment V**. |
| **Environmental Protection Officer, Environmental Protection Department**<br>**received on 18 January 2021**<br>**(Contact: Mr. Nicholas Tsang \| Tel: 2835 1096)** | |
| 1. The Applicant should address any potential waste management and land contamination issues arising from the Proposed Development. | Sections on waste management and land contamination review have been added, please refer to Sections 5 and 6 of the Environmental Assessment Report (**Attachment III**). |

| Comments | Response(s) |
|---|---|
| <u>Air Pollution Control Information</u><br><br>1. The Applicant shall follow the "Guidelines on Air Pollution Control for Joss Paper Burning at Chinese Temples, Crematoria and Similar Places", including the following key points:<br>(a) Implement green initiatives to stop permitting joss paper burning activities, e.g. offering flower, electronic offering, smokeless incense, electric candle.<br>(b) Arrange off-site burning as far as practicable and the facilities for off-site burning should be remote from air sensitive receivers with provision of proper joss paper furnaces and effective air pollution control equipment.<br>(c) Locate exhaust outlet of final discharge of treated flue gas from the furnace at a place where ventilation is good and at sufficient separation distance from any air sensitive receivers in the vicinity. | Noted, the comments have been incorporated in Sections 2.5.2, 2.5.9 and 2.5.10. |
| <u>Noise Assessment & Control</u><br><br>1. Since the present application is an application submitted under the Town Planning Ordinance, the relevant noise standards of the HKPSG is also applicable, in addition to the noise limits of the NCO mentioned in section 2.2 of the report. | Relevant noise standards of the HKPSG are incorporated in Section 3.2.4 of the report. |
| 2. The report is silent about whether there are any other noise sources like carrying out of noisy religious activities involving the use of musical instruments, etc. and whether the management of Memorial Park Hong Kong had received any noise complaints about its existing operation from its neighbours in the past years. | Musical instruments and fixed PA system will not be used during the religious activities. No noise complaint was received by the management of MPHK from its neighbours since its operation in 2008. Details can be referred to Section 3.5 of the report. |

| Comments | Response(s) |
|---|---|
| 3. For the set of prediction of fixed noise source impact given in Annex 2.5 of the report, since there is a set of Air Pollution Control Equipment (APCE) already operating at Memorial Park Hong Kong, an in-situ noise measurement at or around the worst affect NSR N01 is perhaps the most appropriate assessment of the noise situation there. However, a set of noise measurement for a different model of APCE installed at another location with different setting is being presented instead. An in-situ noise measurement can also help to determine whether correction for tonality shall be made to the measured noise levels. Besides, the prevailing background noise level can only be measured on the spot. The noise descriptor of L90(1 hour) is generally used as a measure of the background noise level for the purpose of determining the noise standard of the HKPSG. | The fixed plant noise impact assessment has been updated and presented in Appendix 3.1. |
| 4. While section 2.4.1 of the report says that the noise sensitive receivers (NSRs) included existing and planned uses, there are a number of front layer noise sensitive uses situated at similar or even closer distances than the identified NSR N03-Palazzo but not being mentioned in the report. For example, Yuk Wo Court and the residential development under construction both on the opposite side of Fo Tan Nullah, Jockey Club Ti-i College on the opposite side of East Rail, and Sui Wo Court and the school to the southwest. Since the NSRs are scattered at different locations, the Area Sensitivity Rating (ASR) of each of them may be different which should be assessed individually. If quantitative noise impact assessment at any of the identified NSRs are considered not necessary, the justification should be stated clearly in the report. | The list of representative NSRs has been updated in Table 3.3. As N01 is the NSR closest to the Application Site, it has been selected as the representative NSR for assessment. Given full compliance with the established noise criteria for the daytime period at N01, adverse noise impact from the fixed noise source is not envisaged. The noise impact would diminish for NSRs located further away. Please refer to Section 3.7 and Appendix 3.1 for the details of assessment. |
| 5. The labels for the fixed noise sources indicated in Figure 2.4 (i.e. S1, etc.) are not consistent with those shown in Figure 2.1 and Figure 2.3 (i.e. S01, etc.). | The label for the fixed noise sources has been updated in Figure 3.3. |

| Comments | Response(s) |
|---|---|
| Water Quality Control<br><br>1. To prevent adverse water quality impact due to overloading the septic tank and soak away system, the applicant shall properly maintain the system during peak season, should there be need, portable toilets shall be deployed and maintained to alleviate the loading of the existing on-site sewage treatment facility during peak season. | Noted, the sewage collected in the septic tank would be removed at least once every 6 months, or on as-needed basis, to relieve loading before and/or during the peak seasons. Please refer to Section 4.6.3 for details. |
| Section 2.2<br><br>2. Please elaborate whether there would be any potential water quality impact from site runoff during operation, such as from application of fertiliser, etc. | Potential water quality impact from site runoff during the operation of columbarium and its related activities is not anticipated. Please refer to Section 4.2 for details. |
| Section 2.2.2<br><br>3. Please further elaborate on the whether there would be any adverse water quality impact during maintenance of the fishponds and how the water of the fishponds would be treated. | Maintenance of the fishponds involves the removal of leaves and trash by a sieve only and no detergents would be used for pond cleaning. Water contained in the fishponds on-site are self-circulated by a closed loop pumping system, no effluent would be generated and discharged from the fishponds. |
| Section 2.2.6<br><br>4. Please provide more details on the septic tank design and its capacity. | Please refer to Section 4.3.1 for the details of septic tank design and its capacity. |
| Section 3.4.3<br><br>5. It is reminded that licensed collector shall be hired to tanker away sewage from septic tank. | Noted, Section 4.6.3 has been revised. |

| Comments | Response(s) |
|---|---|
| Annex 3.2<br><br>6. Please include wastewater from staff, kitchen and joss paper furnace in the sewage estimation. | As the joss paper furnace cum APCE does not contain the water scrubbing process and there is no kitchen within the Application Site, no wastewater would be generated from kitchen and joss paper furnace. Wastewater generation from staff is now incorporated in the sewage estimation provided in Appendix 4.1. |
| Annex 3.2<br><br>*7.* Please further elaborate to justify the number of occurrence to be assumed as 0.1. | Assuming the visitors will use the basin and toilet once during their short stay in the site, the number of occurrence has been revised as 1. Appendix 4.1 has been updated. |
| **Director of Food and Environmental Hygiene**<br>**received on 8 January 2021**<br>**(Contact: Mr. Raymond Chan \| Tel: 3141 1231)** | |
| The Private Columbaria Ordinance (the Ordinance), which regulates the operation of private columbaria through a licensing scheme, has come into effect on 30 June 2017 upon gazettal. Under the Ordinance, only private columbaria that have obtained a licence can sell or newly let out niches. The operator of a private columbarium who applies for a licence must comply with the Town Planning Ordinance (Cap. 131) and other requirements prescribed in the Ordinance or specified by the Private Columbaria Licensing Board (the Licensing Board), including land-related, building-related, right to use the columbarium premises, deed of mutual covenant (if applicable), fire safety, etc. A licence applicant is also required to submit a management plan to the Licensing Board for approval. The management plan should show that suitable measures on traffic and public transport arrangement or management would be taken to minimize any adverse impact that operation of the columbarium may have on the neighbourhood. In determining whether to approve an application for a licence, the Licensing Board must have regard to the public interest and may have regard to any other relevant considerations. | Noted with thanks. |

| Comments | Response(s) |
| --- | --- |
| According to the promulgated Application Guide for Private Columbarium Licence and Other Specified Instruments, if the pre-cut-off columbarium has not met the planning-related requirements (i.e. Town Planning Board (TPB)'s approval is required) and the application covers unsold niches, the applicant should submit proposed plans (including niche information) certified by qualified persons in respect of the licence application to the PCLB before submitting the planning application to the TPB. Only when the Private Columbaria Affairs Office (PCAO) has completed vetting of the niche information and accepted such information as a basis for further processing of the licence application should the applicant submit the planning application to the TPB. According to our record, the private columbarium, namely "孝思園", situation at 93, Fo Tan Village, Fo Tan, Shatin, New Territories (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176), submitted two sets of applications for specified instruments (SI) (viz. one set for a licence and temporary suspension of liability (covering only niches already sold before 30 June 2017); in respect of a pre-cut-off columbarium to the Licensing Board and the applications are being processed by the PCAO according to the prevailing procedure. Based on the proposed plans submitted by the applicant in support of these SI applications, it was preliminary noted that the total number of niches proposed for these two sets of SI applications apparently tally with that as shown in this planning permission application (Application No.Y/ST/47). Having said that, the niche information proposed for the SI applications is subject to verification by PCAO. | |
| 骨灰所辦就「香港孝思園有限公司」所提交的管理方案的意見如下：<br><br><u>第(2) 場地資料及樓宇排列</u><br><br>1. 骨灰安置所地址與指明文書申請資料不符。根據本署紀錄，申報的骨灰安置所地址應為「新界沙田火炭火炭村93 號(丈量約份第176 約地段第551 號A 段及餘段、第640 號及第644 號A 分段、B 分段及餘段) 」。 | 是次規劃申請的場地範圍包括毗連的三塊政府土地，因此，規劃申請所提交的管理方案的地址，與早前所申報的骨灰安置所地址不同。除了場地範圍較大外，其他資料大致一樣。 |

| Comments | Response(s) |
|---|---|
| 申請人應統一申報地址。 | |
| 2. 申請人在管理方案所提供之骨灰安置所佔地面積及總樓宇建築面積與申請人向城規會遞交的修訂圖則申請的資料不符。 | 有關資料已在相應地方修改，詳情可參閱管理方案（**附件 IV**）。 |
| 第(3) 可容納的客量及入場管制<br><br>1. 申請人應述明所指的清明節及重陽節期間的實際日子(例如: 清明節及重陽節前兩星期…)。 | 有關日期已在相應地方修改，詳情可參閱管理方案（**附件 IV**）。 |
| 第(5) 人流管理<br><br>1. 申請人應述明所指的掃墓高峰日子或期間的實際日子 (例如: 清明節及重陽節前兩星期…)。 | 有關日期已在相應地方修改，詳情可參閱管理方案（**附件 IV**）。 |
| 2. 申請人應就人流管理事宜具體描述人手分配的情況。例如: 在掃墓高峰日子協助疏導人流的員工數目、站崗位置及其職責等。 | 有關資料已在相應地方提供，詳情可參閱管理方案（**附件 IV**）。 |
| 3. 申請人應述明如何安排及具體執行訪客預約進入骨灰安置所的規定。 | 有關資料已在相應地方提供，詳情可參閱管理方案（**附件 IV**）。 |
| 第(6) 保安管理<br><br>1. 申請人應就保安管理事宜具體描述人手分配的情況。例如: 負責日常保安管理事宜的保安數目、站崗位置及其職責等。 | 有關資料已在相應地方提供，詳情可參閱管理方案（**附件 IV**）。 |
| 第(7) 人手調配<br><br>1. 申請人應就以下事項供資料：<br>(i) 最高層管理人員之姓名、聯絡電話號碼(如有的話)。 | 有關資料已在相應地方提供，詳情可參閱管理方案（**附件 IV**）。 |

| Comments | Response(s) |
|---|---|
| (ii) 員工訓練，例如: 消防安全、急救等;<br>(iii) 在掃墓的高峰日子就維修保養作出的特別人手安排;<br>(iv) 管理模式。 | |
| 第(10) 投訴處理<br><br>1. 申請人應說明處理投訴的詳情，例如處理投訴的流程、調查程序、補救行動及記錄投訴的詳細安排 | 有關資料已在相應地方提供，詳情可參閱管理方案（**附件 IV**）。 |
| 第(11) 管理方案的執行人及批准人<br><br>1. 申請人應提供以下資料：<br>(i) 負責執行管理方案的人員的資料(包括姓名、職位、聯絡電話號碼、電郵地址) ;<br>(ii) 負責批准管理方案的人員(包括姓名、職位、聯絡電話號碼、電郵地址) ;及<br>(iii) 代表骨灰安置所提交管理方案的人員(包括姓名、職位、聯絡電話號碼、電郵地址及其簽署)。 | 有關資料已在相應地方提供，詳情可參閱管理方案（**附件 IV**）。 |

# Attachment II

# Responses-to-Comments table addressing comments from the Public

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information March 2021

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| Public Comments | Response(s) |
|---|---|
| 1. Worsening Traffic<br><br>Fo Tan Road is the only access road to Fo Tan Village and a few estate developments. Roads in the area are congested due to parking on streets and high usage of vehicles. It is anticipated the columbarium will further worsen the traffic condition during the Ching Ming and Chung Yeung festival period as more visitors will come to the columbarium for commemoration.<br><br>The only vehicular access to the site is via Fo Tan Road which is very congested already. The traffic condition at Fo Tan area, including Sui Wo Road and Shan Mei Street, are now under review by the District Council and the Traffic Department.<br><br>A large-scale columbarium, like Po Fok Hill Cemetery could potentially collapse the traffic network at Fo Tan Area, which is an industrial area with lots of heavy vehicles coming in and out on a daily basis. | Traffic condition within the Fo Tan area on Sundays and public holidays, when most grave sweepers are expected to visit the proposed development, is observed to be quiet.<br><br>Furthermore, the proposed development is relative small with only 3,499 niches. Crowd management proposal has been implemented by the Applicant to reduce the amount of traffic generated by the proposed development during the Ching Ming and Chung Yeung festival periods, and the Applicant will continue to implement these measures.<br><br>Hence, the proposed development is expected to have minimal traffic impact to the surrounding road network. |

| Public Comments | Response(s) |
|---|---|
| The emergency service is delayed as more visitors of MPHK park and block the exit illegally.<br><br>The applicant has not provided sufficient information on the traffic impact arise from the development. | |
| 2. Overloaded pedestrian flow<br><br>Residents in Fo Tan rely heavily on the use of MTR. However, Fo Tan Station is a small metro station which can barely accommodate the additional flows on racing days. During Ching Ming and Chung Yeung festival period, it is seen that the pedestrian flow has already reached its maximum capacity with more people coming in Fo Tan from the southern part of Hong Kong.<br><br>There will be more pedestrian using Shan Mei Street and Exit B of Fo Tan MTR station which will exceed the existing capacity.<br><br>The livelihood of the Fo Tan residents has been adversely affected as MPHK significantly increases the pedestrian flow along Fo Tan Village. | The pedestrian condition within the Fo Tan area is observed to be quite on Sundays and public holidays, when most grave sweepers are expected to visit the proposed development.<br><br>The proposed development is relatively small with only 3,499 niches. Crowd management proposal has been implemented by the Applicant to reduce the number of pedestrians generated by the proposed development during the Ching Ming and Chung Yeung festival periods, and the Applicant will continue to implement these measures.<br><br>Hence, the proposed development is expected to have minimal pedestrian impact to the surrounding pedestrian and public transport network. |
| 3. Incompatible Land use<br><br>The application is not suitable for columbarium use as it is surrounded by various residential development (both existing and work in progress), vegetated land and particularly close to Fo Tan | The abutting Fo Tan Road and Shing Mun River help separate the Application Site from the high-rise and high-density residential and industrial developments. With 6.19m of building height, i.e. 2 storeys, the proposed amendment will remain as a low-rise development, which |

| Public Comments | Response(s) |
|---|---|
| Village. As such, it is not compatible to have the columbarium in the area.<br><br>Fo Tan will be accommodating new high-density residential developments and hence the columbarium use is not compatible with the surrounding residential area.<br><br>The 5-storey development is relatively bulky and does not fit in the village character. | is similar to the local village setting. Viewing from the east of the Application Site, the proposed amendment will be visually blocked by the flyover and trees at the northeast of the application site, which provides a screening effect to shield the view from public roads. The proposed development is barely to be seen from the surroundings. |
| 4. Urban Sprawl<br><br>It is important to preserve our precious land resources in "Green Belt" zone especially when Fo Tan area lacks green space. Therefore, rezoning the "GB" to columbarium use is undesirable and unreasonable.<br><br>Rezoning the "Green Belt" would reduce the buffering effect to contain urban sprawl. | The applicant has no plan to intensify the scale of Memorial Park Hong Kong ("MPHK") or further encroach onto the adjacent "Green Belt" ("GB") zone. The current application only includes a small portion of the green belt and hence the area of "GB" is largely safeguarded. In fact, the proposed amendment to permit a columbarium can maintain the tranquil and calming ambience of the area while functioning as the transitional area from "Village Type Development" zone to "GB" zone to contain urban sprawl. |
| 5. Reducing Small House Supply<br><br>The rezoning application is at the expense of housing supply as the application site is currently zoned "Village Type Development" which is intended for small house development. The housing supply will be reduced with less land available. | The Lot Nos. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B and 644 RP in D.D.176 are all owned by the Applicant. Although the Applicant has been the owner of the subject lots since 2006, he has no intention nor eligibility to develop the land into NTEH. Therefore, it has no impact on the small house supply regardless of TPB's approval. |

| Public Comments | Response(s) |
|---|---|
| The application bypasses the objection from villagers and affects the small house supply. | |
| 6. Feng Shui<br><br>The columbarium is located within the area of Fo Tan Village, a traditional village which has a strong belief in Feng Shui. Apparently, the village development is carefully designed to meet with the Feng Shui requirements to ensure health and prosperity. However, the establishment of the columbarium has ruined the sophisticated Feng Shui setting and brought bad spirits to the village. Villagers also fear to pass by the columbarium at night. Therefore, villagers do not welcome the columbarium as it has been affecting both physical and mental health of villagers. | Prior to establishment of MPHK, the application site was being used as a Buddhist worship hall known as "Hing Lung Buddhist Hall"(興隆佛堂). Since then, the application site has been continuously serving the community as a venue for half-monthly religious congregation and social gatherings in early and recent years, as well as bringing peace and harmony among the villagers and patrons.<br><br>The application site has separate entrance and is far away from the main village cluster (approximately 25m). In this connection, the adverse impact induced from the proposed amendment is generally minimised. |
| 7. Lease contravene<br><br>It was the court order in 2018 that the columbarium should be shut down and returned niches to customers since human remains are not permissible at the application site. Therefore, the approval of the current application for rezoning the "Village Type Development" and "Green Belt" is utterly inconsistent with the judgement and set an undesirable precedent, as well as encouraging illegal occupation of Government Land. | Court of Appeal ("CA") has delivered its judgement of MPHK's appeal on 9 March 2021. While CA has reconfirmed that cremated human ashes are human remains, MPHK may still proceed with its application for a licence under the Private Columbarium Ordinance ("PCO").<br><br>The current planning application includes three strips of Government lands which are disperse in different direction. Each of the Government land involves small area and is rather alienated. Upon TPB's acceptance of the proposed amendment, the applicant will apply for the |

| Public Comments | Response(s) |
|---|---|
| | lease modification to rectify the columbarium use as well as the grant of a Short Term Tenancy through Lands Department to regularize the occupation of the Government land. |
| 8. Expansion of MPHK<br><br>The expansion of the columbarium to 5 blocks is outrageous. It is worrying that MPHK will develop into a columbarium of a scale of Po Fok Hill Cemetery. Approval of this application will set an undesirable precedent as others can apply for columbarium use on the same ground. | Referring to the responses in section 4, the applicant has no plan to intensify the development of the existing columbarium. On a contrary, the proposed amendment can effectively restrict the maximum plot ratio, building height and site coverage to 293.674m$^2$, 6.19m and 30.073% respectively. Any significant changes of the development will require planning application, subject to approval of the Town Planning Board. In this connection, it is hardly inducive to turn MPHK into a Pok Fok Hill alike cemetery.<br><br>According to the Notes of the subject OZP, every case shall be considered on an individual basis/merits with different planning circumstances. Therefore, TPB's acceptance of the proposed amendment will not set an undesirable precedent. |
| 9. Air impact<br><br>The site is situated within proximity of residential area, namely, Chun Yeung Estate, residents at Sui Wo Road and the residential development at Fo Tan Road that is under construction. The smoke, ashes and chemical emitted from burning offering and incense are blown to the residential area and significantly affect the | An integrated joss paper furnace cum dry-type air pollution control equipment (APCE) is currently used by MPHK to control the emission of smoke from joss paper burning activities. The treatment of flue gas involves the extraction of fine portion of fly ash and smoke through industrial grade, high-efficiency dry filters driven by an extraction fan. |

| Public Comments | Response(s) |
|---|---|
| air quality. The pollutant also threatens people's health, particularly on children and elderlies. The smell is intimidating that residents can no longer open windows. A lot of ashes are found in the balcony and roof floor. It is inevitable that the proposed amendment of plan, which includes 1,650 unsold niches, will bring even more pollutants to the area and affect the livelihood of the neighbourhood. | Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance. Therefore, emissions of dark smoke and ashes are not expected from the burning of joss paper and artifacts. The management of MPHK has dedicated trained staff to collect and put visitors' offerings into the joss paper furnace in a controlled manner and feeding rate. Wrapping materials, especially plastic ones are to be removed before they are burnt in the furnace. Hence, hazardous substances emitted during the burning of plastic materials are not expected from the joss paper burning activities. |
| 10. Noise impact<br><br>The noise from running regular religious ceremony and funeral are disturbing and scary. | Musical instruments and outdoor public address (PA) system will not be used during the religious activities. The only low noise source on site is the integrated joss paper furnace cum air pollution control equipment (APCE). Without any mitigation, the predicted noise levels at nearby representative noise sensitive receivers (NSRs) are well below the established noise criteria for daytime operation. |
| 11. It was seen that sewage from MPHK was dumped to Fo Tan River. | The applicant has been following the Water Pollution Control Ordinance as required by the Environmental Protection Department and the septic tank on site has met the statutory requirements. Sewage tanker comes regularly to remove the sludge in the septic tank to ensure that it is functioning properly. |

| Public Comments | Response(s) |
|---|---|
| 12. The columbarium has been operating without any government permission. Local residents have not been consulted regarding the scheme. The approval of this application will allow such problematic practice to continue and neglect the public opinions. | Based on the information, the columbarium has been operating since 2008, long before the effective date of the PCO. This application is submitted to fulfil the statutory planning requirements under the PCO to obtain relevant licence for the continuous operation of the current columbarium without disrupting the stakeholders and surrounding area. The application also aims to rectify and regulate the current land use. Should TPB accept the proposed amendment, relevant Government departments can have more holistic control on the development and operation of MPHK. |
| 13. Whilst considering purchasing the current units here, residents took into consideration of the surrounding land use in which there was no columbarium at that time. The proposed rezoning application will strongly affect property value. | Comparing to the typical small house development with maximum building height of 8.23m (i.e. 3 storeys), MPHK with maximum building height of 6.18m (i.e. 2 storeys) is not significantly different from any small houses in Fo Tan Village. Moreover, the application site is situated in a segregated location, which is far away from high-rise residential and industrial developments and Fo Tan Village. The structures of MPHK are mostly screened out by trees and the adjacent flyover. In this sense, the effect on the neighbourhood is minimal. |
| 14. Since the application site is currently zoned "Village Type Development" and "Green Belt", there is not sufficient provision of infrastructure, such as road capacity and environmental mitigation measures to address the problems arose from the application. | The existing columbarium has been operating with crowd control management plan in recent years and no complaint has been received so far.<br><br>Based on the traffic impact assessment report, the performance of the local key junctions and footpath will be satisfactory with adequate reserved capacities. Together with the traffic and crowd management |

| Public Comments | Response(s) |
|---|---|
| | measures, there will be no adverse traffic impact on the road networks arising from the proposed amendment.<br><br>On the other hand, no insurmountable environmental problems with respect to air quality, noise and sewerage are anticipated. In order to reduce air pollution to the surrounding area, an integrated joss paper furnace, which can control the emission of smoke is currently in use. Large pieces of fly ashes can be filtered and collected at the bottom of tray. Eco-friendly offerings such as electronic incense and flowers are encouraged to reduce the air pollution. |
| 15. Residents of the area feels unsafe to have more strangers coming. | Referring to the responses in section 8, the location of the application site is segregated from the main village cluster. Moreover, to better control the crowd during festive period, a crowd control management plan including advance booking arrangement has been introduced and implemented effectively. Visiting time is also restricted to 9am to 6pm daily to create minimal disturbance to the neighbourhood. |

# Attachment III

# Revised Environmental Assessment

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information March 2021

Prepared for

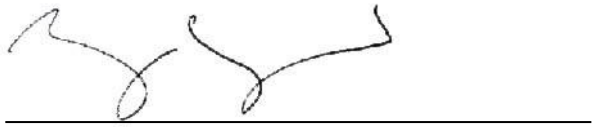
**Memorial Park Hong Kong**

Prepared by

**Ramboll Hong Kong Limited**

# SECTION 12A REZONING APPLICATION FOR EXISTING COLUMBARIUM AT MEMORIAL PARK HONG KONG NO. 93 FO TAN VILLAGE, SHA TIN, N.T.

## ENVIRONMENTAL ASSESSMENT

| | |
|---|---|
| Date | **24 March 2021** |
| Prepared by | **Rachel Wong**<br>**Assistant Environmental Consultant** |
| Signed | |
| Approved by | **Katie Yu**<br>**Senior Manager** |
| Signed |  |
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# 1. INTRODUCTION

## 1.1 Project Background

1.1.1 The Application Site (or "the Site"), Memorial Park Hong Kong, is mainly falls within an area zoned "V" with a minor encroachment onto "GB" zone under the Approved Sha Tin OZP (Statutory Plan No.: S/ST/34) and is currently used as a Buddhist and Taoist temple with ancillary columbarium.

1.1.2 Memorial Park Hong Kong is a pre-cut-off columbarium and has ashes interred in niches well before 8 a.m. on the cut-off date on 18 June 2014 referred under Section 20(1)(d) in the Private Columbaria Ordinance ("PCO").

1.1.3 Ramboll Hong Kong Limited has been commissioned by the Applicant to conduct this Environmental Assessment (EA) for the subject S12A rezoning application.

1.1.4 The EA will assess the air quality, noise, water quality, land contamination and waste management impacts associated with the operation of existing columbarium.

## 1.2 Application Site and its Environ

1.2.1 The Application Site is located at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land). It is situated in Fo Tan urban area bounded by village type developments to the north and Fo Tan Road to the east. It can be accessed on foot by a 5-minute walk from the Fo Tan MTR Station. **Figure 1.1** shows the location of the Application Site and its environ.

## 1.3 Proposed Development

1.3.1 Memorial Park Hong Kong has a 2-storey building comprising worshipping halls, columbarium (G/F and 1/F) with ancillary office, toilets and fishponds on G/F. **Figure 1.2** shows the general layout of different uses and **Figure 1.3** shows an outlook of the Site.

## 1.4 Operating Hours

1.4.1 Memorial Park Hong Kong opens in the hours of 09:00 – 18:00 daily for worshipping. Shorter worshipping times in the hours of 10:00 – 14:00 would apply during Lunar New Year (from New Year's Eve to the seventh day of Lunar New Year).

# 2. AIR QUALITY IMPACT ASSESSMENT

## 2.1 Introduction

2.1.1 This section evaluates and summarises the potential off-site air quality impacts that could be caused by the existing air pollution sources on-site during operation of the columbarium and its related activities.

## 2.2 Air Pollution Sources Related to Columbarium Operations

2.2.1 An existing joss paper furnace cum dry-type air pollution control equipment ("APCE") is provided for shared use by general Buddhist and Taoist worshipping activities and columbarium related uses. **Figure 2.1** and **Figure 2.2** show the location of the existing joss paper furnace cum APCE and its photo record respectively. There is no incense furnace in the Site for columbarium use. Eco-friendly offerings (i.e. electronic incense offering, flower and fruit) are encouraged instead. Hence, joss paper furnace is the only source of air pollution concern.

## 2.3 Area of Air Pollution Concern

2.3.1 The area of air pollution concern is defined within 500m from the Application Site boundary as shown in **Figure 2.3**.

## 2.4 Air Sensitive Receivers

2.4.1 Air sensitive receivers (ASRs) are those defined in the HKPSG and fall within the area of air pollution concern. These include existing, committed and planned uses, if any, at time of submission of this Application based on the best available information from the following sources:

1. Existing sensitive uses verified by site surveys;
2. Planned sensitive uses demarcated in the Approved Sha Tin OZP (No.: S/ST/34);
3. Known, committed sensitive uses by private or public sectors;
4. Planned sensitive uses as a result of approved planning applications; and
5. Planned sensitive uses arising from approved rezoning requests of plans or approved applications for amendment of plans.

2.4.2 After thorough desktop review and ground-truthing, the nearest representative ASRs are identified in **Table 2.1** and shown in **Figure 2.4**. Photo record of these ASRs are shown in **Figure 2.5**.

**Table 2.1 Representative ASRs during the Operation of Columbarium**

| ASR Label | Description | Existing/ Planned Uses | Nature of Use | Horizontal Distance from APCE Exhaust Outlet (m) |
|---|---|---|---|---|
| A01 | No.92 Fo Tan Village | Existing | Residential | 21 |
| A02 | No.1 Shek Shui Wan Village | Existing | Residential | 76 |
| A03 | Po Leung Kuk Siu Hon Sum Primary School | Existing | Educational Institution | 173 |
| A04 | Fung Yue House, Sui Wo Court | Existing | Residential | 188 |
| A05 | Residential Development at CDA(1) Site | Planned | Residential | 89 |
| A06 | Jockey Club Ti-i College | Existing | Educational Institution | 239 |
| A07 | Fo Tan Railway House | Existing | Commercial | 172 |

## 2.5 Air Pollution Control Measures

2.5.1 In order to control air pollution associated with flue gas emission from joss paper burning, Memorial Park Hong Kong is currently using an integrated joss paper furnace cum dry-type APCE to mitigate air quality impacts.

2.5.2 The dry-type "Bamako Burner™" (Model: FAST-D7) is currently used as the integrated joss paper furnace cum dry-type APCE (cartridge filters) to control the emission of smoke. It is installed at the open area next to the fishpond, where the exhaust outlet of final discharge of treated flue gas from the furnace is located at a place with good ventilation and at sufficient separation distance from any sensitive receivers in the vicinity. Its location and image are given in **Figure 2.1** and **Figure 2.2** respectively.

2.5.3 The treatment of flue gas involves the extraction of fine portion of fly ash and smoke emitted during the burning of joss paper through industrial grade, high-efficiency dry filters driven by an extraction fan. Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance.

2.5.4 The existing joss paper furnace cum APCE is targeted to handle flue gas emissions from burning up to 7 kg/hr of joss paper. A catalogue with design drawing is appended in **Appendix 2.1** for reference.

Arrangements for Burning of Paper Offerings

2.5.5 From safety considerations, the management of the Columbarium has dedicated trained staff to help visitors to burn offerings in the joss paper furnace in a controlled manner and feeding rate. Wrapping materials, especially plastic ones are to be removed before they are burnt in the furnace. A notice stating that the joss paper furnace must be operated by staff has been placed in front of the furnace to ensure proper control of the joss paper feeding rate. The photo record of the notice is shown in **Figure 2.2**.

2.5.6 In order to maintain the operation of joss paper furnace cum APCE, the Applicant should follow the operational and maintenance plan given below and the operation manual given in **Appendix 2.2**.

Operational Plan

2.5.7 To ensure proper use of joss paper furnace with APCE, Memorial Park Hong Kong committed to adopt the following operational and maintenance practices:

1. All joss paper burning is carried out by trained operator to ensure proper operation. Furnace is fenced by wire and turned off when not operating, to prevent visitors from burning joss paper without assistance of operator. **Figure 2.2** shows the photo record of locked furnace.
2. The operator would make sure the air pollution control equipment has been turned on and running normally.
3. Only paper-made offerings material can be burnt in the furnace. Other wrapping materials, e.g. plastic materials, would be removed before burning.
4. The operator would control the feeding rate of joss paper to the furnace not exceeding the designed capacity. In case visible emissions are observed at the flue gas discharge, the feeding rate should be reduced as appropriate. If the visible emissions persist, the operator will stop burning activities and call for maintenance.
5. The operator would clean the burning chamber regularly to clear away ash remains inside the burning chamber. The ash would be wetted sufficiently by water spraying during ash clearing process to prevent emission.

Maintenance Plan

2.5.8 Maintenance and repair would be carried out by manufacturer's competent personnel with sufficient training. All components would be inspected, cleaned and serviced regularly. The proposed maintenance plan is shown below:

**Table 2.2 Maintenance Plan for Joss Paper Furnace cum APCE**

| Description | Recommended Schedule |
|---|---|
| Clear the ash from joss paper burner<br>• Open the access door at the bottom of the joss paper burner<br>• Clear the ash from the joss paper burner by using shovel | Daily |
| Check the following items:<br>• The condition of treated flue gas discharge (i.e. the colour and the flow rate)<br>• Running current of blower<br>• Any abnormal noise or vibration during the operation<br>• Performance of back flow function | Monthly |

2.5.9 Eco-friendly offerings (i.e. electronic incense offering, flower and fruit) are encouraged to reduce the joss paper burning activities on-site.

2.5.10 Off-site joss paper burning would be considered by the Applicant from time to time should the need arises.

## 2.6 Conclusion

2.6.1 The existing Columbarium is undergoing a regularization process, first through this S12A planning application. During this period, the Applicant freezes selling of niches. Being an existing established use, the Columbarium does not need to be constructed nor does it require any expansion/ alteration works.

2.6.2 Given the use of dry-type joss paper furnace cum APCE employing the best available technology, and the sufficient separation distances with nearby air sensitive receivers,

the air quality impacts arising from the Columbarium operation should be well under control. With the implementation of air pollution control measures stated in **Section 2.5**, no adverse air quality impact is anticipated.

# 3. NOISE IMPACT ASSESSMENT

## 3.1 Introduction

3.1.1 This section evaluates and summarises the potential off-site noise impacts that could be caused by existing noise sources on-site during operation of the Columbarium and its related activities.

## 3.2 Relevant Legislation, Standards and Guidelines

Acceptable Noise Levels

3.2.1 Fixed noise sources impacting on existing uses are regulated under the Noise Control Ordinance ("NCO"), which requires that impacts shall comply with the Acceptable Noise Levels ("ANL") laid down in Table 2 of the Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites ("IND-TM").

3.2.2 In setting the ANL, reference has been made to the Area Sensitivity Rating ("ASR") in Table 1 of IND-TM (reproduced in **Table 3.1**) reflecting the nature of area where noise sensitive receivers ("NSRs") are situated.

**Table 3.1 Area Sensitivity Ratings (ASRs)**

| Type of Area Containing NSR | Degree to which NSR is affected by Influencing Factor | | |
|---|---|---|---|
| | Not Affected | Indirectly Affected | Directly Affected |
| (i) Rural area, including country parks or village type developments | A | B | B |
| (ii) Low density residential area consisting of low-rise or isolated high-rise developments | A | B | C |
| (iii) Urban area | B | C | C |
| (iv) Area other than those above | B | B | C |

**Source:** Table 1 of Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites.

3.2.3 Based upon the different ASRs, the ANLs are shown in **Table 3.2** below.

**Table 3.2 Acceptable Noise Levels (ANLs), dB(A)**

| Area Sensitivity Ratings in relevant Time Periods | ASR | | |
|---|---|---|---|
| | A | B | C |
| Day (0700 to 1900 hours) | 60 | 65 | 70 |
| Evening (1900 to 2300 hours) | | | |
| Night (2300 to 0700 hours) | 50 | 55 | 60 |

**Source:** Table 2 of Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites.

3.2.4 To plan for a better environment, HKPSG requires the operation noise at the façade of the nearest NSR to be 5 dB(A) below the respective ANL for the NSR, or in the case of the background being lower than the ANL by 5 dB(A) or more, should not be higher than the background.

3.2.5 As there is no evening/ night-time operation at the Columbarium, the noise impacts should meet ANL – 5 or not higher than the background during the daytime periods. The noise criteria involving existing fixed noise sources impacting on NSRs off-site are listed in **Table 3.4**.

## 3.3 Assessment Area

3.3.1 Assessment area for fixed noise sources impact is generally defined within 300m from the Site boundary as shown in **Figure 3.1**.

## 3.4 Noise Sensitive Receivers

3.4.1 Noise sensitive receivers ("NSRs") defined under the HKPSG, and fall within the assessment area are considered NSRs of concern. These include existing, committed, and planned uses, if any, at time of the submission of this Application based on the best available information including:

1. Existing sensitive uses verified by site surveys;
2. Planned sensitive uses demarcated in the Approved Sha Tin OZP (No.: S/ST/34);
3. Known, committed sensitive uses by private or public sectors;
4. Planned sensitive uses as a result of approved planning applications; and
5. Planned sensitive uses arising from approved rezoning requests of plans or approved applications for amendment of plans.

3.4.2 After thorough desktop review and ground-truthing, the nearest existing and planned sensitive uses are considered relevant and representative for the purpose of assessment.

3.4.3 **Figure 3.1** shows the first tier of representative NSRs selected in the assessment area by virtue of their being close to the Site. A description of these representative NSRs and their particulars are given in **Table 3.3** with their record photos given in **Figure 3.2**.

**Table 3.3 Representative NSRs Off-site for Assessment**

| NSR Label | Description | Existing/ Planned Uses | Nature of Use | Horizontal Distance from APCE (m) |
|---|---|---|---|---|
| N01 | No.92 Fo Tan Village | Existing | Residential | 21 |
| N02 | No.1 Shek Shui Wan Village | Existing | Residential | 82 |
| N03 | Po Leung Kuk Siu Hon Sum Primary School | Existing | Educational Institution | 178 |
| N04 | Fung Yue House, Sui Wo Court | Existing | Residential | 194 |
| N05 | Residential Development at CDA(1) Site | Planned | Residential | 88 |
| N06 | Yuk Wo Court | Existing | Residential | 211 |
| N07 | Jockey Club Ti-i College | Existing | Educational Institution | 238 |
| N08 | Tower 1, The Palazzo | Existing | Residential | 245 |

**Note:** The above NSRs rely on opened windows for ventilation.

## 3.5 Identification of Noise Sources

3.5.1 The existing joss paper furnace cum APCE is considered as the major noise source on site and is the focus in the current assessment. Other existing noise sources such as the split-type air conditioners installed on the roof are considered relatively minor.

3.5.2 Musical instruments and outdoor public address (PA) system will not be used during the religious activities. The Applicant has not received any noise complaints from its neighbours since its operation in 2008.

3.5.3 The location of major fixed noise source on site is shown in **Figure 3.3**.

## 3.6 Assessment Approach and Methodology

3.6.1 The assessment of noise impact arising from various fixed noise source(s) has been based on standard acoustic principles, and procedures given in the *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites* ("IND-TM") issued under the *NCO*.

3.6.2 Impacts due to individual noise source(s) have been calculated and logarithmically summed at the individual NSRs for calculation of the overall impacts:

$$PNL = \sum [SWL_i + C_{dist} + C_{impulse} + C_{tonality} + C_{barrier} + C_{facade}]$$

where

| | | |
|---|---|---|
| $PNL$ | = | Overall predicted noise level arising from individual source after various corrections |
| $SWL_i$ | = | Sound power level of individual noise source |
| $C_{dist}$ | = | Correction for distance attenuation |
| $C_{impulse}$ | = | Correction [+3 dB(A)] for impulsive noise in IND-TM, if applicable |
| $C_{tonality}$ | = | Correction [+6 dB(A)] for tonality as in IND-TM, if applicable |
| $C_{barrier}$ | = | Correction [-5 to -10 dB(A)] for barrier effects due to various architectural features/ topography/ obstacles/ purpose-built noise barrier/ parapet wall, if any |
| $C_{facade}$ | = | Correction [+3 dB(A)] for façade reflection at receiver |

3.6.3 The steps of calculations are outlined below:

- Identify the relevant noise source(s) on-site;
- Prepare an inventory of noise source(s) that will impact on the selected representative NSRs in the assessment area shown in **Figure 3.1**;
- Calculate the PNL due to various sources;
- Compare the PNL with the established noise criteria at any one of the representative NSR after adjustments for various applicable corrections; and
- Recommend, as necessary, the appropriate mitigation measures to address/ mitigate the noise impact to ensure no exceedance.

3.6.4 An in-situ noise measurement was conducted to determine the SWL of the existing joss paper furnace cum APCE. Details of the noise measurement are provided in **Appendix 3.1**.

3.6.5 Background noise measurement was also conducted to obtain the prevailing background noise level at the nearest NSR, NSR N01, within the operating hours of

the Application Site. The lowest background noise level measured in $L_{90}$ (1 hour) during the operating hours is adopted for the assessment.

## 3.7 Assessment Results

3.7.1 As N01 is the NSR closest to the Application Site, it is expected that it will be mostly affected and hence has been selected as the representative NSR for assessment. Without any mitigation, the PNL have been predicted as given in **Table 3.4** with details appended in **Appendix 3.1**.

**Table 3.4 Summary of Unmitigated Impacts on Representative NSRs**

| NSR Label | Description | Noise Criteria, $L_{eq}$ (30 min) (0700 to 1900) | Daytime (0700-1900), $L_{eq}$ (30 min), dB(A) |
|---|---|---|---|
| N01 | No.92 Fo Tan Village | 58.8[2] | 49.8 |

**Note:**
[1] The above NSRs rely on opened windows for ventilation.
[2] The lowest background noise level (in $L_{90}$ (1-hour)) was measured at N01 from 12:20 to 13:20.

3.7.2 Given full compliance with the established noise criteria for the daytime period at the nearest NSR N01, adverse noise impact from the fixed noise source is not envisaged. The noise impact would diminish for NSRs located further away. Noise mitigation would not be necessary.

## 3.8 Conclusion

3.8.1 The current assessment has revealed that the only major noise source of concern will be due to the integrated joss paper furnace cum dry-type APCE comprising extraction fans and dry filters.

3.8.2 As the predicted noise level ("PNL") does not exceed the established noise criteria for daytime operation, effective noise control on-site is envisaged.

# 4. WATER QUALITY IMPACT ASSESSMENT

## 4.1 Introduction

4.1.1 This section presents a water quality impact assessment for the operation of the existing columbarium and recommends mitigation measures where required.

## 4.2 Identification of Water Pollution Sources On-site

4.2.1 Major existing facilities that generate effluent include the following:

1. Toilets (Two for public and one for staff); and
2. Hand-washing basins (One in public toilet and one in staff toilet).

4.2.2 Water contained in all fish and turtle ponds on-site are self-circulated by a closed loop pumping system, and hence no effluent would be generated and discharged. Leaves and trash are sieved out regularly and no detergents are used for pond cleaning process. **Figure 4.1** shows the photo record of these facilities.

4.2.3 There is no open car park on-site. There are existing septic/ soakaway facilities on-site serving the toilets, which is located underneath the open area near the gate.

4.2.4 As no wet scrubber is involved in the operation of integrated joss paper furnace with APCE, there is no wastewater generation associated with its use.

4.2.5 Fertilisers would not be used during gardening, watering of plants would only be involved in the gardening process.

4.2.6 Potential water quality impact from site runoff during the operation of columbarium and its related activities is not anticipated. Wastewater generated from toilets and hand-washing basins is the key source of potential water pollution concern.

## 4.3 Sewerage Infrastructure

4.3.1 Wastewater from toilets are collected and treated in septic and soakaway facilities as shown in **Figure 4.2**. They are regularly de-sludged to maintain their optimum use. The approximate dimension of the septic tank is 2740mm x 2000mm x 3600mm (depth x width x length). Photo record of manhole covers is provided in **Figure 4.3**.

## 4.4 Drainage Layout Plan

4.4.1 A drainage layout plan has been drawn as shown in **Figure 4.4** to present the following key information in connection with this Application:

1. Location of the premises;
2. Main facilities that produce effluent;
3. Effluent discharge routes; and
4. Location of discharge points (i.e. soakaway pit).

## 4.5 Ancillary Facilities for Visitors to the Columbarium

4.5.1 Memorial Park Hong Kong does not have a kitchen. The toilets and hand-washing basins in the Site are intended for staff and visitors.

4.5.2 The toilets and hand-washing basins in the toilets are connected to the septic tank/ soakaway facilities as shown in **Figure 4.2**.

## 4.6 Operation Plan to Address Peak Effluent Flow

4.6.1 It is envisaged that upon full occupation of the niches, some 1,258 nos. of visitors per day would be an extreme upper estimate when all visitors were assumed to come on

the very same day during Ching Ming or Chung Yeung Festivals. From past experience/ observations, visitors usually stay for 30 minutes to an hour, and hence the toilet usage rate is not particularly high. Given the relatively short stay, the surge in sewage generation is not envisaged due to a high number of visitors.

4.6.2 Based on the number of toilets, basins, flow rate and daily use duration/pattern, the amount of effluent generation from all on-site facilities has been estimated at 4.7 $m^3$/day in **Appendix 4.1**. In other words, the existing septic tank/soakaway facilities have sufficient capacity to cope with peak flows in peak seasons.

4.6.3 Licensed sewage collector would be engaged at least once every 6 months, or on as-needed basis, to remove some of the sewage collected in the septic tank to relieve loading before and/or during the peak seasons. As long as the septic tank is not overloaded, the integral soakaway system would have ample capacity to cater for the treated effluent coming from the septic tank as usual.

## 4.7 Conclusion

4.7.1 Effluents generated on site are collected and treated in septic and soakaway facilities within the Application Site. There is no potential water quality impact from site runoff during the operation of columbarium and its related activities.

4.7.2 Based on the sewage estimation, the existing septic tank/soakaway facilities have sufficient capacity to cope with peak flows in peak seasons.

# 5. WASTE MANAGEMENT

## 5.1 Introduction

5.1.1 This section identifies the possible types of waste arising from the daily operation of the Columbarium.

## 5.2 Relevant Legislation, Standards and Guidelines

5.2.1 The following legislation shall be followed during the handling, treatment and disposal of waste:

- Waste Disposal Ordinance (Cap 354);
- Land (Miscellaneous Provisions) Ordinance (Cap 28); and
- Public Health and Municipal Service Ordinance (Cap 132).

## 5.3 Waste Generation during Operation of Columbarium

Non-combustible Residues

5.3.1 Given the scale of the columbarium operation, small amount of non-combustible residues (i.e. furnace bottom ash) generated from the joss paper burning activities would be collected in polyethene bags and disposed of to landfill together with other general refuse on a regular basis.

General Refuse

5.3.2 An insignificant amount of general refuse generated by the visitors and staff during daily operation of columbarium is anticipated. The amount of general refuse is expected to be higher during festivals.

5.3.3 The general refuse shall be stored in covered waste skips and removed from the Application Site on daily basis to minimise odour, pest and litter impacts. Burning of refuse shall be strictly prohibited.

5.3.4 Waste generated in office could be minimised by segregating and collecting recyclable waste materials such as aluminium cans, plastic bottles, packaging materials and paper for recycling.

## 5.4 Conclusion

5.4.1 With the implementation of appropriate waste management practices, potential environmental impacts arising from the handling, storage and disposal of non-combustible residues and general refuse are not anticipated from the daily operation of columbarium.

# 6. LAND CONTAMINATION REVIEW

## 6.1 Introduction

6.1.1 This section evaluates and assesses the potential land contamination issues due to previous land uses and the existing operation, which could cause impacts on the proposed development.

## 6.2 Environmental Legislation and Guidelines

6.2.1 The following guidelines published by EPD have been followed:

- Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management (GM), dated December 2007;
- Guidance Note for Contaminated Land Assessment and Remediation (GN), dated 15 August 2007; and
- Practice Guide for Investigation and Remediation of Contaminated Land (PG), dated August 2011.

## 6.3 Currently Available Information

Land Uses

6.3.1 The Application Site is currently occupied for columbarium use. In order to identify any past land uses which may have the potential to cause land contamination, the development history of the Application Site has been reviewed with the aid of selected historical aerial photos between 1945 and present (2020).

6.3.2 According to the available historical aerial photos, the Application Site was occupied with village house since 1945 and the land use of the Application Site has not been changed.

6.3.3 **Table 6.1** below presents the land use summary of the Application Site. The aerial photos of Years 1945, 1963, 1978, 1990, 2003, 2015 and 2020 are attached in **Appendix 6.1**.

**Table 6.1 Land Use Summary of the Application Site**

| Period / Year | Land Use / Description | Owner or Occupier | Sources of Information | Off-Site Property Affected? |
|---|---|---|---|---|
| 2006 and before | The Application Site was occupied by village house. | Hing Lung Buddhist Hall (興隆佛堂) was one of the previous owner/occupier | Aerial photographs from the Lands Department and information provided by the Applicant. | No. |
| 2006 to 2020 | The Application Site was occupied by village house for columbarium use. | Memorial Park Hong Kong | Aerial photographs from the Lands Department and information provided by the Applicant. | No. |

Site Inspection and Observation

6.3.4 The Consultant has visited the Application Site on 2 March 2021. Photo records of the Application Site taken during the site visit are presented in **Appendix 6.2**.

6.3.5 Upon the site visit on 2 March 2021, the Application Site was observed to be consistent with the abovementioned information which is currently occupied by village house for columbarium use. No aboveground/underground oil storage tank, chemicals and dangerous goods observed to be stored on site.

6.3.6 A Site Walkover Checklist has been completed with the Applicant as required in the Practice Guide and attached in **Appendix 6.3**.

Information from Government Departments

6.3.7 Apart from the information reviewed, the following departments of the Government of HKSAR have been enquired on the latest update on the availability of land use status and records of land contamination and/or spillage for the Application Site. The summary of correspondence is presented in **Table 6.2** below. Copy of the letters which the Consultant sent to various departments of the Government of HKSAR and relevant replies from various departments of the Government of HKSAR are included in **Appendix 6.4** for reference.

**Table 6.2 Enquiries and Responses on Land Contamination Related Records in the Application Site**

| Consultant's Letter Ref. | Department | Response Letter Ref. | Response Date | Summary |
|---|---|---|---|---|
| MPHKLPCOEA00_0_0005L.21 | Fire Services Department | (20) in FSD GR 6-5/4 R Pt. 32 | 3 March 2021 | ➢ Neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found at the Application Site. |
| MPHKLPCOEA00_0_0008L.21 | Explosive Ordinance Disposal Bureau, Hong Kong Police Force | (16) in CP OPS EOD 6-20/1 Pt. 5 | 22 February 2021 | ➢ The office has not found any record and location of explosive storage, as well as explosive spillage reports for the Application Site. |
| MPHKLPCOEA00_0_0006L.21 | Lands Department | (27) in LD DLO/ST 373/ZLT/75 Pt. 2 | 2 March 2021 | ➢ The Application Site is occupied for columbarium use. |

6.3.8 The Consultant reviewed the registry of chemical waste producers maintained at the Territory Control Office of EPD in February 2021. With reference to registry records, there was no registered chemical waste producer within the Application Site.

6.3.1 The Consultant visited the Building Records Access and Viewing Online (BRAVO) of Buildings Department (BD) over the internet to obtain records for completed private building. There is neither records of building, structural, drainage, alternation & additions, site formation, minor works nor existing building available for the Application Site. The captured screen of BRAVO is provided in **Appendix 6.5** for reference.

## 6.4 Discussion

6.4.1 A land contamination review has been conducted for the Application Site. Background information including selected aerial photos from Lands Department were reviewed and site survey was conducted to identify the potential land contamination in the Application Site.

6.4.2 With reference to the aerial photos obtained from Lands Department, the Application Site was occupied with village house since 1945 and the land use of the Application Site has not been changed.

6.4.3 Moreover, after reviewing the available information, the Application Site would not have involved storage and handling of chemicals, oils and/or hazardous waste, etc., which are considered as contaminative activities and facilities. In addition, from the site inspection, there was no aboveground/underground oil storage tank, chemicals and dangerous goods observed to be stored on site. Therefore, the Application Site are not considered to have any potential land contamination issues.

## 6.5 Conclusion

6.5.1 Based on the findings of the site appraisal on the historical and current land uses and site visit of the assessment area, there is no potential land contamination issues identified within the Application Site.

# 7. CONCLUSION

## 7.1 General

7.1.1 The existing Columbarium is undergoing a regularization process, first through this S12A planning application. During this period, the Applicant freezes selling of niches. Being an existing established use, the Columbarium does not need to be constructed nor does it require any expansion/ alteration works.

7.1.2 According to various assessments conducted, it is anticipated that no significant adverse impacts would be induced by the operation of columbarium, in terms of air quality, noise, water quality, waste management and land contamination.

## 7.2 Air Quality Impact

7.2.1 Given the use of dry-type joss paper furnace cum APCE employing the best available technology, and the sufficient separation distances with nearby air sensitive receivers, the mitigated air quality impacts should be well under control. Adverse air quality impact is not envisaged.

## 7.3 Noise Impact

7.3.1 The current assessment has revealed that the only major noise source of concern will be due to the integrated joss paper furnace cum dry-type APCE comprising extraction fans and dry filters. As the predicted noise level ("PNL") does not exceed the established noise criteria for daytime operation, adverse noise impact is not is envisaged.

## 7.4 Water Quality Impact

7.4.1 Effluents generated on site are collected and treated in septic and soakaway facilities within the Application Site. Based on the sewage estimation, the existing septic tank/soakaway facilities have sufficient capacity to cope with peak flows in peak seasons.

7.4.2 Based on the site operation, potential water quality impact from site runoff during the operation of columbarium and its related activities is not anticipated.

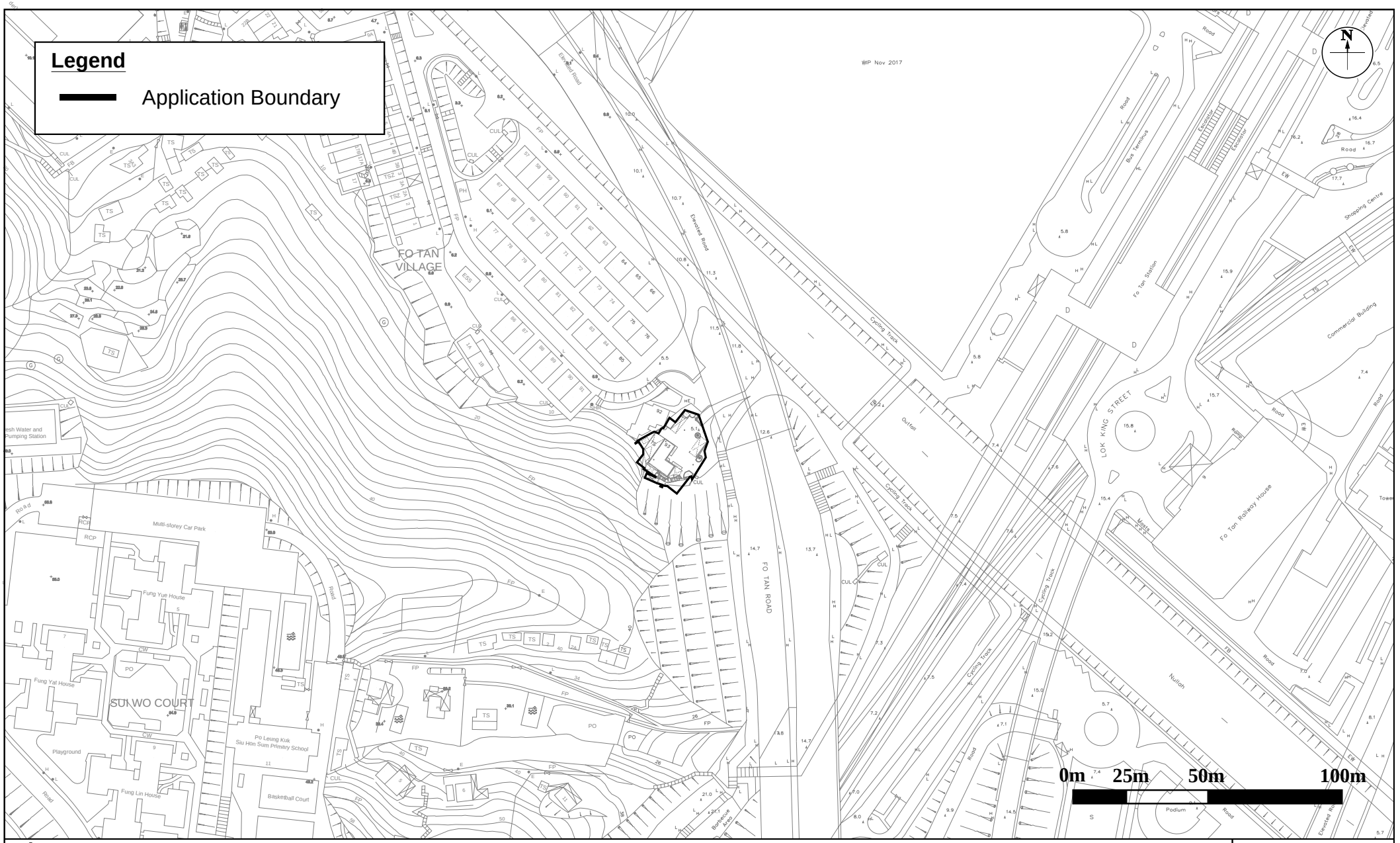
## 7.5 Waste Management

7.5.1 With the implementation of appropriate waste management practices, potential environmental impacts arising from the handling, storage and disposal of non-combustible residues and general refuse are not anticipated from the daily operation of columbarium.

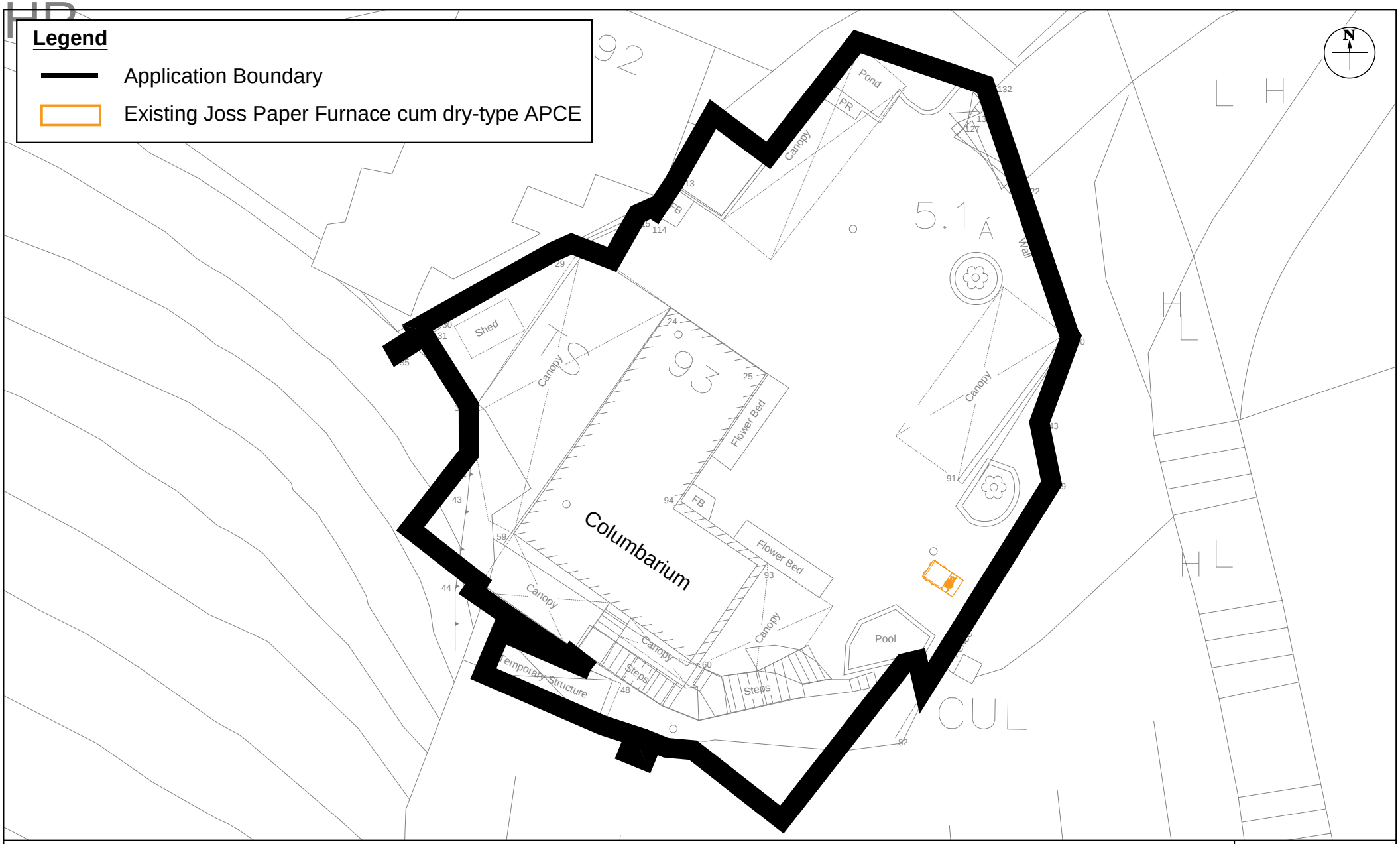
## 7.6 Land Contamination Review

7.6.1 Based on the findings of the site appraisal on the historical and current land uses and site visit of the assessment area, there is no potential land contamination issues identified within the Application Site.

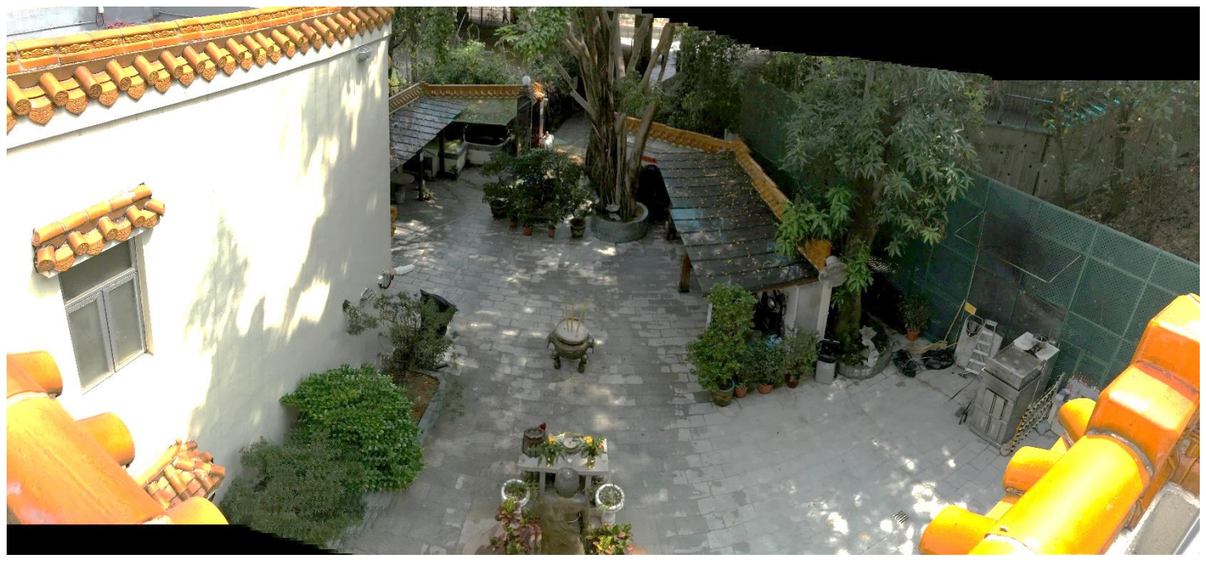
**Figures**




| | |
|---|---|
| **Figure:** 1.1 | RAMBOLL |
| **Title:** Site Location and the Environ | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | | |
|---|---|---|
| **Figure:** | 1.2 | RAMBOLL |
| **Title:** | Master Layout Plan (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong,<br>No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |



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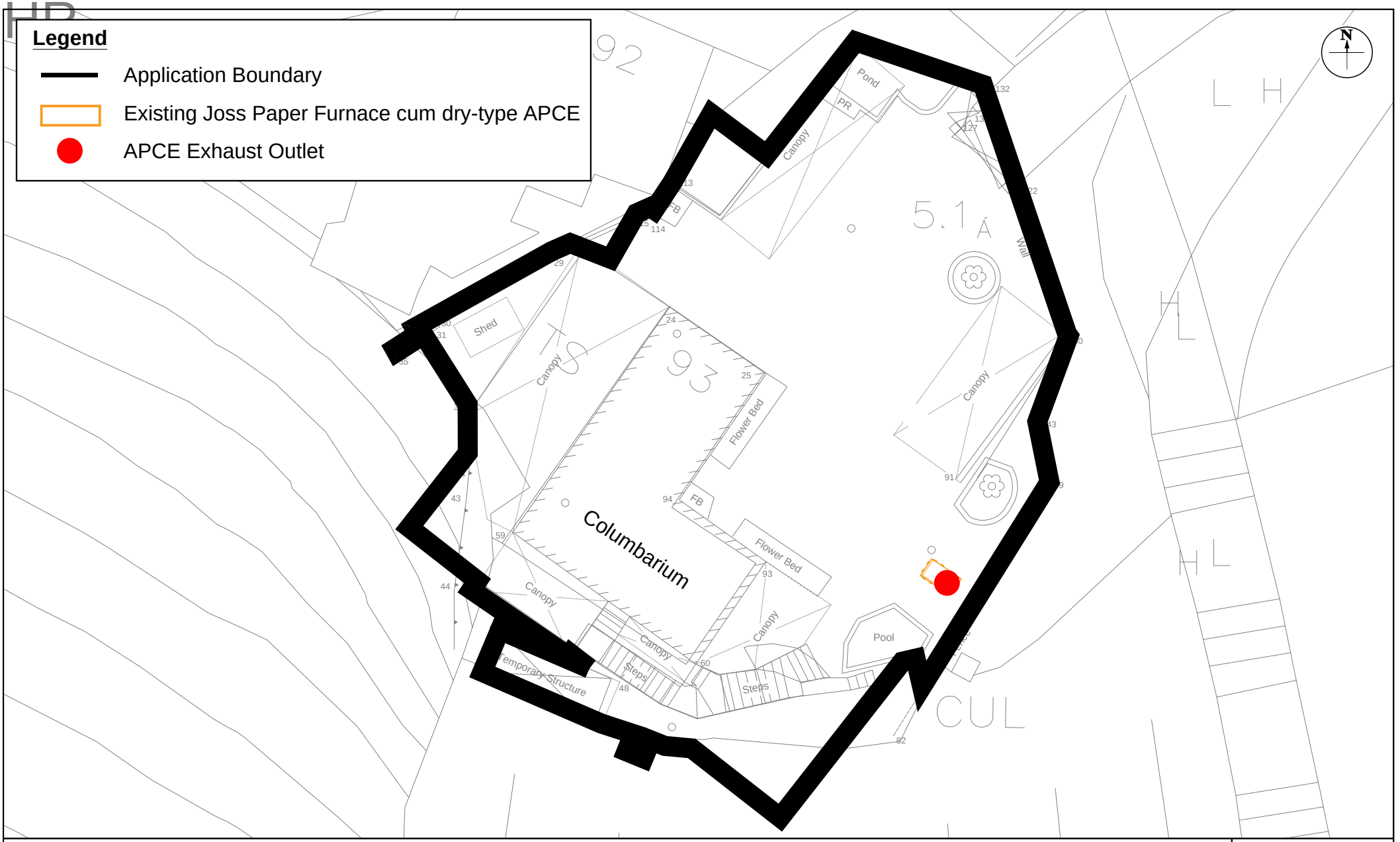
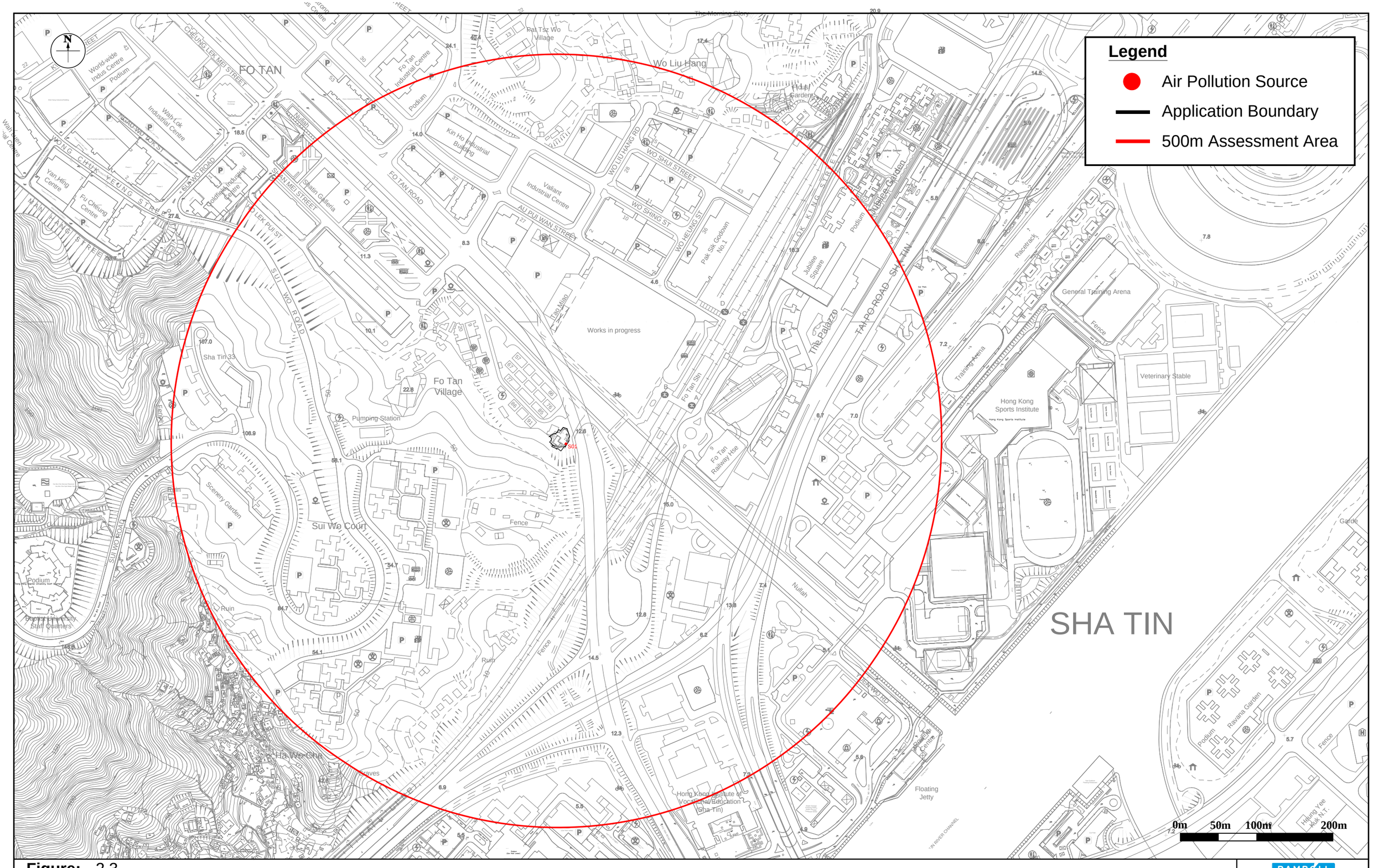
|---|---|
| **Figure:** 1.3 | RAMBOLL |
| **Title:** An Outlook of Memorial Park Hong Kong | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | |
|---|---|
| **Figure:** 2.1 | RAMBOLL |
| **Title:** Location of Air Pollution Sources (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

**Existing Joss Paper Furnace cum APCE**

| | | | |
|---|---|---|---|
| **Figure:** | 2.2 | RAMBOLL | |
| **Title:** | Image of Existing Joss Paper Furnace cum Dry-type Air Pollution Control Equipment | Drawn by: | RW |
| | | Checked by: | KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: | 1.0 |
| | | Date: | Mar 2021 |

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|---|---|
| **Figure:** 2.3 | RAMBOLL |
| **Title:** Area of Air Pollution Concern | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

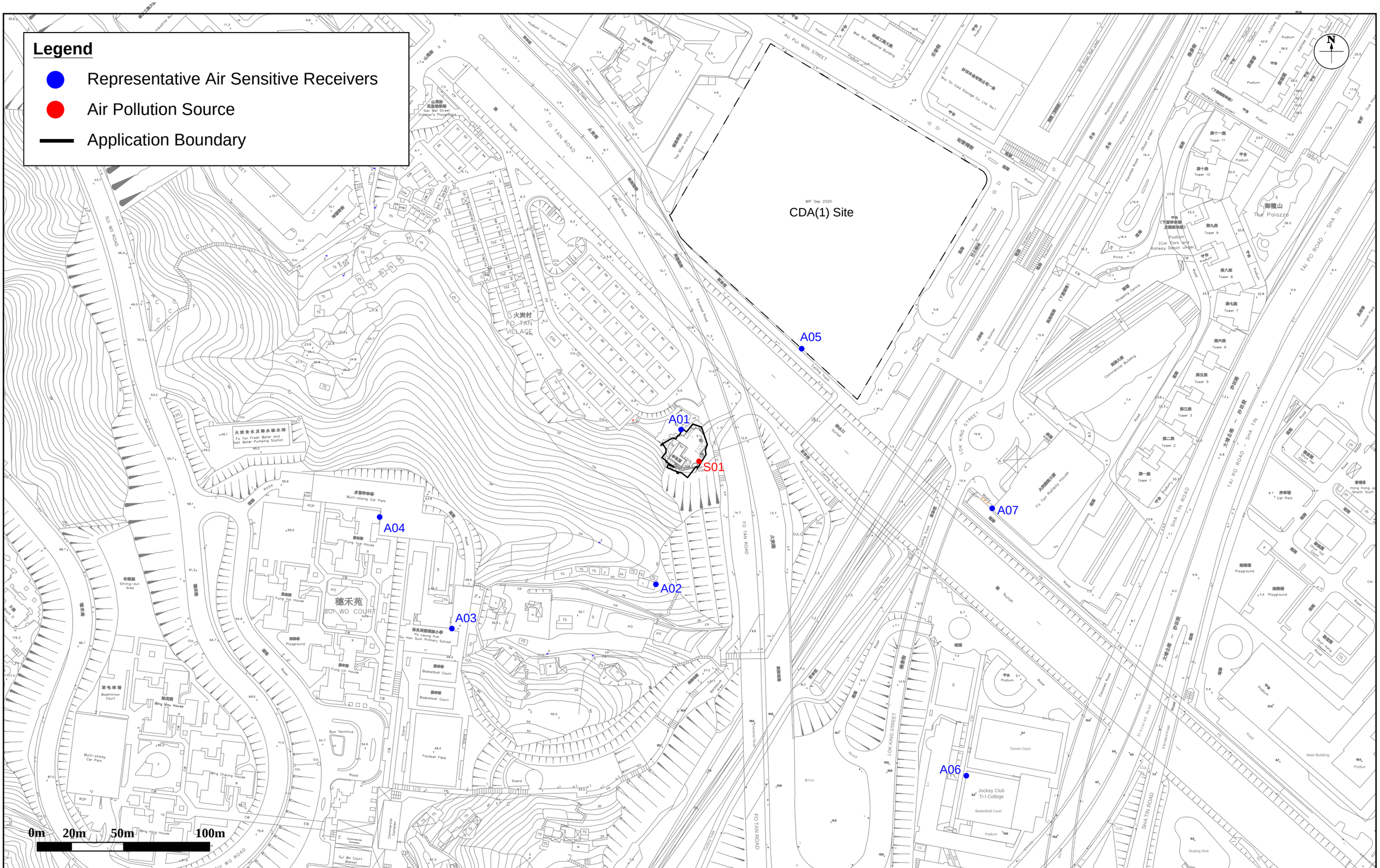



**Figure:** 2.4

**Title:** Location of Major Air Pollution Sources and Air Sensitive Receivers

**Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

| | |
|---|---|
| Drawn by: | RW |
| Checked by: | KY |
| Rev.: | 1.0 |
| Date: | Mar 2021 |

6

**A01: No.92 Fo Tan Village**

**A02: No.1 Shek Shui Wan Village**

**A03: Po Leung Kuk Siu Hon Sum Primary School**

**A04: Fung Yue House, Sui Wo Court**

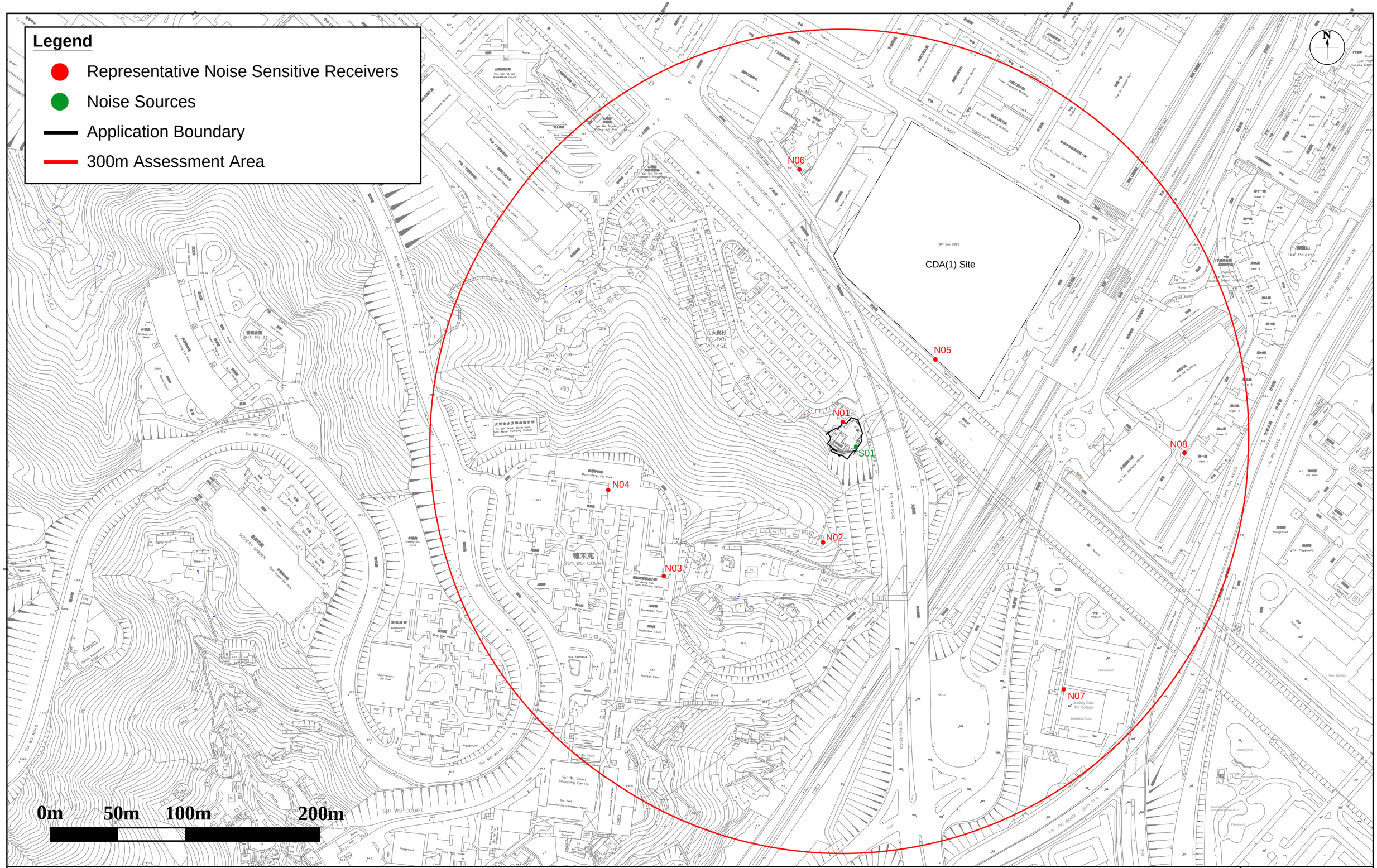
| | |
|---|---|
| **Figure:** 2.5 | RAMBOLL |
| **Title:** Photo Record of Representative Air Sensitive Receivers | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

**A05: Residential Development at CDA(1) Site**

**A06: Jockey Club Ti-i College**

**A07: Fo Tan Railway House**

| | |
|---|---|
| **Figure:** 2.5 | RAMBOLL |
| **Title:** Photo Record of Representative Air Sensitive Receivers | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |




| | | |
|---|---|---|
| **Figure:** | 3.1 | RAMBOLL |
| **Title:** | Assessment Area for Noise Impact and Representative NSRs Off-site | Drawn by: RW |
| | | Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | | Date: Mar 2021 |

**N01: No.92 Fo Tan Village**

**N02: No.1 Shek Shui Wan Village**

**N03: Po Leung Kuk Siu Hon Sum Primary School**

**N04: Fung Yue House, Sui Wo Court**

| | |
|---|---|
| **Figure:** 3.2 | RAMBOLL |
| **Title:** Photo Records of Representative NSRs | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

6

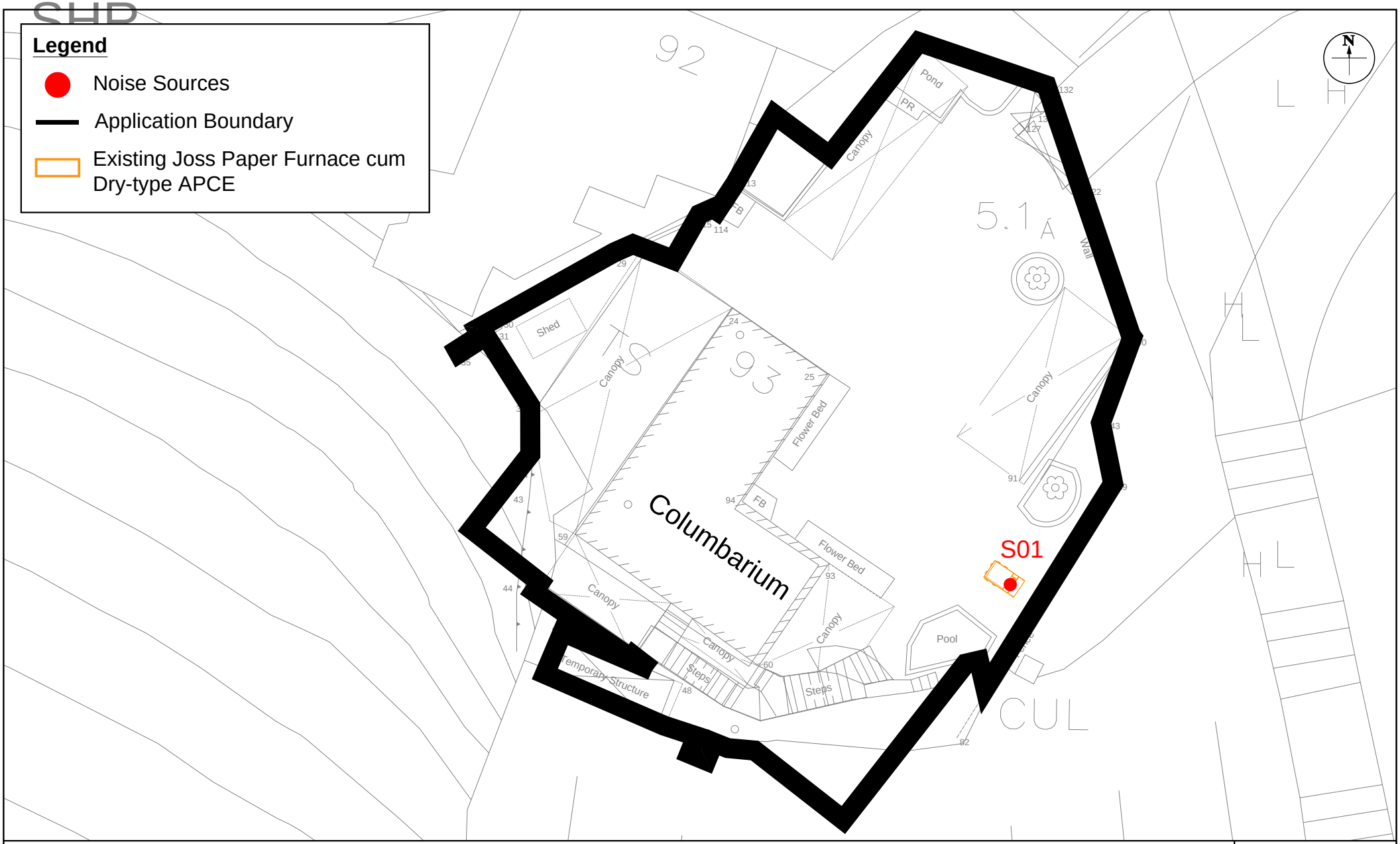
**N05: Residential Development at CDA(1) Site**

**N06: Yuk Wo Court**

**N07: Jockey Club Ti-i College**

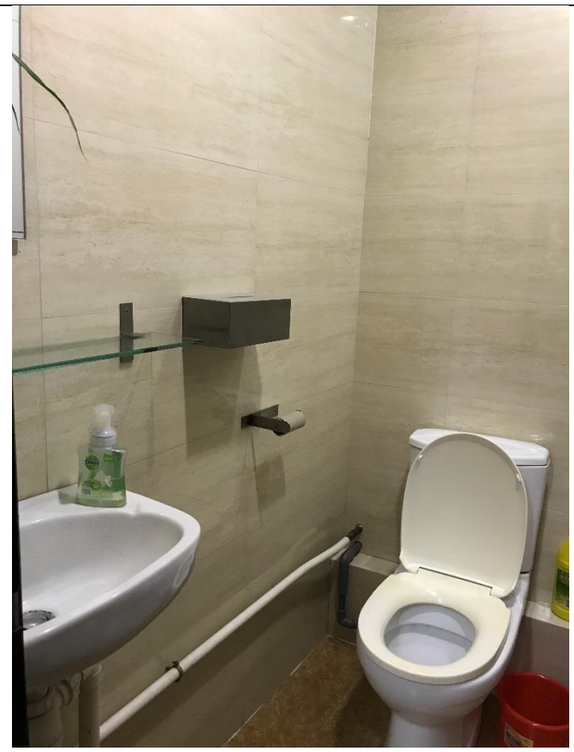
**N08: Tower 1, The Palazzo**

| | |
|---|---|
| **Figure:** 3.2 | RAMBOLL |
| **Title:** Photo Records of Representative NSRs | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | | |
|---|---|---|
| **Figure:** | 3.3 | RAMBOLL |
| **Title:** | Location of Major Fixed Noise Sources (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

Public Toilet: 2 nos. of water closets and 1 nos. of hand-washing basin



Staff Toilet: 1 nos. of water closet and 1 nos. of hand-washing basin

1 nos. of Fish Pond near the stairs

2 nos. of Fish and Turtle Ponds near the gate

**Figure:** 4.1

**Title:** Photo Record of Toilets, Fish and Turtle Ponds

**Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T.

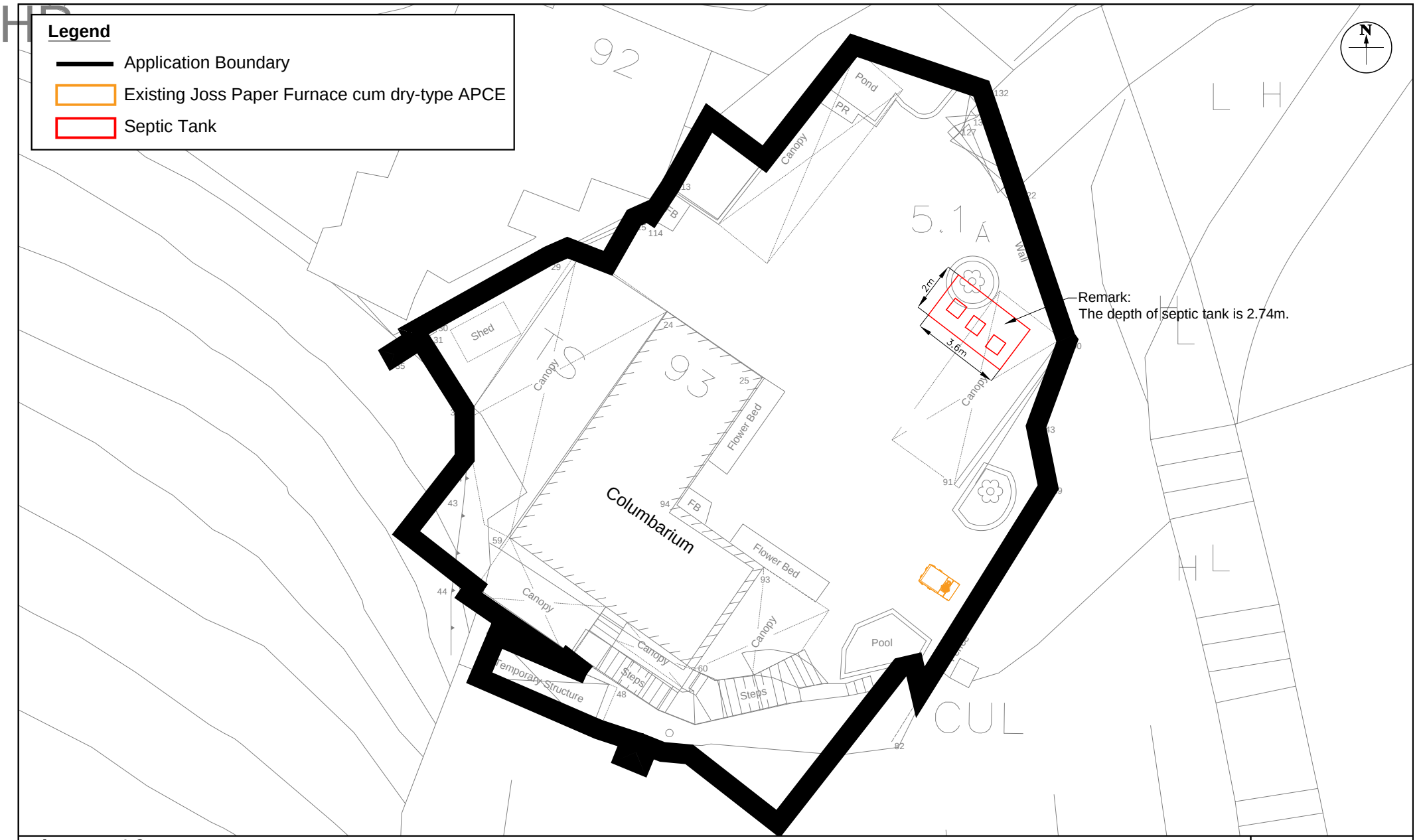
RAMBOLL

Drawn by: RW

Checked by: KY

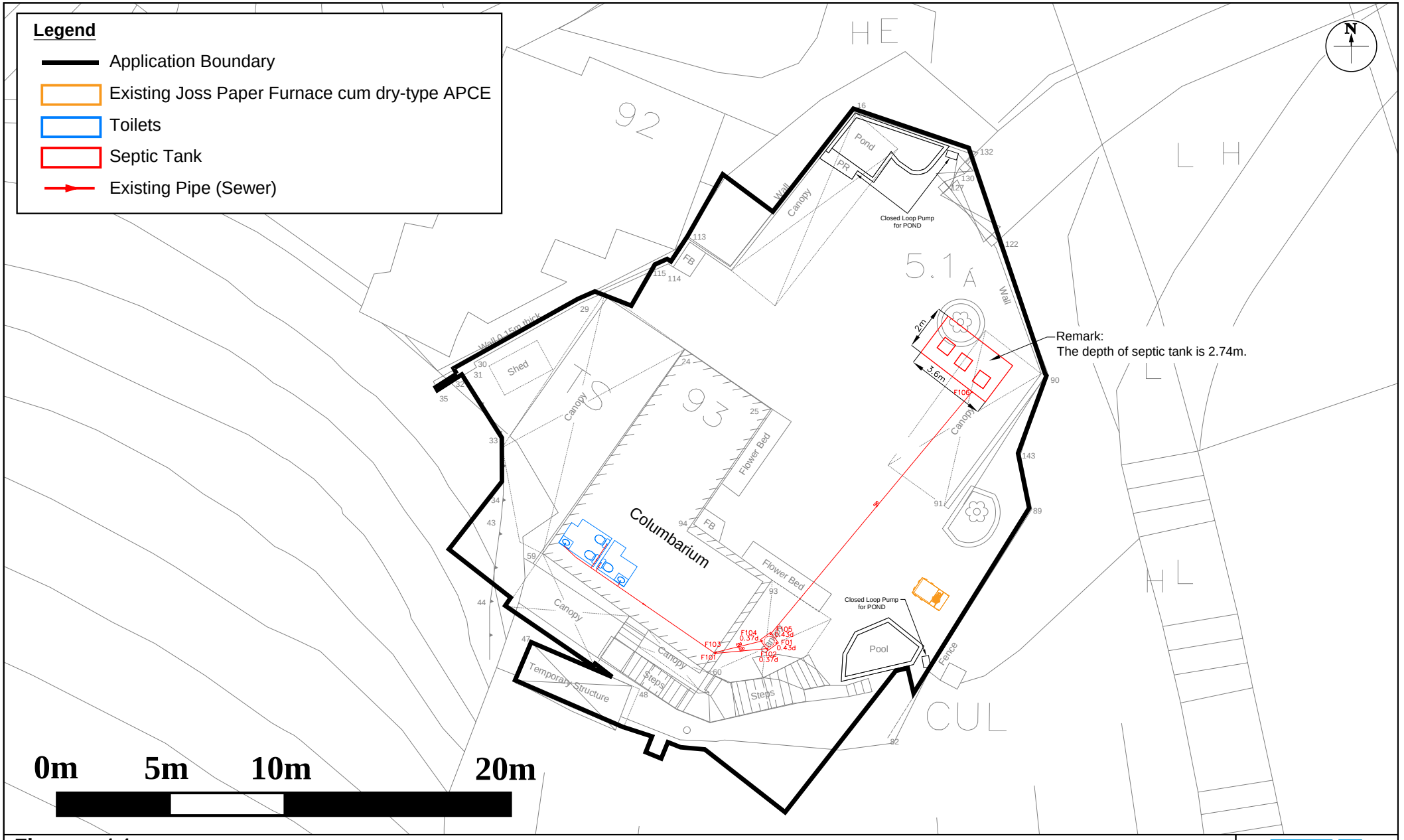
Rev.: 1.0

Date: Mar 2021




| | |
|---|---|
| **Figure:** 4.2 | RAMBOLL |
| **Title:** Location of Existing Septic/ Soakaway Facilities (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

| | | |
|---|---|---|
| **Figure:** | 4.3 | RAMBOLL |
| **Title:** | Manhole Covers of Existing Septic/ Soakaway Facilities | Drawn by: RW |
| | | Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | | Date: Mar 2021 |




| | |
|---|---|
| **Figure:** 4.4 | RAMBOLL |
| **Title:** Drainage Layout Plan | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

**Appendix 2.1**

**Catalogue and Design Drawing of the Joss Paper Furnace fitted with Air Pollution Control Equipment**

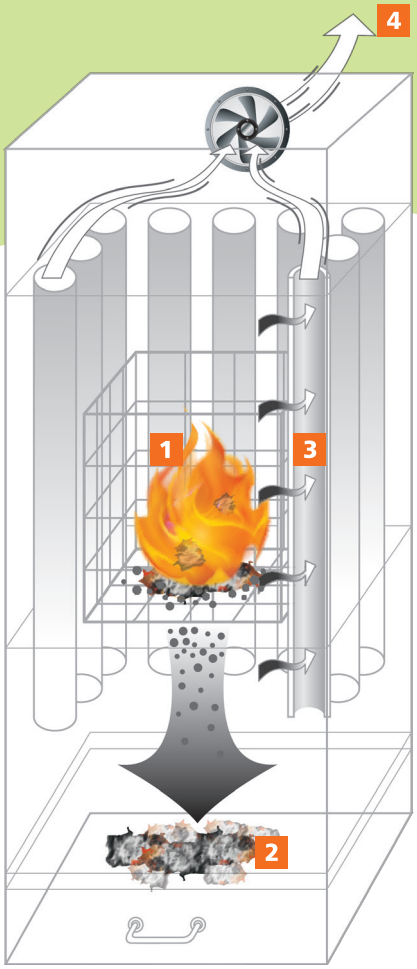
Bamako Burner™
寶潔科　綠化寶系統™

# 乾式「寶潔科　綠化寶系統™」零黑煙排放

## Dry-Type "Bamako Burner™" Zero Black Smoke Emission

升級流動版
Upgraded mobile version

- **革命性除煙塵技術，除煙塵效率 > 90%**
  Revolutionary smoke and fly ash removal technology with > 90% removal rate
- **締造寧靜環境**
  Tranquil environment created
- **適用於各道堂、屋苑、廟宇、骨灰龕場、醫院殮房等**
  Excellent for Taoist Institution, Estates, Temples, Columbaria, Mortuaries, and etc.




## 運作原理 System Schematic

1. 從燃燒爐產生的黑煙及飛灰被抽入系統；
   Black smoke and fly ash from the combustion chamber will be extracted to the treatment system;
2. 較大灰塵會被爐灰盤收集；
   Large smoke particulate matter will be collected by ash tray;
3. 最後，高效乾式濾芯再過濾煙氣中剩下較微細的灰塵；
   The remaining fine ash will be filtered by high efficiency dry filters ;
4. 排出已淨化的空氣。
   The smokeless clean air will be discharged at the air outlet diffuser.

## 產品特點 Product Features

- ✔ 使用工業級乾式濾芯，達致零黑煙排放
- ✔ 高效除煙除塵，可處理2.5μm(PM2.5)微粒
- ✔ 全自動清潔系統
- ✔ 一鍵操作
- ✔ 2 年保養

- ✔ Zero black smoke emission achieved through adoption of industrial grade dry type filter and strictest process
- ✔ Highly efficient treatment system; particulates removed up to 2.5μm (PM2.5)
- ✔ Automatic cleaning system
- ✔ Intuitive single button control
- ✔ Warranty : 2 years

## 產品規格 Product Specifications

| 型號 Model | FAST-D7 | FAST-D20 |
|---|---|---|
| 化寶量 (公斤/小時)<br>Joss Paper Burning Capacity (kg/hr) | 7 | 20 |
| 外形尺寸 (闊x深x高)(毫米)<br>Dimension (W x D x H) (mm) | 800 x 1439 x 1825 | 1950 x 1260 x 2290 |
| 燃燒爐爐口尺寸 (闊x高)(毫米)<br>Opening Dimension (W x H) (mm) | 300 x 370 | 500 x 600 |
| 燃燒倉內部尺寸 (闊x深x高)(毫米)<br>Interior Dimension (W x D x H) (mm) | 400 x 600 x 618 | 600 x 630 x 830 |
| 風量<br>Air Flow Rate | 0.1m³/s | 0.25m³/s |
| 總重量 (噸)<br>Total Weight (ton) | 0.35 | 1.8 |
| 電功率 (千瓦)<br>Rated Power (kW) | 1 | 3.3 |
| 輸入電壓<br>Input Voltage | 220V/1ph/50Hz | |
| 煙塵排放濃度<br>Particulates Matter | 少於 Below 30mg/m³<br>(最佳可達 Optimum result < 5mg/m³) | |
| 除煙塵效率<br>Particulates Matter Removal Efficiency | 高於 Above 90% | |
| 煙氣排放黑度<br>Darkness of Smoke | 低於林格曼黑度1級 (無黑煙)<br>Below Grade 1 of Ringelmann Smoke Scale<br>(No black smoke) | |

## 一站式服務 One-stop Service

盈電環保科技有限公司能為你提供一站式的服務。

1. 實地評估及系統設計
2. 供應及安裝
3. 保養及維修

REC Green Technologies Company Limited provides one-stop service for our clients including:

1. On-site Inspection & System Design
2. Supply & Installation
3. Maintenance Service

資料如有更改，恕不另行通知。
Information is subject to change without prior notice.

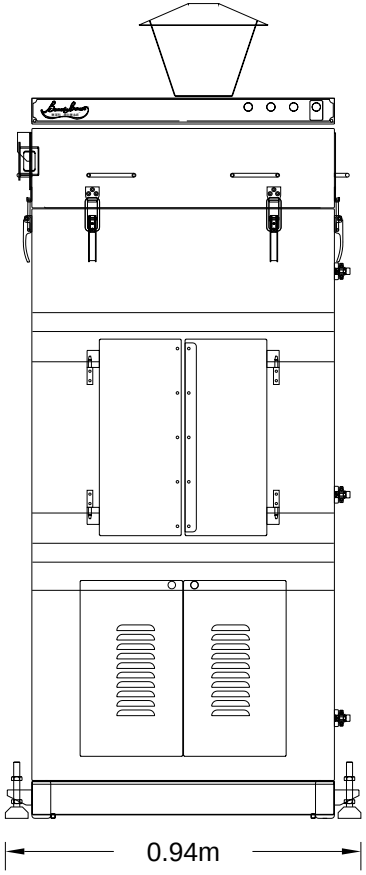
REC GREEN Technologies Co., Ltd.
A wholly-owned subsidiary of Yau Lee Holdings Limited


如欲查詢更多「寶潔科 綠化寶系統™」的資訊，歡迎與盈電環保科技有限公司聯絡。
For more information of Bamako Burner™, please contact REC Green Technologies Co., Ltd. via any of the below channels.

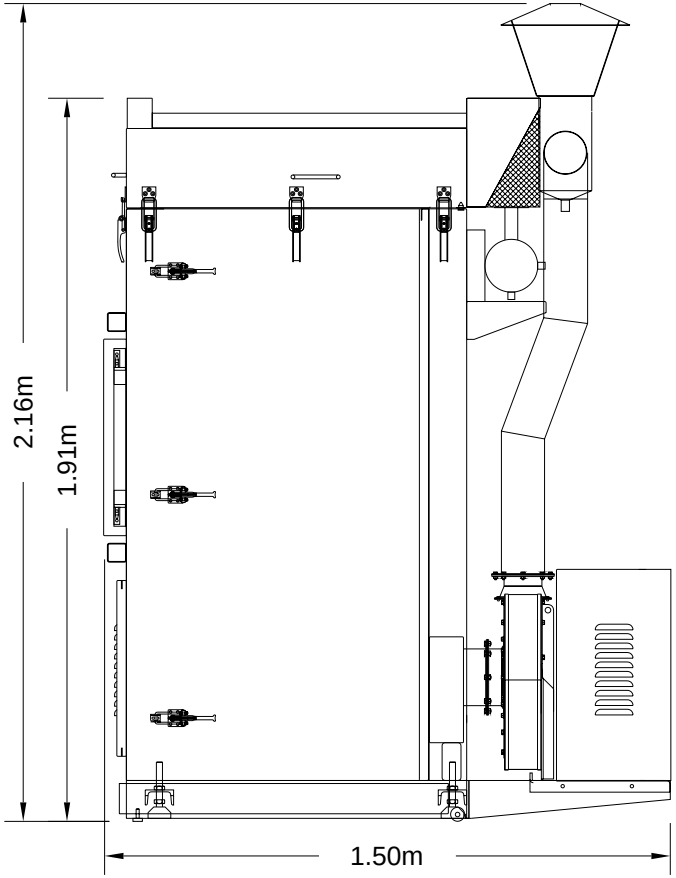
**電話 Tel:** (852) 2619-8817 | **傳真 Fax:** (852) 2481-2870 | **電郵 E-mail:** rgt@rec-eng.com | **網址 Website:** www.rec-gt.com

**地址** ：香港新界葵涌青山道585-609號嘉民葵涌物流中心15樓A-D室
**Address:** Units A-D, 15/F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, N.T., Hong Kong

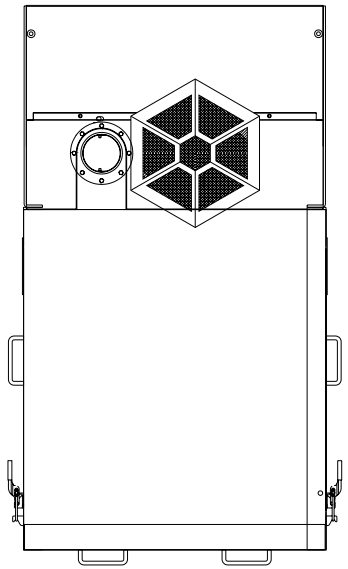

Bamako version D3 06/2016




FRONT VIEW




SIDE VIEW



TOP VIEW

# BAMAKO BURNER MODEL: FAST-D7

| | | |
|---|---|---|
| **Appendix:** | 2.1 | RAMBOLL |
| **Title:** | Design Drawings of the Joss Paper Furnace fitted with Air Pollution Control Equipment (Scale of 1:20 on A4) | Drawn by: RW<br>Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

**Appendix 2.2**

**Operation Manual of Dry-Type "Bamako Burner™" (Model: FAST-D7)**

盈電環保科技有限公司
REC Green Technologies Co., Ltd.
(A wholly-owned subsidiary of Yau Lee Holdings Limited)

寶潔科　綠化寶系統™

# Dry Type Bamako Burner ™
# Remove Smoke and Ash, Heat Absorption, Full-Featured Burner System

## MODEL：FAST-D7

## User's Guide

**Contents**


1. Introduction
2. Operation
3. Technical Specifications
4. Daily Notification
5. Maintenance
6. Troubleshooting



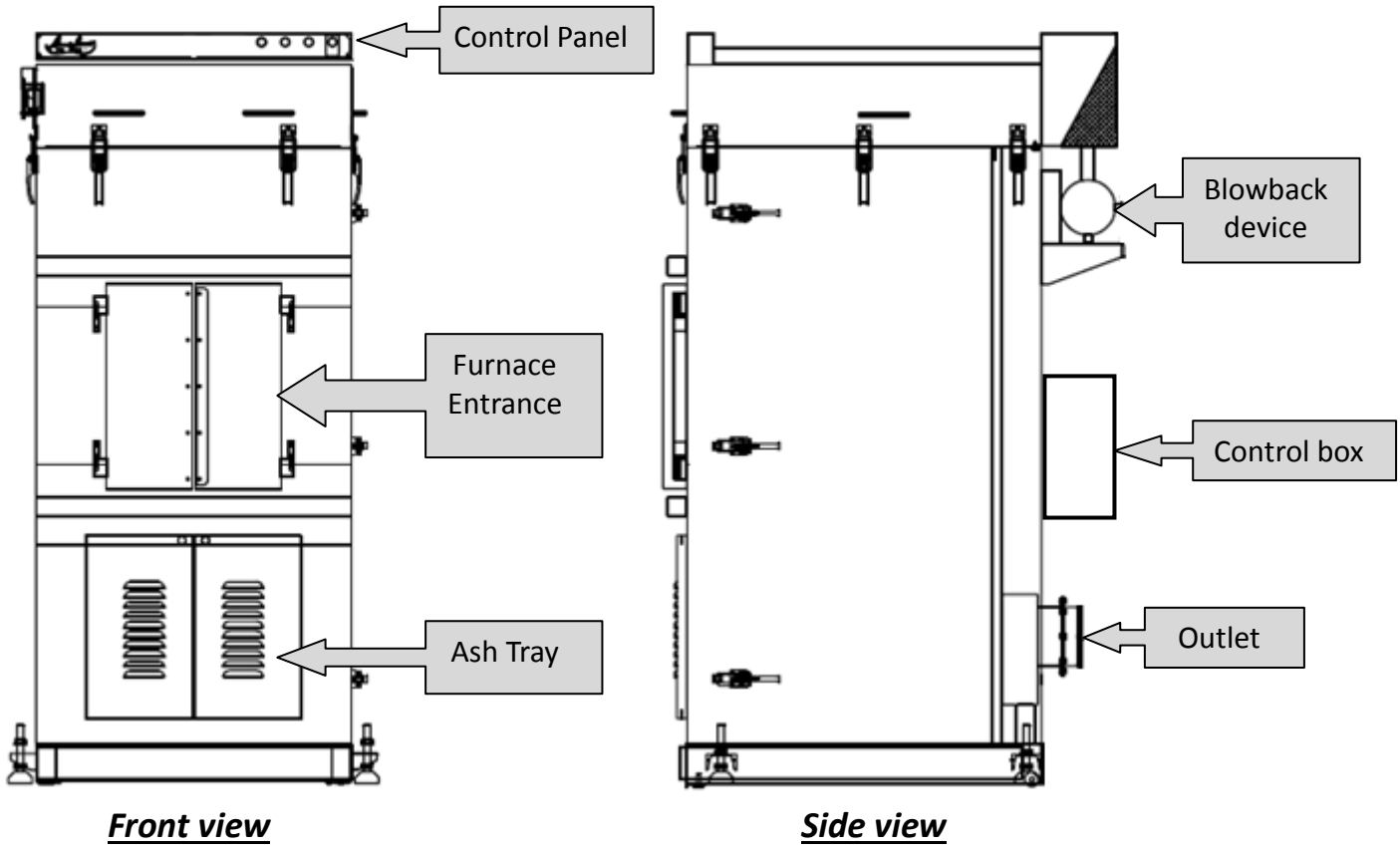
Customer Service Hotline：852-8100-8083

E-mail：rgt@rec-eng.com

Address: Units A-D, 15F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, New Territories, Hong Kong

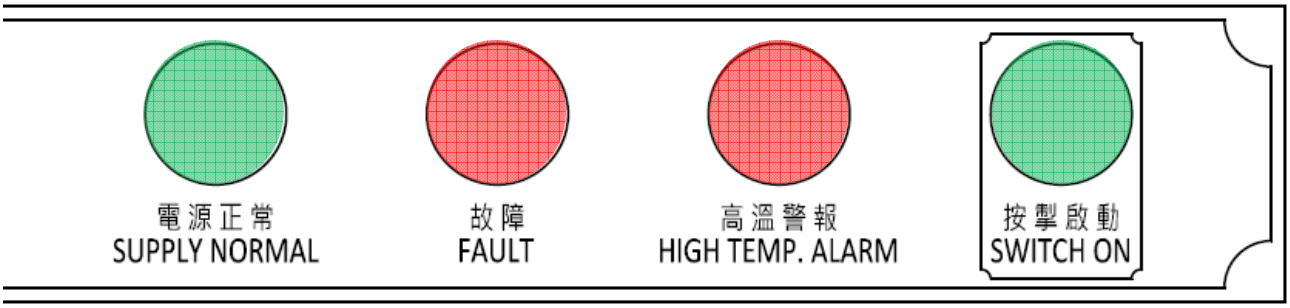
# 1. Introduction

## 1.1. Components




***Front view*** ***Side view***

## 1.2. Control Panel



## 2. Operation

2.1. Operation Instructions

- Press "start" button, system will automatically turn on.
- Open the door, light and put joss paper into the furnace.
- Press "start" button for 5 seconds, the system will be turned off.
- To restart the system, please press the "Start" button again.
- Caution: Do not burn plastic or other substances, otherwise it will block the filter.

2.2. Blowback device

During operation, the system will clean the filter automatically (4 minutes per one) until the system stops. When turn on the system, it will perform a blowback and the “start” button will flash for 4 minutes, and perform the second blowback, which is a cycle of automatic cleaning, "start" button will be non-flash, until the next blowback. Blowback which generates opposite flow will operate. This may raises a small amount of dust.

2.3. High temperature alarm

When temperature is higher than the setting value (200 °C and 300 °C) , an alarm will raise when the temperature reaches 200°C. When the temperature reaches 300°C, the "High Temperature Alarm" will light up. Alarm siren will be turned on. For turn off the alarm siren, users can press the "High Temperature Alarm" once. During high temperature alarm occurs, the system will operate continuously with alarm light. Users should not put joss paper into the furnace. When the temperature drops below the setting temperature, the high temperature alarm will turn off. After 1-2 minutes, users can use the burner again.

## 3. Technical Specifications

| Equipment | Specification | |
|---|---|---|
| System | Total size (mm) (W x D x H) | 800 x 1439 x 1825 |
| | Flow rate | 0.1$m^3$/s |
| | Weight | ~350kg |
| | Power (per unit) | 1kW |
| | Power requirements | 220V/1ph/50Hz |
| Burning Chamber | Furnace Entrance size (mm) (W x D) | 300 x 370 |
| | Furnace size (mm) (W x D x H) | 400 x 400 x 600 |
| Filter | Length | 1.25m |
| | Amount | 18 |

## 4. Daily Notification

4.1. Ashtray Cleansing

Users should clean up the ashtray regularly if this is full.

## 5. Maintenance

5.1. Purchased the Dry Type Bamako Burner™, including the first 24 months of defect liability period.

5.2. Please call our customer service hotline (Tel: 852-8100-8083) for inspection arrangements to repair.

Hotline Duration: Monday to Saturday, 0900-1700

5.3. If the defect liability period expires, please contact us to arrange an extension of maintenance or purchase product accessories.

## 6. Troubleshooting

6.1. The system cannot be turned on

- Check whether the "Supply Normal" light is on. If not, check the power supply is normal, and the power plug is inserted.
- Check the "Fault" light is on. If yes, please refer to item 6.2.

6.2. "Fault" light on

- "Fault" will light up and alarm siren will be turned on.
- Users can press the "Fault" button for turn off the alarm siren
- Disconnect the power supply and reconnect it.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

6.3. Black smoke is discharged

- Check if there is other substance in the furnace, such as plastic, wood, etc. If yes, immediately remove the substance.
- Check whether the filter has broken or not. If yes, please contact our engineering staff.

6.4. Low suction force

- Check whether the air outlet is blocked.
- Check whether blowback has been performed.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

If the problem persists, please contact our engineering staff.
(Customer Service Hotline: 852-8100-8083)

**Appendix 3.1**

**Prediction of Fixed Noise Source Impact**

| NSR Label | Descriptions | Nature of Use | Existing/ Planned Uses | Location | | Local Ground, (mPD) | Selected Floor | Floor Level, (mPD) | Assessment Point, z, (mPD) | ASR | Noise Criteria (ANL-5 / Background), $L_{eq}$ (30 min), dB(A) | | Unmitigated Noise Impact at NSR, $L_{eq}$ (30 min), dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | x Easting | y Northing | | | | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | Daytime (0700-1900) | Evening and Night Time (1900-0700) |
| N01 | No.92 Fo Tan Village | Residential | Existing | 838269 | 828358 | 4.3 | 1/F | 7.3 | 8.5 | B | 58.8 | N.A. | 49.8 | N.A. |

| Noise Source ID | Description of Noise Sources | Sources | Source Location | | | Measured SPL, dB(A) (free-field) | Noise Measurement Location | | | Distance from Source (m) | Measured Background SPL, dB(A) (free-field) | Corrected SPL, dB(A) (free-field) | Corrected SWL, dB(A), $L_{eq}$ (30 min) | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | % on-time within 30min (Night-time Peak) | Tonality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Planned | X | Y | Z, mPD | | x Easting | y Northing | Z, mPD | | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | | | | | |
| S01 | Joss Paper Furnace cum Dry-type APCE | Existing | 838279 | 828340 | 7.3 | 66.6 | 838274 | 828343 | 6.3 | 5 | 58.8 | 65.8 | 91.2 | OFF | 1 | 1 | 100% | N.A. | 6 |

## Prediction of Fixed Noise Source Impact on Identified NSR

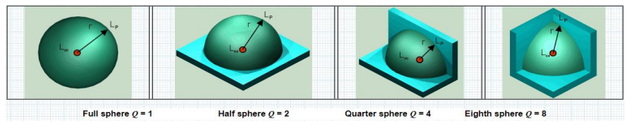
| NSR Labels | Descriptions | ASR | Noise Criteria (ANL-5 / Background), $L_{eq}$ (30 min) | | Noise Source ID | Description of Noise Sources | Unmitigated SWL, dB(A), $L_{eq}$ (30 min) | | Location | | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | Distance to NSR, d (m) | Correction for, dB(A) | | | | | | | Noise Impact at NSR, dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | X | Y | Z, mPD | | | | | Distance | No. | % on time (Daytime) | Screening by Features [1] | Enclosure/ Barrier | Tonality | Impulsive | Façade [3] | Daytime | Evening and Night Time |
| N01 | No.92 Fo Tan Village | B | 58.8 | N.A. | S01 | Joss Paper Furnace cum Dry-type APCE | 91 | OFF | 838279 | 828340 | 7.3 | 1 | 1 | 100% | 21 | -37.4 | 0 | 0 | -10 | 0 | 6 | 0 | 0 | 49.8 | N.A. |

**Notes:**

[1] Screening by structures (building/ wall) resulting in rough noise attenuation of 5 to 10 dB(A). The 10dB(A) attenuation has been claimed for situation where source- reciever are substantially blocked by a major obstacle e.g. buildings/ topography, and the 5dB(A) attenuation is claimed for case where the direct line of sight from source is barely blocked by obstable when viewed from the reciever.

[2] Directivity Factor (Q) is a correction index quantifies the deviation of the sound propagation from unifrom spherical spreading. Q=1 for spherical sound propagation; Q=2 for hemispherical sound propagation; Q=4 for quarter spherical sound propagation and Q=8 for octantspherical sound propagation.

[3] Background noise level of N01 was measured at the façade of NSR, therefore façade correction is not applied.



**Appendix 4.1**

**Estimation of Septic Tank Loading under Peak Effluent Flow**

**Evaluation of Impact on Septic Tank Capacity**

**(a) Design Criteria**

Capacity of Septic Tank = Daily Water Consumption (From ProPECC PN 3/95 & From Building (SSFPDW&L) R 65 (2)(a))

Daily Water Consumption = Daily Water Consumption by Basins + Daily Water Consumption by WC

**(b) Analysis for Peak Load**

No. of staff = 6

No. of visitors upon full niche occupancy = 1,258 (Predicted no. of visitor based on previous visitor survey data under peak season e.g. Ching Ming Festival & Chung Yeung Festival)

Peak No. of visitors = 665 person/day recorded on 5th April 2018 (Ching Ming Festival)

| | Basin | | Remarks |
|---|---|---|---|
| No. of Staff | 6 | | Information provided by the Applicant |
| Flow Rate (L/s) | 0.15 | | Reference to IoP[2] |
| Duration (s) | 10 | | Reference to BEAM Plus[3] |
| No. of Hand Wash Operations per day | 5 | | Reference to BEAM Plus[3] |
| Daily Water Consumption (L) | 45 | | |
| | | | |
| No. of Visitors per day during peak seasons | 1,258 | | Estimated[1] |
| Flow Rate (L/s) | 0.15 | | Reference to IoP[2] |
| Duration (s) | 10 | | Reference to BEAM Plus[3] |
| No. of Occurrence | 1 | | Assume the visitors will use the basin once during their short stay. |
| Daily Water Consumption (L) | 1,887 | | |
| | **WC** | | |
| | **Male** | **Female** | |
| No. of Staff | 6 | | Information provided by the Applicant |
| Capacity of Flushing Cistern (L) | 7.5 | | Waterworks Regulation[4] |
| No. of Occurrence | 5 | | Reference to BEAM Plus[3] |
| Daily Water Consumption (L) | 225 | | |
| | | | |
| No. of Person | 157 | 157 | Based on site observation, only around 10% - 20% of the visitors would use the WC during their stay. As a conservative estimate, 25% of the 1258 visitors is assumed to use the toilets. [1] |
| Capacity of Flushing Cistern (L) | 7.5 | 7.5 | Waterworks Regulation[4] |
| No. of Occurrence | 1 | 1 | Assume the visitors will use the toilet once during their short stay. |
| Daily Water Consumption (L) | 1,179 | 1,179 | |
| | 2,359 | | |
| | | | |
| Daily Water Consumption by Basin (L) | 1,932 | | |
| Daily Water Consumption by WC (L) | 2,584 | | |
| Daily Water Consumption by Urinal (L) | 0 | | No urinal on-site |
| Daily Water Consumption by Pantry Sink (L) | 0 | | No pantry sink on-site |
| Total Daily Water Consumption (L) | **4,516** | | |
| Daily Water Consumption (L) - Adjusted | **4,742** | | An allowance of 5% for uncertainty has been included |
| Daily Water Consumption ($m^3$) - Adjusted | **4.7** | | |
| | | | |
| Total Design Capacity of Septic Tank ($m^3$) | **19.7** | | |
| | **Comply** | | |

**Notes:**

[1] Estimated for peak seasons upon full niche occupancy

[2] Institution of Plumbing – Table 14 of Plumbing Engineering Services Design Guide (IOP Guide)

[3] The Hong Kong Green Building Council (HKGBC) - BEAM Plus for New Buildings v1.2

[4] HKSAR - CAP 102A Waterworks Regulation

[5] Total no. of niches = 3,499
No. of niches sold up to the day where peak no. of visitors was recorded = 1,849.

**Appendix 6.1**

**Historical Aerial Photos**

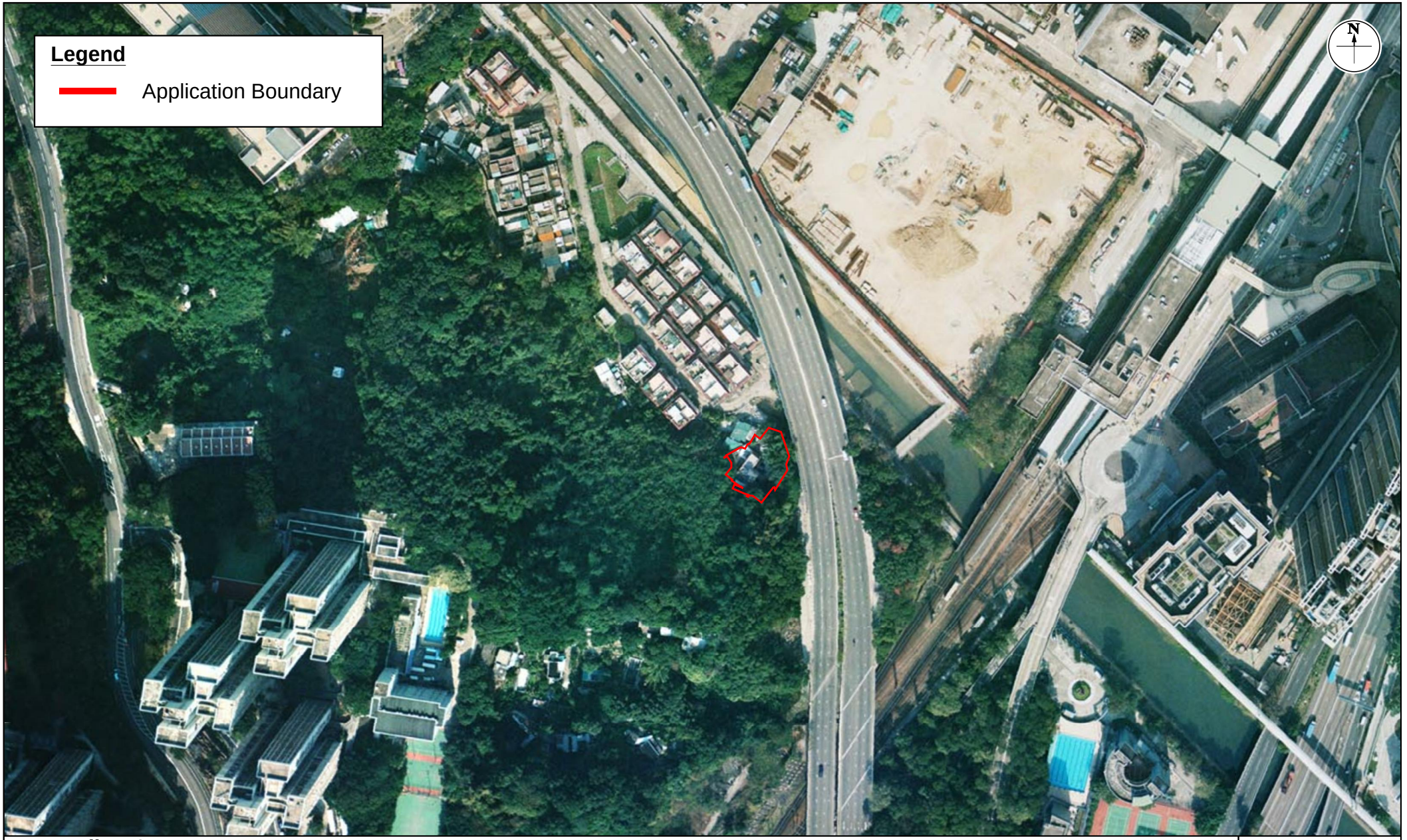
| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1945 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1963 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

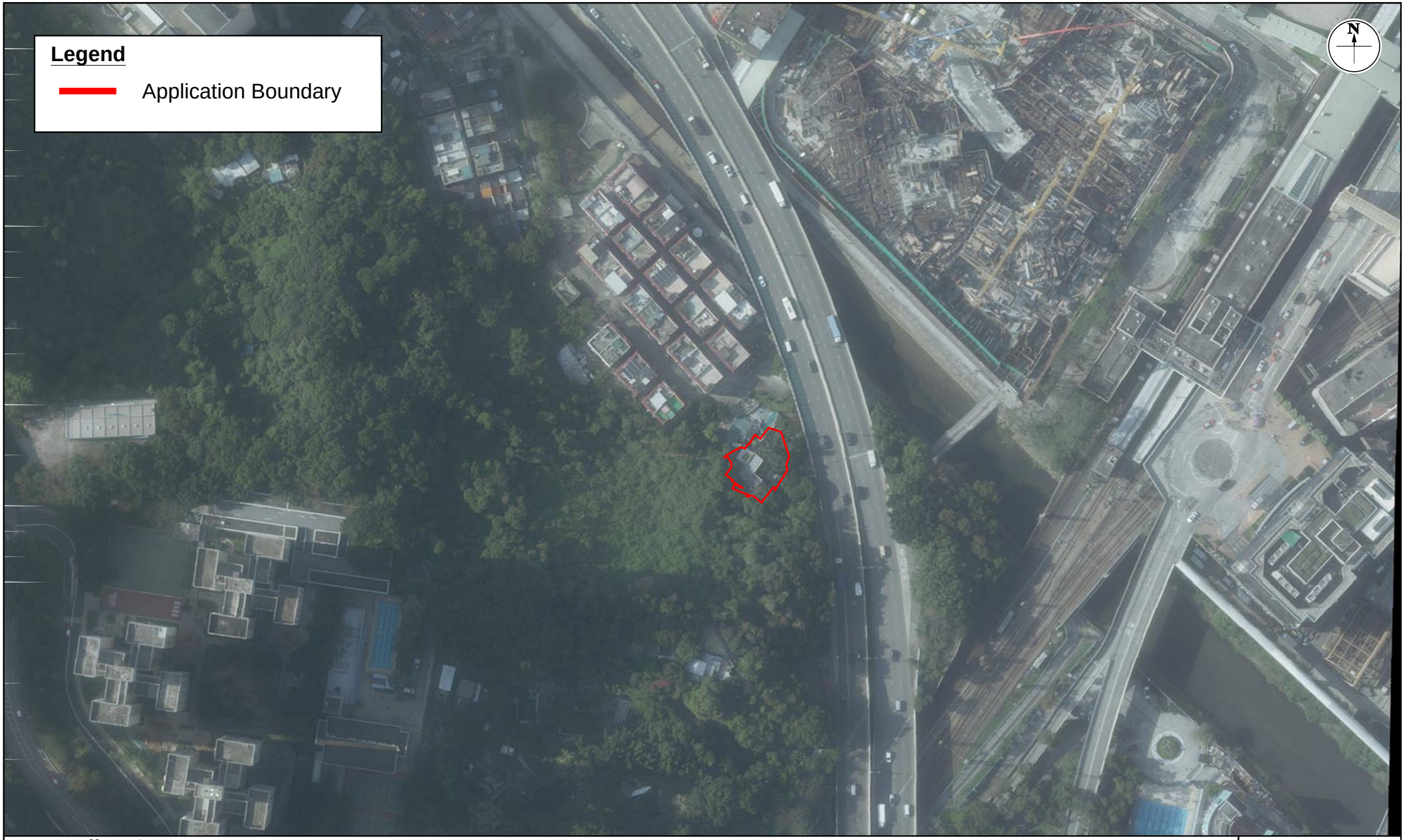
| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1978 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1990 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 2003 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 2015 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 2020 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

**Appendix 6.2**

**Photo Record of the Site Visit**

# Photo Record of Site Visit on 2 March 2021

Photo 1: Entrance of the Application Site

Photo 2: Fish and turtle ponds

Photo 3: Incense furnaces for general worshipping

Photo 4: Joss paper furnace cum dry-type APCE and a fishpond

Photo 5: Columbarium building

Photo 6: Bins for general refuse

**Appendix 6.3**

**Site Walkover Checklist**

# Appendix B

## Site Walkover Checklist (2 March 2021)

### *GENERAL SITE DETAILS*

SITE OWNER/CLIENT Memorial Park Hong Kong

PROPERTY ADDRESS No.93 Fo Tan Village, Sha Tin, N.T.

**PERSON CONDUCTING THE QUESTIONNAIRE**

NAME Ms. Rachel Wong

POSITION Assistant Environmental Consultant, Ramboll Hong Kong Limited

**AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)**

NAME Ms. Bobo Fung

POSITION Executive Manager

TELEPHONE 2145 4825

### *SITE ACTIVITIES*

Briefly describe activities carried out on site, including types of products/chemicals/materials handled.

**Obtain a flow schematic if possible.**

| | | |
|---|---|---|
| Number of employees: | Full-time: | N/A |
| | Part-time: | N/A |
| | Temporary/Seasonal: | N/A |
| Maximum no. of people on site at any time: | | N/A |
| Typical hours of operation: | | N/A |
| Number of shifts: | | N/A |
| Days per week: | | N/A |
| Weeks per year: | | N/A |
| Scheduled plant shut-down: | | N/A |

Detail the main sources of energy at the site:

| | |
|---|---|
| Gas | ~~Yes~~/No |
| Electricity | ~~Yes~~/No |
| Coal | ~~Yes~~/No |
| Oil | ~~Yes~~/No |
| Other | ~~Yes~~/No |

## *SITE DESCRIPTION*

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: 520.4 $m^2$

What area of the site is covered by buildings (%): 39%

Please list all current and previous owners/occupiers if possible.

Current owner/occupier:
Memorial Park Hong Kong

Previous owner/occupier:
Hing Lung Buddhist Hall (興隆佛堂)

---

Is a site plan available? If yes, please attach. Yes/~~No~~

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Fo Tan Village

South: Hill

East: Fo Tan Nullah

West: Hill

# Appendix B – Site Walkover Checklist (Page 43)

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Flat terrain

State the size and location of the nearest residential communities.

Fo Tan Village located at the northern side of the Application Site

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

No

### *Questionnaire with Existing/Previous Site Owner or Occupier*

| Ref. | | Yes/No | Notes |
|---|---|---|---|
| 1. | What are the main activities/operations at the above address? | Columbarium use and religious activities | |
| 2. | How long have you been occupying the site? | Since 2006 | |
| 3. | Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy?) | No | |
| 4. | Prior to your occupancy, who occupied the site? | Hing Lung Buddhist Hall (興隆佛堂) | |
| 5. | What were the main activities/operations during their occupancy? | Buddhist worship hall | |
| 6. | Have there been any major changes in operations carried out at the site in the last 10 years? | No | |
| 7. | Have any polluting activities been carried out in the vicinity of the site in the past? | No | |
| 8. | To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage? | No | |
| 9. | Are there any boreholes/wells or natural springs either on the site or in the surrounding area? | No | |
| 10 | Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.) | No | |
| 11. | Are any chemicals used in your daily operations? (If yes, please provide details.) | No | |
| | • Where do you store these chemicals? | N/A | |
| 12. | Material inventory lists, including quantities and locations available?<br>(If yes, how often are these inventories updated?) | No | |
| 13. | Has the facility produced a separate hazardous substance inventory? | No | |
| 14. | Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.) | No | |

| Ref. | | Yes/No | Notes |
|---|---|---|---|
| 15. | How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)? | N/A | |
| 16. | Do you have any underground storage tanks? (If yes, please provide details.) | No | |
| | ▪ How many underground storage tanks do you have on site? | N/A | |
| | ▪ What are the tanks constructed of? | N/A | |
| | ▪ What are the contents of these tanks? | N/A | |
| | ▪ Are the pipelines above or below ground? | N/A | |
| | ▪ If the pipelines are below ground, has any leak and integrity testing been performed? | N/A | |
| | ▪ Have there been any spills associated with these tanks? | N/A | |
| 17. | Are there any disused underground storage tanks? | No | |
| 18. | Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.) | N/A | |
| 19. | How are the wastes disposed of? | N/A | |
| 20. | Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.) | No | |
| 21. | Have any spills occurred on site?<br>(If yes, please provide details.) | No | |
| | • When did the spill occur? | N/A | |
| | • What were the substances spilled? | N/A | |
| | • What was the quantity of material spilled? | N/A | |
| | • Did you notify the relevant departments of the spill? | N/A | |
| | • What were the actions taken to clean up the spill? | N/A | |
| | • What were the areas affected? | N/A | |
| 22. | Do you have any records of major renovation of your site or rearrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.) | No | |
| 23. | Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)? | No | |
| 24. | Are there any known contaminations on site? (If yes, please provide details.) | No | |
| 25. | Has the site ever been remediated?<br>(If yes, please provide details.) | No | |

### *Observations*

| Ref. | | Yes/No | Notes |
|---|---|---|---|
| 1. | Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)? | No chemical storage areas | |
| 2. | What are the conditions of the bund walls and floors? | N/A | |
| 3. | Are any surface water drains located near to drum storage and unloading areas? | No | |
| 4. | Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.) | Yes | General refuse and non-combustible residues generated from the joss paper burning activities |
| 5. | Is there a storage site for the wastes? | Yes | |
| 6. | Is there an on-site landfill? | No | |
| 7. | Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.) | No | |
| 8. | Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.) | No | |
| 9. | Are there any potential off-site sources of contamination? | No | |
| 10. | Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)? | No | |
| 11. | Are there any sumps, effluent pits, interceptors or lagoons on site? | No | |
| 12. | Any noticeable odours during site walkover? | No | |
| 13. | Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam? | No | |

**Appendix 6.4**

**Copy of Consultant's Letters and the Letters Replies from Various Departments of the Government of HKSAR**

RAMBOLL

Ref.: MPHKLPCOEA00_0_0005L.21

16 February 2021

Fire Services Department / Management Group
9/F, Fire Services Headquarters Building
1 Hong Chong Road
Tsim Sha Tsui East
Kowloon, Hong Kong

By Fax (2739 5879) & Post

Dear Sir / Madam,

**Re: Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)**
**Enquiry for Land Contamination Information**

We are conducting a Land Contamination Assessment Study for the captioned project at No.93 Fo Tan Village, Sha Tin, N.T. (the Subject Site). As required by the "Practice Guide for Investigation and Remediation of Contaminated Land" published by the Environmental Protection Department of the Government of HKSAR (EPD), information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site are required as part of the vetting process.

Of particular interests are spill and incident reports (including records of fire at the Subject Site) that we believe your Department might have record of. Furthermore, we would also like to know whether anywhere of the Subject Site had applied or possessed licence for dangerous goods storage. We enclosed herewith a site map showing the location of the Subject Site for your reference.

Due to the urgency of the project, we would be much appreciated if you could provide the requested information by **24 February 2021**.

Should you have any queries, please do not hesitate to contact our Ms. Rachel Wong at 3465 2815 or the undersigned at 3465 2832. We thank you in anticipation of your help in the matter.

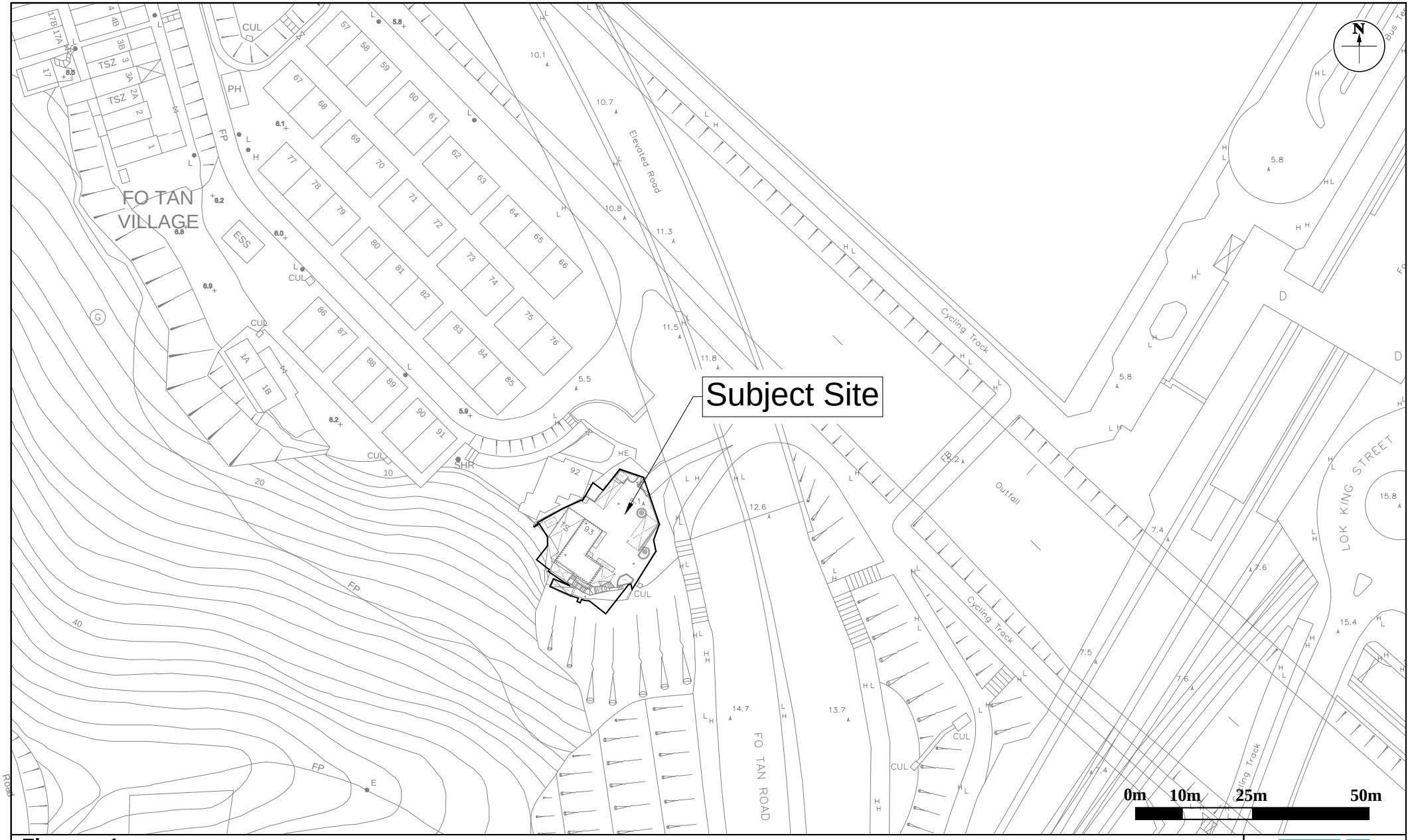
Thank you for your kind attention.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Katie Yu
Senior Manager
*Encl.*

Q:\Projects\MPHKLPCOEA00\02 Project Management\02 Corr\MPHKLPCOEA00_0_0005L.21.doc

Ramboll Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
**www.ramboll.com**




| | |
|---|---|
| **Figure:** 1 | RAMBOLL |
| **Title:** Location of Subject Site | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Feb 2021 |

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (132) in FSD GR 6-5/4 R Pt.31
來函檔號 YOUR REF. : MPHKLPCOEA00_0_0005L.21
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電 話 TEL NO. : 2733 7741

17 February 2021

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wanchai, Hong Kong.
**(Attn: Ms. Katie YU, Senior Manager)**

***By fax (3465 2899) only***

Dear Ms. YU,

**Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park (孝思園) Hong Kong at No. 93 Fo Tan Village, Sha Tin, N.T.**
**Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 16.2.2021 regarding the captioned subject.

Your case is being handled, and a reply will be furnished to you as soon as possible. Please be advised that due to time lapse, this Department can only provide the following information for your requested information:

(i) Dangerous Goods Licence Record: from the year of 1990 to present moment.

(ii) Incident Record: Past three years of fire and special services incidents.

Please also submit the appointment letter from your client for record.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)
*for* Director of Fire Services

Ref. number and date should be quoted in reference to this letter
凡 提 及 本 信 時 請 引 述 編 號 及 日 期

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

RECEIVED
- 9 MAR 2021
BY:.....

本處檔號 OUR REF. : (20) in FSD GR 6-5/4 R Pt. 32
來函檔號 YOUR REF. : MPHKLPCOEA00_0_0010L.21
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電 話 TEL NO. : 2733 7741

3 March 2021

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wanchai, Hong Kong.
**(Attn: Ms. Katie YU, Senior Manager)**

Dear Ms. YU,

**Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park (孝思園) Hong Kong at No. 93 Fo Tan Village, Sha Tin, N.T.**
**Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 16.2.2021 and subsequent letter of 19.2.2021 regarding the captioned request and reply below in response to your questions:-

Please be advised that neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found in connection with the given conditions of your request at the subject location.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)
*for* Director of Fire Services

Ramboll Hong Kong Ltd.
Project: MPHKLPCOEA00/0/0014L
Maconomy no.:
Circulation: KY
Read Action

Ref. number and date should be quoted in reference to this letter
凡 提 及 本 信 時 請 引 述 編 號 及 日 期

Ref.: MPHKLPCOEA00_0_0006L.21

16 February 2021

Lands Department
District Lands Office, Sha Tin
11/F, Sha Tin Government Offices
1 Sheung Wo Che Road
Sha Tin, New Territories

By Fax (2602 4093) & Post

Dear Sir / Madam,

**Re: Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)**
**Enquiry for Land Contamination Information**

We are conducting a Land Contamination Assessment Study for the captioned project at No.93 Fo Tan Village, Sha Tin, N.T. (the Subject Site). As required by the "Practice Guide for Investigation and Remediation of Contaminated Land" published by the Environmental Protection Department of the Government of HKSAR (EPD), information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site are required as part of the vetting process.

Of particular interests are information on spillage accidents, illegal/contaminating land uses or uncontrolled dumping uses, current and historical land use information, and any information relating to land contamination issues of the Subject Site. We enclosed herewith a site map showing the location of the Subject Site for your reference.

Due to the urgency of the project, we would be much appreciated if you could provide the requested information by **24 February 2021**.

Should you have any queries, please do not hesitate to contact our Ms. Rachel Wong at 3465 2815 or the undersigned at 3465 2832. We thank you in anticipation of your help in the matter.

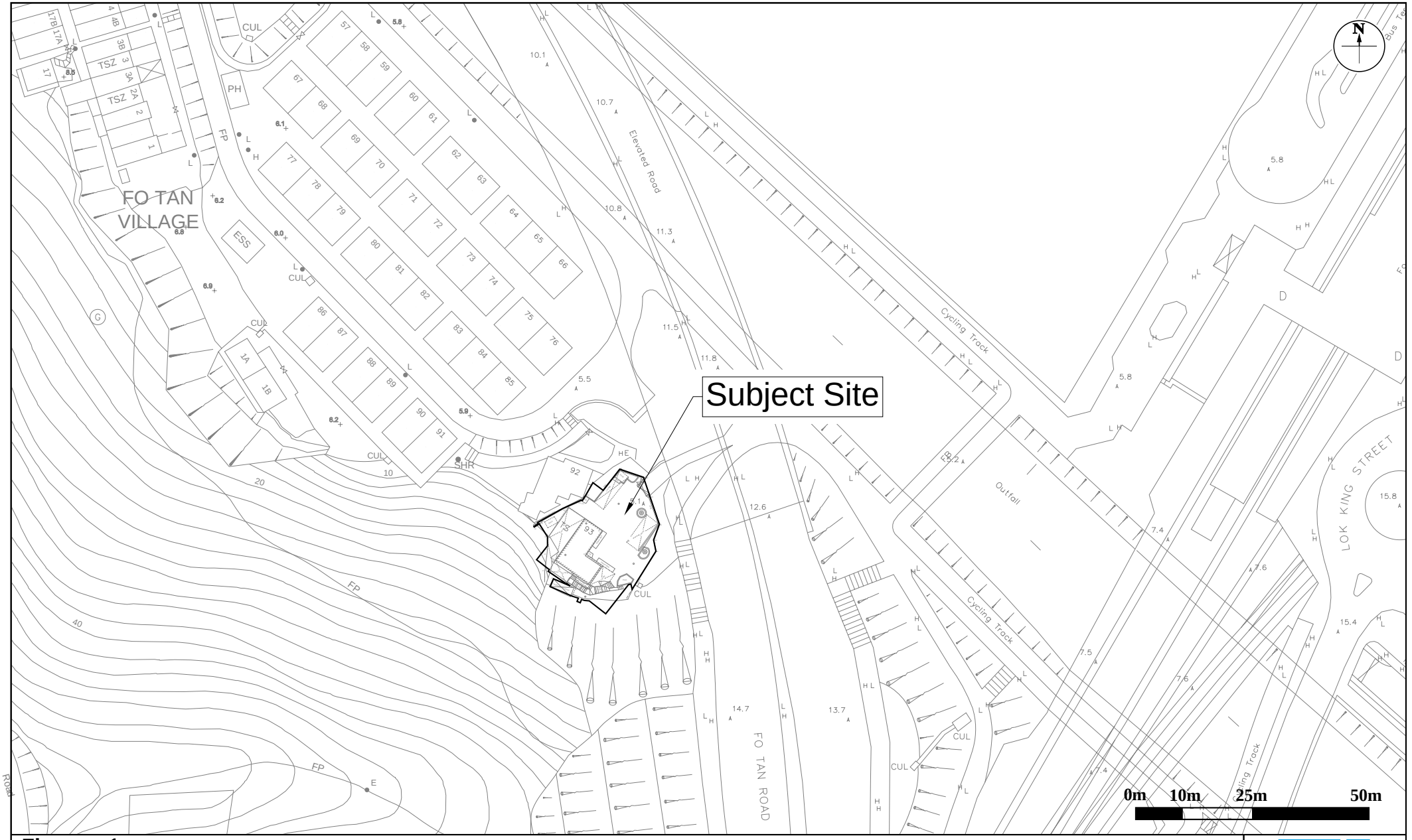
Thank you for your kind attention.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Katie Yu
Senior Manager
*Encl.*

Q:\Projects\MPHKLPCOEA00\02 Project Management\02 Corr\MPHKLPCOEA00_0_0006L.21.doc

Ramboll Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
www.ramboll.com




| | |
|---|---|
| **Figure:** 1 | RAMBOLL |
| **Title:** Location of Subject Site | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Feb 2021 |

RECEIVED
- 3 MAR 2021
BY:

地政總署
沙田地政處
DISTRICT LANDS OFFICE/
SHA TIN
LANDS DEPARTMENT

電　　話 Tel: 2158 4755
圖文傳真 Fax: 2602 4093
電郵地址 Email:
本署檔號 Our Ref.: (27) in LD DLO/ST 373/ZLT/75 Pt.2
來函檔號 Your Ref. MPHKLPCOEA00_0_0006L.21

我們矢志努力不懈，提供盡善盡美的土地行政服務。
We strive to achieve excellence in land administration.

新界沙田上禾輋路1號沙田政府合署11樓
11/F., SHA TIN GOVERNMENT OFFICES,
1 SHEUNG WO CHE ROAD, SHA TIN, N.T.

網址 Website: www.landsd.gov.hk

By Post & By Fax
(Fax: 3465 2899)
2 March 2021

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wan Chai, Hong Kong
(Attn.: Ms. Katie Yu)

Dear Madam,

**Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T.**
**Lot Nos. 551 S.A, 551 R.P., 640, 644 S.A, 644 S.B and 644 R.P. all in D.D. 176**
**and adjoining Government Land**
**Enquiry for Land Contamination Information**

I refer to your letter of 16 February 2021.

Re Para. 2 of your letter, please be informed that the site is occupied for columbarium use. This office is not in the position to advise the other information concerned in your letter. We have referred this enquiry to Environmental Protection Department for reply.

Should you have further enquiries, please contact the undersigned or our Ms. YEUNG at 2158 4793.

Ramboll Hong Kong Ltd.
Project: MPHKLPCOEA00_0_0013L.21
Memorandum no.:
Circulation: KY
Read Action

Yours faithfully,

( Rex LUI )
for District Lands Officer/Sha Tin

This message including any attachment is intended for the use of the addressee only. It may contain information which is confidential and/or legally privileged. You are hereby notified that no unauthorised disclosure or use of this message is permitted. If you have received this message by mistake, please notify us immediately and delete or destroy this message, as appropriate. Any liability arising from the use of this information is excluded.

Ref.: MPHKLPCOEA00_0_0008L.21

16 February 2021

Hong Kong Police Force
Explosive Ordinance Disposal Bureau
EOD Mount Butler Depot
150 Mount Butler Road
Jardine's Lookout
Hong Kong

By Fax (2203 4273) & Post

Dear Sir / Madam,

**Re: Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)**
**Enquiry for Land Contamination Information**

We are conducting a Land Contamination Assessment Study for the captioned project at No.93 Fo Tan Village, Sha Tin, N.T. (the Subject Site). As required by the "Practice Guide for Investigation and Remediation of Contaminated Land" published by the Environmental Protection Department of the Government of HKSAR (EPD), information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site are required as part of the vetting process.

Of particular interests are current and historical explosive storage locations and records at the Subject Site, and any explosive spillage and incident reports that we believe your Department might have record of. We enclosed herewith a site map showing the location of the Subject Site for your reference.

Due to the urgency of the project, we would be much appreciated if you could provide the requested information by **24 February 2021**.

Should you have any queries, please do not hesitate to contact our Ms. Rachel Wong at 3465 2815 or the undersigned at 3465 2832. We thank you in anticipation of your help in the matter.

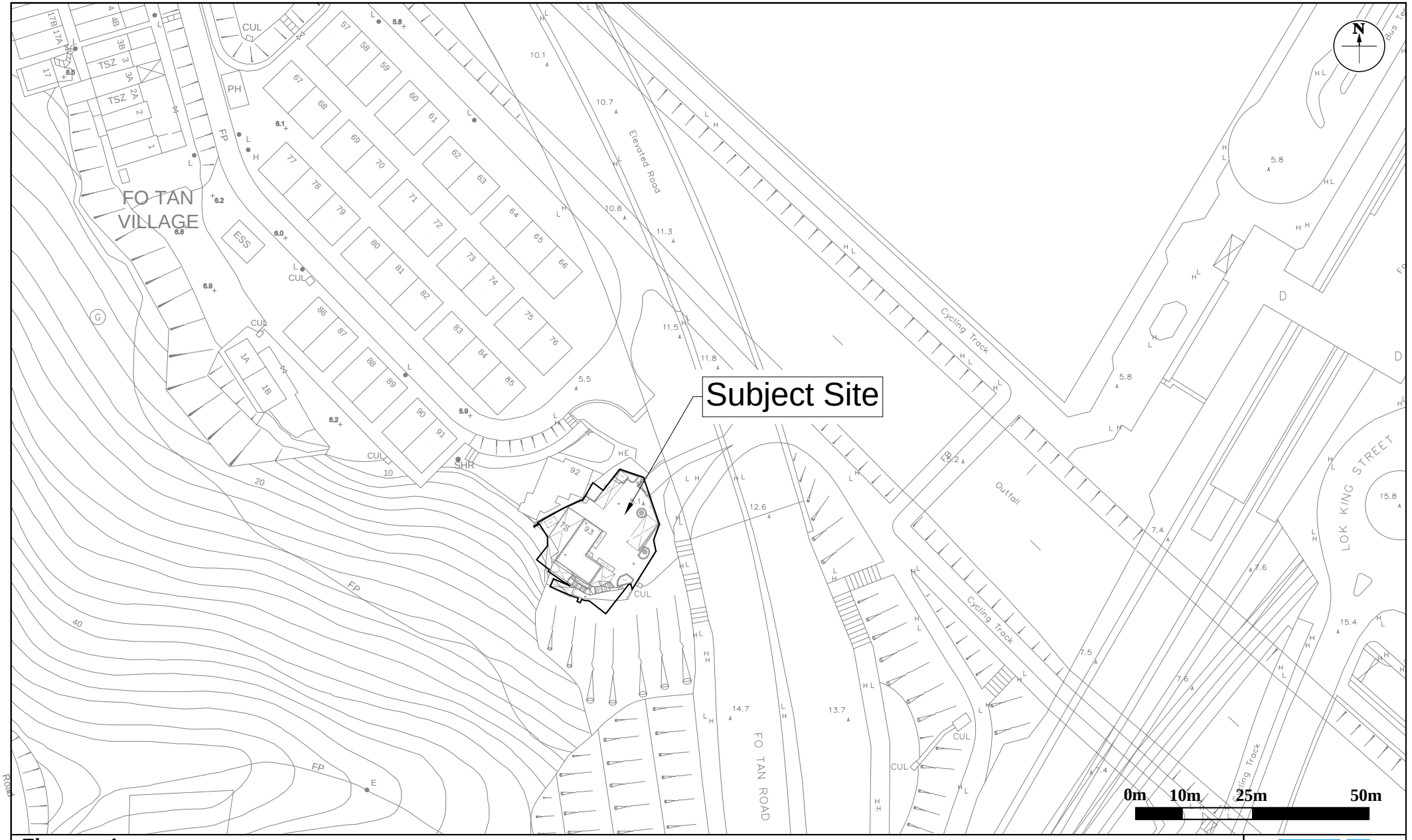
Thank you for your kind attention.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Katie Yu
Senior Manager
*Encl.*



Ramboll Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
**www.ramboll.com**




| | |
|---|---|
| **Figure:** 1 | RAMBOLL |
| **Title:** Location of Subject Site | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Feb 2021 |

*Our Ref:* (16) in CP OPS EOD 6-20/1 Pt.5
*Telefax No.* : +852 2203 4273
*Telephone No.* : +852 2203 4294
*Date* : 2021-02-22

**Explosive Ordnance Disposal Bureau**
**Hong Kong Police**
EOD Depot,
150 Mount Butler Road,
Jardine's Lookout,
Hong Kong.

## FACSIMILE TRANSMISSION

To : Ramboll HK Ltd (Attn: Katie Yu)
Addressee's Telefax No.: +852 3465 2899
Thro' ( SBDO/9 22/~ )
Your Ref.: MPHKLPCOEA00_0_0008L.21
Total Number of Pages Transmitted: 1 (including this page)
Dated: 2021-02-16
Please notify Ms. TSE, General Registry, EOD (2203 4325) if the message is incomplete

Dear Sir/Madam,

**Re: Enquiry for Land Contamination Information**

Your letter was received.

There was no explosive incident in our database on either "Memorial Park Hong Kong" or "No. 93 Fo Tan Village".

We do not hold record and location of explosive storage, as well as explosive spillage reports for the mentioned site,. You may wish to approach the Mines Division of the Civil Engineering and Development Department for further advice.

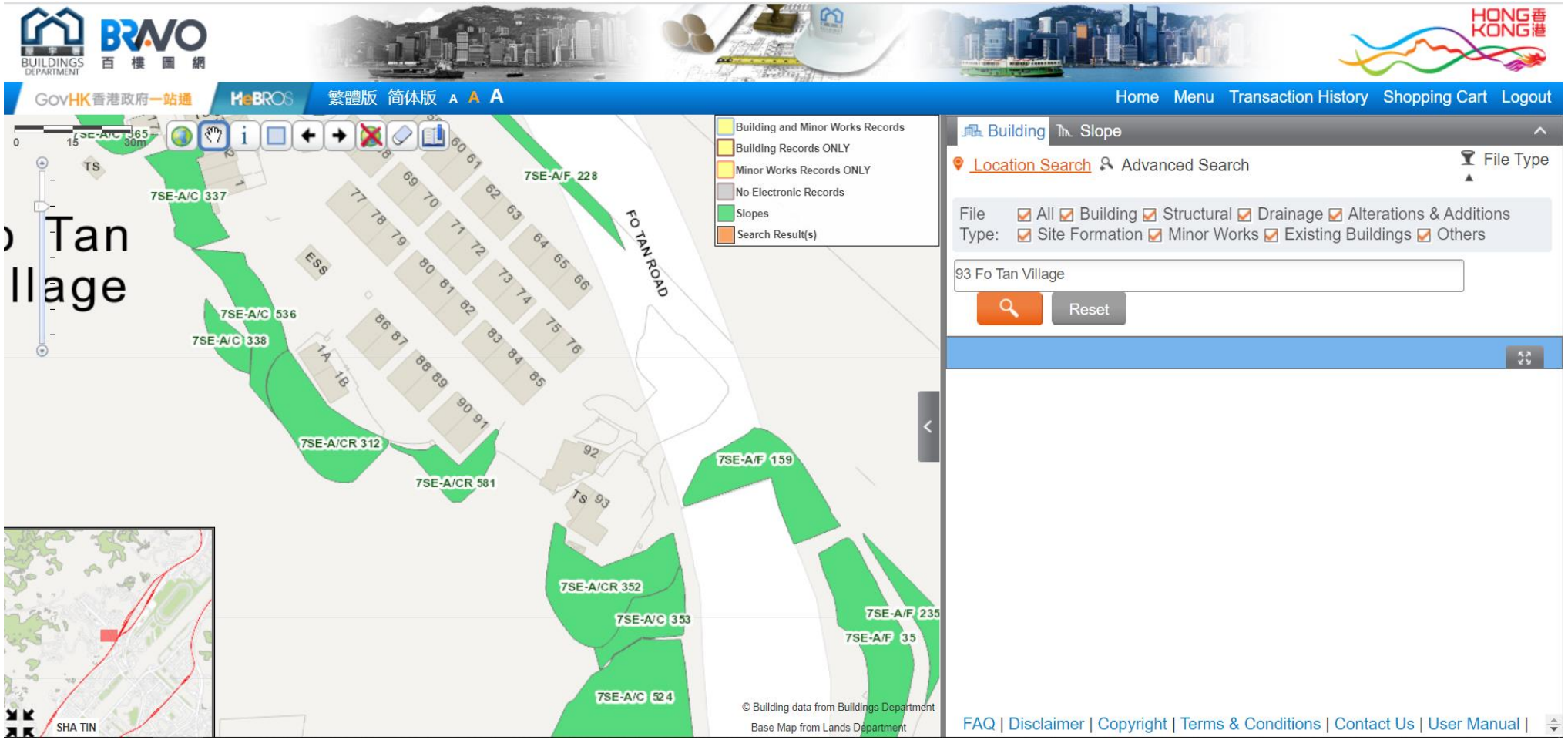
Should you require further information, please contact our Inspector, Mr. Tommy LEUNG at 2203 4297.

Yours faithfully,

Nestor Lai
Bomb Disposal Officer
Explosive Ordnance Disposal Bureau
Hong Kong Police Force

**Appendix 6.5**

**Screen Capture of BRAVO**




| | |
|---|---|
| **Appendix:** 6.5 | RAMBOLL |
| **Title:** Screen Capture of BRAVO | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong | Rev.: 1.0 |
| | Date: Mar 2021 |

# Attachment IV

# Revised Management Plan

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information March 2021

# 私營骨灰安置所 -《孝思園》管理方案

## (1) 骨灰安置所基本資料

骨灰安置所名稱 ：孝思園

骨灰安置所地址 ：新界沙田火炭火炭村 93 號(丈量約份第 176 約地段第 551 號 A 段及餘段、第 640 號及第 644 號 A 分段、B 分段及餘段)和毗連政府土地

根據第 12A 條申請修訂圖則場地界線:
新界沙田火炭火炭村 93 號(丈量約份第 176 約地段第 551 號 A 段及餘段、第 640 號及第 644 號 A 分段、B 分段及餘段及毗連的政府土地)

開始營辦年份 ：2008 年

營辦者名稱 ：香港孝思園有限公司

營辦者身分 ：土地擁有人

骨灰安置所所屬宗教 ：佛教及道教 (部份使用者信奉天主教及基督教)

## (2) 場地資料及樓宇排列

骨灰安置所佔地約 520.4 平方米，總樓面面積約 292.674 平方米，共有：
1 座骨灰安置所大樓(兩層高: 地下及一樓); 一樓平台戶外龕牆; 及地面花園戶外龕牆
1 個戶外香爐
1 個戶外環保化寶爐

**其他支援骨灰安置所運作的必要配套設施建築物**
1 個寫字樓
2 個廁所
3 個儲物室

**其他支援骨灰安置所運作的必要配套設施**

不適用

**龕位總數 /安放灰位總數 #牌照申請編號**
1849 / 2010　#001 [只包括 2017 年 6 月 30 日前已售出的龕位]
1650 / 1853　#038 [只包括 2017 年 6 月 30 日仍未售出的龕位]

**(3) 可容納的客量及入場管制**

**開放時間：**
日常開放時間：週一至週日，上午 9 點至下午 6 點
清明節及重陽節期間的開放時間(節日的前後兩星期，週一至週日)：上午 9 點至下午 6 點
農曆年開放時間(中國農曆年廿九至年初四)：上午 10 點至下午 2 點

骨灰安置所可容納的訪客量：40 人

為確保進場訪客人數不會超出上述可容納訪客量：
為達到人潮分流，每逢清明節及重陽節期間，訪客需事先致電孝思園(下稱"本園")預約。訪客須遵循由本園建議或雙方協商之指定日子和時間，方可前來本園拜祭先人。

**(4) 交通及公共運輸安排**

本園鄰近各主要公共交通設施

港鐵：東鐵線火炭站，於該站 B 出口步行 3 分鐘便可抵達本園

九巴：火炭村站，沿石階而下 1 分鐘便可抵達本園，相關巴士線如下

| | |
|---|---|
| 73A | 沙田愉翠苑 至 上水彩園 |
| 80M | 九龍塘 / 鐵路站 至 穗禾苑 |
| 81K | 沙田新田圍 至 穗禾苑 |
| 85 | 九龍城碼頭 至 火炭山尾街 |
| 88X | 駿洋邨 至 平田 (循環) |
| 285 | 駿洋邨 至 沙田新城市廣場 (循環) |
| 48P | 駿洋邨 至 青龍頭 |
| 280X | 穗禾苑 至 尖沙咀東 |
| 798 | 駿洋邨 至 調景嶺 |

小巴：火炭村站，沿石階而下 1 分鐘便可抵達本園，相關小巴線如下

60K　　沙田火車站平台 至 火炭平房區
62K　　沙田火車站平台 至 沙田山莊
481　　荃灣街市街 至 山尾街 (城門隧道 特快線)

本園鼓勵訪客乘搭以上公共交通工具往來，從而減少訪客乘坐私家車或的士前來本園，以助降低區內行車道路之負荷。

本園區內外均沒有泊車設施。

## (5) 人流管理

在掃墓高峰日子*或期間，本園就場內之人流管理所訂的人手調配計劃
*高峰日子為清明節及重陽節的前後兩星期的六、日及公眾假期。

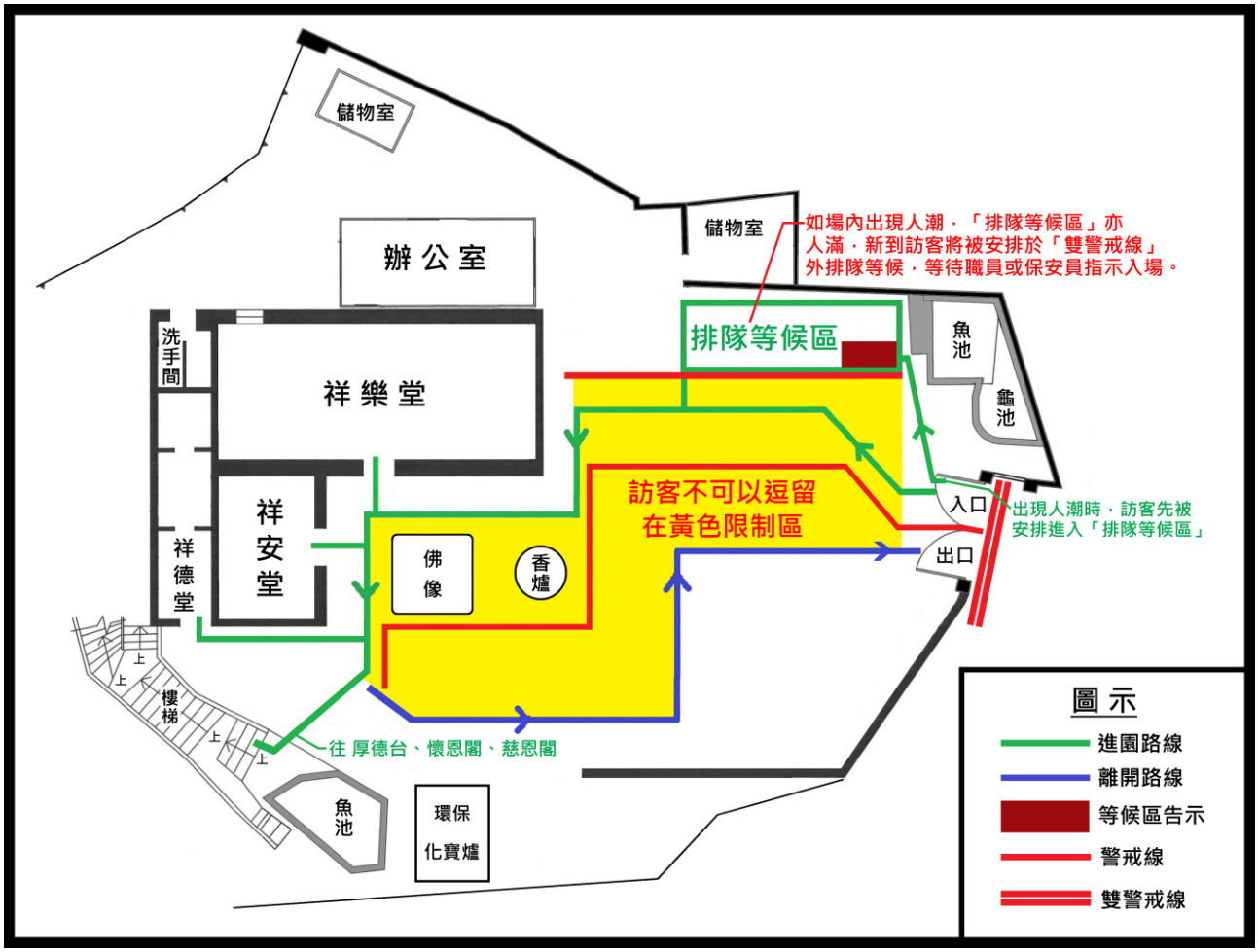
### i. 於高峰日子派員管理及協助訪客人流數目

員工數目: 8 人
一樓堂閣 2 名，負責堂閣內人流管理及協助客人。
地下堂閣 2 名，負責堂閣內人流管理及協助客人。
花園 2 名，負責進入堂閣人流管理及排隊等候區秩序。
大門前 1 名，安排已預約人士按時入園。
大門口後 1 名，負責控制及點算進園人數。

### ii. 定期向警方通報場內情況

每小時與警方聯絡，匯報場內情況，包括現場訪客人數等資料。此措施自本園 2008 年營運以來實施至今持之有效，期間從未發生任何意外事故。

### iii. 本園範圍之佈局與人流方向特別安排



**iv. 急救當值服務**

本園駐有一位受急救訓練合格的職員，隨時提供急救當值服務;在清明節及重陽節前後兩星期期間，本園會額外僱用合資格的臨時急救員於本園當值。

**v. 預約訪園的安排及具體執行**

適用時間: 清明節及重陽節的前後兩星期內的週六、週日及公眾假期

客人可以經本園的電話預約、網上及手機的應用程式 APPS 預約進入本園。於高峰日子時段，有預約的客人於已預約的時間可以優先進場拜祭，位於大門的職員會安排已預約的客人先進入本園，而沒有預約的客人只能在門外等待直到本園有足夠的空間才可以讓沒有預約的客人進入。

電話：2145 4825
網址：http://memorialpark.hk/
手機應用程式 APPS：
iOS:
https://apps.apple.com/hk/app/%E5%AD%9D%E6%80%9D%E5%9C%92-memorial-park/id1478614161
Andriod:
https://play.google.com/store/apps/details?id=io.framework7.memorialparkapphkapp

**(6) 保安管理**

本園設有閉路電視 CCTV24 小時運作及錄影場內各龕堂及主要通道，以便職員監察場內具體狀況，包括訪客進出流量等，有需要時去調節入園客量。

為確保園內安全，亦有 1 位全職保安員負責按時在園內巡邏及在大門站崗提供管理服務。

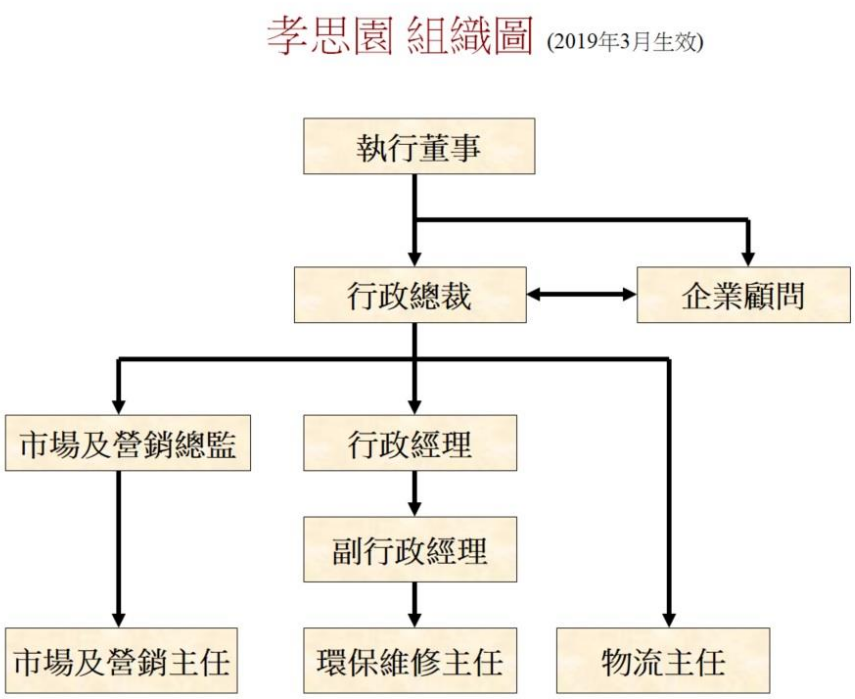
在掃墓高峰日子，職員巡視各龕堂及主要通道，以了解實際情況和保障公眾安全。遇有緊急問題，即與警方聯絡。

在掃墓高峰日子，調配足夠專業保安員及僱用臨時場地員工，以便在掃墓高鋒時段以應付突然增多之掃墓人潮。並嚴格執行預約訪園安排，確保掃墓客量不超越可容納客量。

## (7) 人手調配

i. 組織架構

本園在執行董事以下共僱用 8 名員工，以下為本園的組織圖:




ii. 員工訓練

本園會有 2 名員工負責每月定期檢查消防安全及急救用品的數量，本園的辦公室設有急救用品箱，以備訪客使用。本園另外有 2 名員工負責日常事務，包括基本維修保養，並會安排在掃墓高峰日子(清明節及重陽節)前完成適當的維修保養及檢查。

iii. 掃墓高峰日子的特別人手安排

根據以往多年經驗，本園於清明節及重陽節期間會額外加派 3 名臨時員工，以滿足高峰掃墓期間的額外人手要求。

iv. 掃墓高峰日子就維修保養的特別人手安排

如本園的拜祭設備(例如: 環保化寶爐或冷氣等)於高峰日子出現問題，本園會立即安排相關的承辦商盡快前來維修，直到該設備完成維修才可以繼續供訪客使用。本園與環保化寶爐供應商簽訂一年長的檢查及維修合約，確保化寶爐保持正常運作。

v. 管理模式

本園會按照上面的組織圖，下對上的直接負責。

(1) 園內管理

本園的行政經理主要負責向董事局匯報及執行董事局之決議，屬下有一名副行政經理負責管理園內日常運作，處理突發工作等。

(2) 物流管理

本園的物流主任主要負責本園的物資流動，直接向行政總裁負責，另外需要與負責園內管理的行政經理作出適當的協調。

(3) 銷售團隊

本園的市場及營銷總監及其屬下主要負責本園的銷售安排及相關策略，直接向行政總裁負責，於銷售安排上需要與負責園內管理的行政經理作出適當的協調。

(4) 每月例會

本園每月最後一個星期五舉行例行會議，由一位執行董事主持會議。會議討論內容包括：本園管理；園區保養；清明、盂蘭及重陽節增聘臨時員工及場地工作指引；訪園預約及人流管理；舉行佛學講座及慈善活動安排；刊印定期刊物分發客戶；及派發應節食品或防疫用品給長者等事項。

# 重要人士和管理人員資料

## 執行董事 (3 名)

姓名：趙鎮龍，梁錦濠，郭卓彥
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 趙氏和梁氏於本園逾 12 年工作經驗。
- 孝思園由執行董事掌管。
- 負責監督本園日常運作，因應社會和市場變遷，以及客戶訴求和期望而提供優質服務，包括售後服務。
- 其下有 1 名企業顧問，1 名行政總裁，1 名行政經理，1 名副行政經理，1 名市場及營銷總監，1 名市場及營銷主任，1 名環保維修主任和 1 名物流主任。

## 企業顧問

姓名：樊容昌
電話 : (852) 2760 1088
傳真：(852) 2760 1078

- 接受執行董事委託，向公司主管級和以上之管理團隊提供專業諮詢服務。
- 就本園申請牌照程序上提供專業意見。
- 就特別事項，與行政總裁共同策劃及處理事務。

## 行政總裁

姓名：朱建諾
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有 10 年工作經驗。
- 統籌本園申請牌照事宜，致力優化園內設施和管理以符合相關牌照要求。
- 制定及推行行政管理與規範。
- 制定本園之銷售產品和服務範疇。
- 為本園銷售團隊定下銷售方針和目標。
- 致力開拓與長者市場相關之服務，公益活動，推動生命教育。
- 與中外同業協會聯繫，致力提升香港殯葬業專業技術和服務水平。
- 負責本園人事任免。
- 其下有 1 名行政經理， 1 名副行政經理，1 名市場及營銷總監，1 名市場及營銷主任，1 名環保維修主任和 1 名物流主任。

## 行政經理

姓名：馮寶琪
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有 11 年工作經驗
- 確保園內設施符合食環署私營骨灰安置所之牌照要求，包括維修保養，消防安全，急救裝備齊全，環保和衛生範疇等。
- 負責策劃、監督和實施本園日常管理工作。
- 在”春秋二祭”等拜祭高峰期時確保園內訪客安全，並與有關政府部門，包括警方等緊密聯繫。
- 提供客戶服務，包括銷售和售後服務。
- 農曆每月初一和十五於園內舉辦佛道講座，參加者多為長者，屬區內居民和客戶。會後向善信免費派發米包等禮品，目的為促進社區和諧和關愛長者。
- 其下有 1 名副行政經理及 1 名環保維修主任。

## 副行政經理

姓名：林金煇
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有 10 年工作經驗。
- 確保園內設施符合食環署私營骨灰安置所之牌照要求，包括維修保養，消防安全，急救裝備齊全等。
- 輔助行政經理策劃、監督和實施本園日常管理工作，包括環保和衛生範疇。
- 在”春秋二祭”等拜祭高峰期時確保園內訪客安全，並與有關政府部門，包括警方等緊密聯繫。
- 提供客戶服務，包括銷售和售後服務。
- 農曆每月初一和十五於園內舉辦佛道講座，參加者多為長者，屬區內居民和客戶。會後向善信免費派發米包等禮品，目的為促進社區和諧和關愛長者。
- 其下有 1 名環保維修主任。

## 市場及營銷總監

姓名： 暫時空缺 (申牌期間營銷已停止)
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 就申請牌照，向行政總裁提供文書處理和對外聯絡等支援。
- 市場及營銷總監策劃、監督和實施市場宣傳、營銷業務和品牌形象。
- 制定本園之銷售產品和服務。
- 為其下銷售團隊提供相關銷售訓練。
- 提供客戶服務，包括銷售和售後服務。
- 負責籌劃，推動社區、慈善公益活動。策劃如何實踐企業社會責任（CSR, Corporate Social Responsibility）精神（ 詳見附件 ）。
- 負責特別工程或項目。
- 其下有 1 名市場及營銷主任。

## 市場及營銷主任

姓名： 暫時空缺 (申牌期間營銷已停止)
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 輔助市場及營銷總監策劃、監督和實施市場宣傳、營銷業務和品牌形象。
- 為其下銷售團隊提供相關銷售訓練。
- 提供客戶服務，包括銷售和售後服務。
- 負責推行社區、慈善公益活動
- 與香港知名之慈善或教育機構，包括善寧會，香港賽馬會善寧之家，沙田婦女會，香港公開進修大學等緊密聯繫，與前者們一起宣傳公益服務。
- 在香港推動生命教育、善終服務和社區義工服務等，體現企業社會責任 ( CSR, Corporate Social Responsibility ) 精神。

## 環保維修主任

姓名：譚小燕
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有約 2 年工作經驗。
- 主任為受訓合資格急救員。
- 負責園內空氣、噪音、廢物和水質處理等各設施之運作和保養。
- 對上述設施作不定期評估，必要時向副行政經理提交改善建議。
- 負責園內衛生，綠化和動植物護理。

## 物流主任

姓名：呂志偉
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 負責執行董事車輛的日常駕駛任務，嚴格遵守交通法規。
- 如時間許可，負責行政總裁和企業顧問之開會，客戶接待以及辦理公務的駕駛任務。
- 服從公司調配，定期匯報車輛的運行情況，以保證車輛在安全情況下使用
- 安排運送物資及補給到本園，確保有足夠資源去維持本園暢順地運作。

**(8) 應對火警或其他緊急情況的應變方案**

消防安全主任
由部門主管委任，負責協調及統籌單位內有關消防安全事宜

#防火設備
在園內指定地點設置滅火筒及滅火毯。
相關設備由合資格之消防顧問作年檢，並簽發證書。

#走火路線
在主要通道設有緊急逃生指示牌，並在當眼處，張貼走火路線圖 (以下為參考圖)

#火警演習
每年進行至少 2 次火警演習，走火路線及安全集合地點如下:

火警演習 – 程序指引
由消防安全主任擬定可能發生火警的地方及火勢。

通知各相關人士、服務對象及單位等，有關火警演習的日子，時間及安排。

演習當日，消防安全主任指導有關人士儘快依照走火路線圖離開現場，並前往安全地點集合。

待所有人士到達集合地點後，替各人點名並登記時間。

演習完成後，於內部會議中報告演習結果，並提出檢討事項。

填寫「火警演習記錄表」記下演習日子和時間，演習結果，包括所需時間，檢討事項等。

#附註：有關詳情請參閱：

**Guidelines on "Fire Safety Plan" for Memorial Park Hong Kong ( MPHK )**

<孝思園>「消防安全計劃」指引

## (9) 遵從發牌委員會訂明的發牌條件、指引及業務守則

以下為本園之部份業務守則，包括福位、場內設施使用方法、製造碑石及上位規則。有關守則張貼在辦公室，接待顧客之當眼處，務求便利前線工作人員及顧客去遵從守則內容，以符合發牌條件。

福位及場內設施使用規則

i. 每個福位只可安放已安排之先人遺物，不得隨意變更，也不可以阻礙他人之福位。先人遺物包括：先人之靈灰或其他紀念品（不包括違禁品及爆炸品）。

ii. 單人福位只可存放 1 位先人之遺物，雙人福位及側式福位最多可放 2 位先人之遺物。

iii. 所有碑石必須經由本園司負責安裝，照片尺寸和刻字式樣及字數必須依照本園之統一規定。

iv. 訪客須遵守消防條例，所有寶帛、衣紙、冥嫌、紙扎祭品，必須在指定設置之環保化寶爐內焚化，嚴禁焚燒真衣。

v. 請保持各靈堂整潔，福位外壁及碑面，不得裝置各類貢物和易燃物品，以免引致火警發生。

vi. 龕堂內禁點香燭，已燃點香燭必須插在花園的戶外香爐，以策安全。

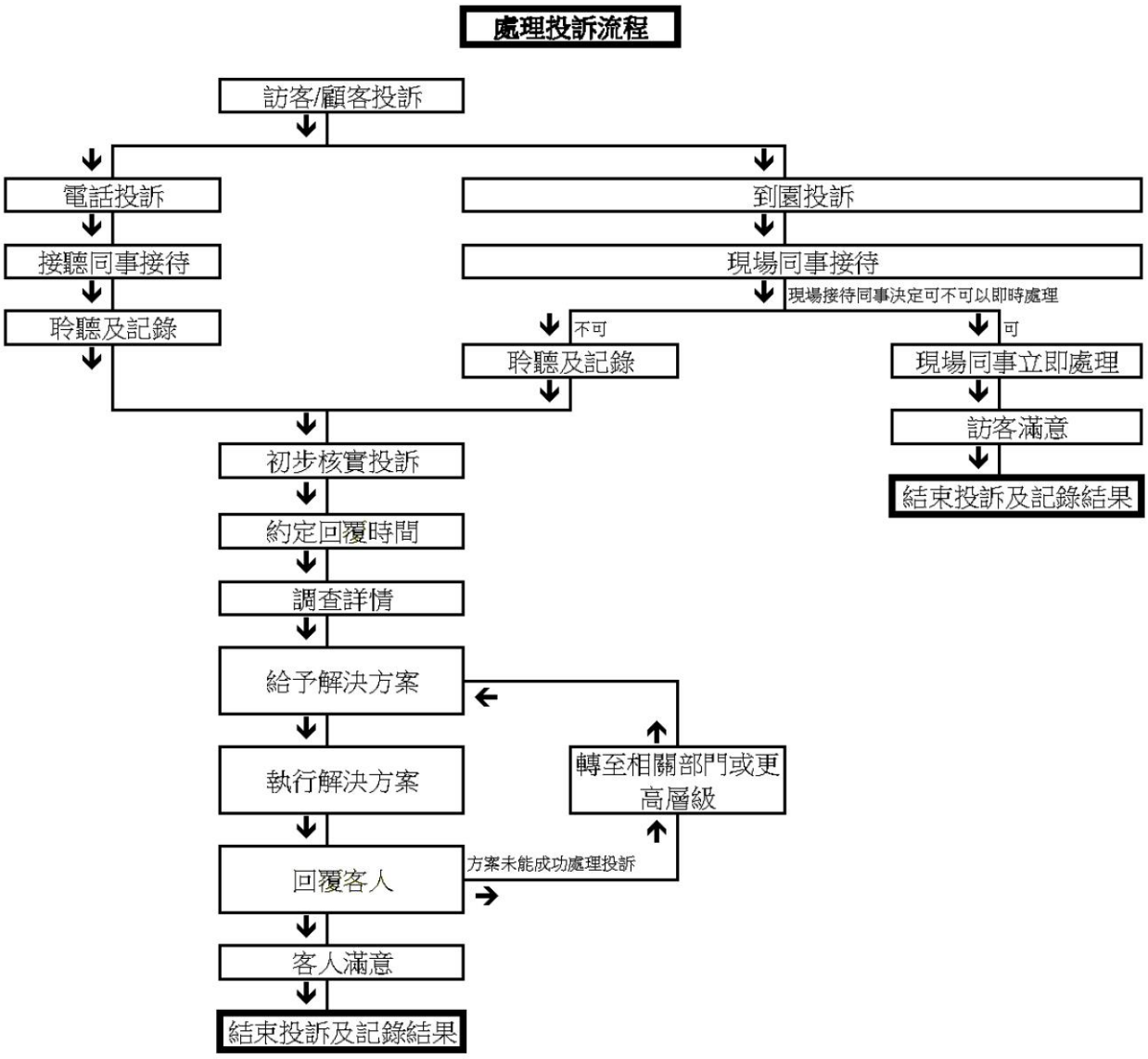
## (10) 投訴處理

本園會致力達到所訂下的服務承諾和目標，但有時或受本園控制能力以外之因素影響，而未能達標。

在此情況下，申訴人可透過以下聯絡方法，與本園當值之負責人了解詳情

香港沙田火炭村 93 號
電話：(852) 2145 4825 (辦公時間)
電郵：info@memorialpark.hk

## 處理投訴流程:




## (11) 財務方案

*詳見一式 3 份，獨立信封內之「管理方案第(11)項的附件」*

## (12) 管理方案的執行人及批准人

執行管理方案的負責人
姓名：馮寶琪
職位: 行政經理
聯絡電話號碼 ：(852) 2145 4825
電郵地址：bobof09@yahoo.com.hk

批准管理方案的負責人
姓名：趙鎮龍
職位: 執行董事
聯絡電話號碼 ：(852) 2145 4825
電郵地址：lungchiu2005@yahoo.com.hk

代表上述骨灰安置所提交本管理方案的人員資料
姓名：趙鎮龍
職位：執行董事
聯絡電話號碼 ：(852) 2145 4825
電郵地址：lungchiu2005@yahoo.com.hk

簽署：_____
日期：2021 年 月 日

[Rev 29.3.2021]

# Attachment V

# Geotechnical Planning Review Report

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information March 2021

Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance (CAP131)
Application No. Y/ST/47
Rezoning from "Village Type Development" and "Green Belt" to "Other Specific Uses" annotated "Columbarium (1)" for Memorial Park Hong Kong

# Geotechnical Planning Review Report

On

# Columbarium Use

At

# Memorial Park Hong Kong

In 93 Fo Tan Village, Fo Tan,

Shatin, New Territories

(Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP In D.D. 176)

Date:

February 2021

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| 2.0 | Description of Site | 2 |
| 3.0 | Geotechnical Investigation | 4 |
| 4.0 | Geotechnical Review | 6 |
| 5.0 | Conclusion | 8 |

| | |
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| Appendix A | Slope Information Record |
| Appendix B | Stage 1 Study Report |
| Appendix C | GEO Incident Report No. ME97/7/58 |
| Appendix D | GEO Incident Report No. ME97/7/27 |
| Appendix E | API Report |
| Appendix F | GEOMAP and Geological Profile |
| Appendix G | Geological Map |
| Appendix H | Stability Assessment of the Existing Feature |
| Appendix I | Surface Drainage Design |

# 1. INTRODUCTION

To apply Planning Application for Columbarium Use at Memorial Park Hong Kong (MPHK) in 93 Fo Tan Village, Fo Tan, Shatin, New Territories (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D. 176) ("the Site"), L&G Engineering Consultant Company is appointed as the geotechnical consulting engineer to review geotechnical features in the vicinity of the development, Memorial Park Hong Kong, in accordance with GEO Advice Note for Planning Applications under Town Planning Ordinance (CAP.131).

To review the geotechnical features in the vicinity of the building, following geotechnical aspects are addressed in this report:

- Examine geographical conditions and slope upgrading works implemented for the features in the vicinity of the development
- Review of geotechnical features which may affect or be affected by the development

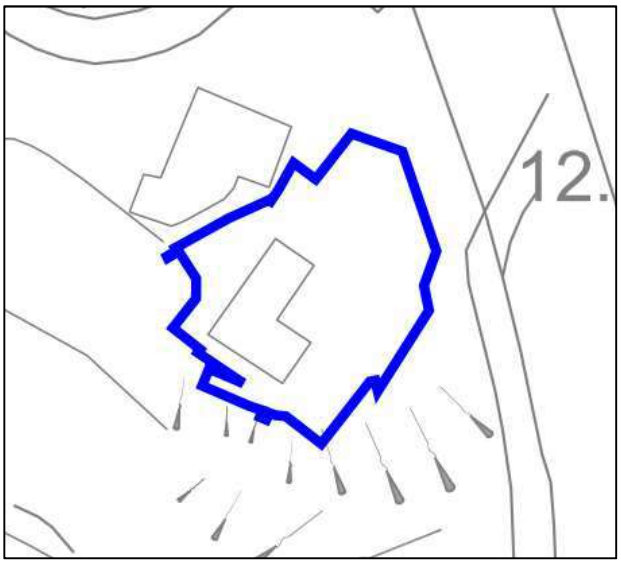



Figure 1 – Area for Plan Application

# 2. DESCRIPTION OF SITE

## 2.1 Site Location and Topography

The Site is located behind No. 93 Fo Tan Villaeg, Shatin. The existing ground generally flat with levels varying from +6.20mPD to +8.30mPD. The central area of the Site was previously served as village house. The southern boundaries of the proposed development are surrounded by slopes.

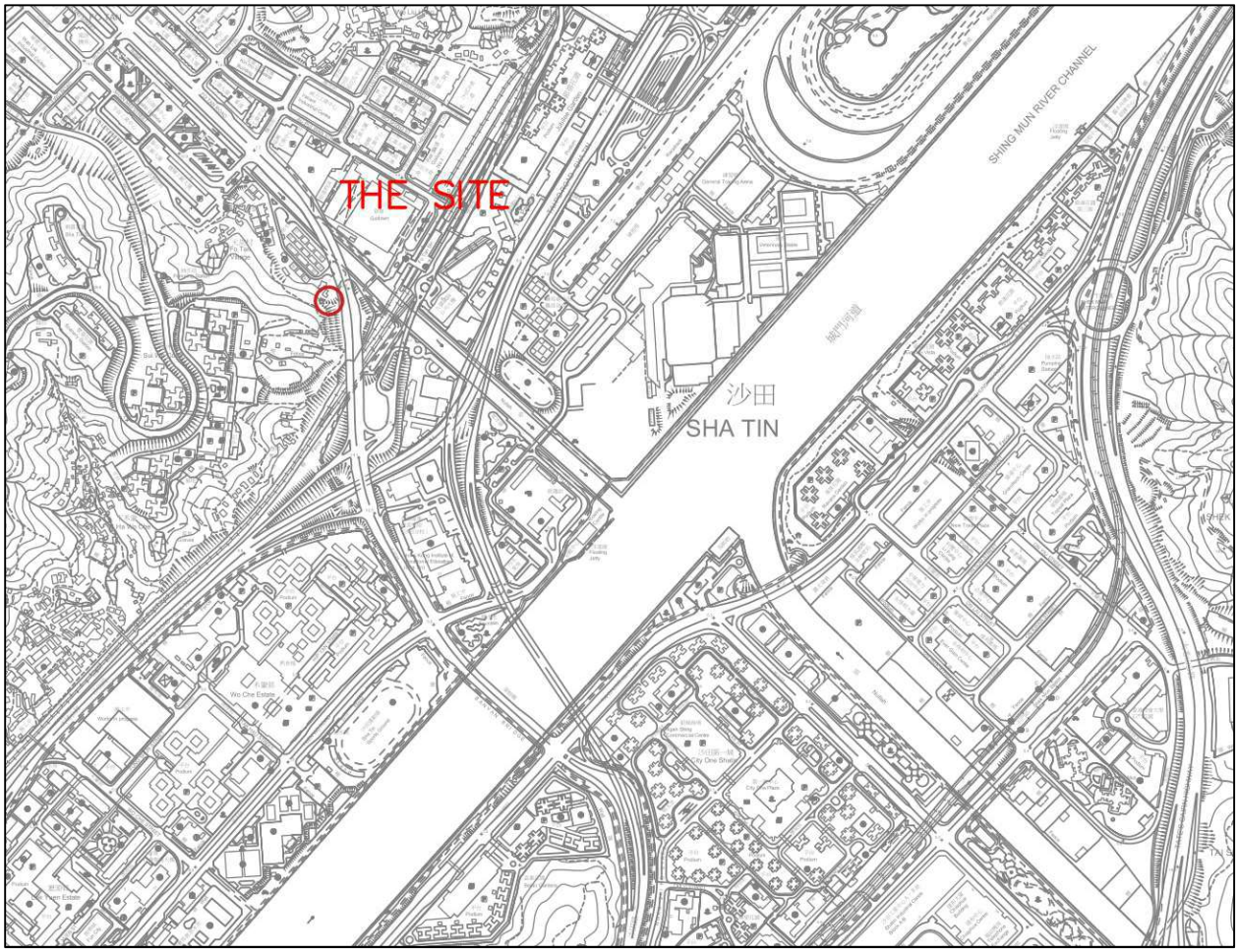



Figure 2 – Site Location Plan

## 2.2 Registered Feature 7SE-A/CR352

A registered feature no. 7SE-A/CR352 exists in the vicinity of the Site. The location of this feature is shown in **Figure 3**. Detailed information of the feature extracted from Slope Information System is enclosed in **Appendix A**.

Figure 3 – Location Plan of Feature no. 7SE-A/CR352

The feature is a cut slope, approximately 35m long and 19m high. It is generally facing to the south with an average angle of 45º. The feature wall is approximately 23m long and 3m high. Undeveloped green belt is located at the slope crest and other densely populated buildings are located at slope toe. The maintenance responsibility of the feature belongs to the DD176 LOT644RP and Lands Department.

# 3. GEOTECHNICAL INVESTIGATION

## 3.1 Stage 1 Study Report for Feature 7SE-A/CR352

GEO conducted a Stage 1 Study on the Feature in 1997. The Feature falls into the Consequence-to-Life Category "1". No sign of seepage was noted. Reasonable sign of distress was found near the crest, mid-portion and toe of the Feature. **Appendix B** refers.

## 3.2 GEO Incident report with Incident No. ME97/7/58

A landslide was recorded at the mid-portion of the Feature in July 1997. The landslide involved a debris volume of less than 10m3 and the possible cause of failure was surface erosion. Urgent repair work of providing surface protection to the trimmed failure surface was recommended. **Appendix C** refers.

## 3.3 GEO Incident report with Incident No. ME97/7/27

A landslide was recorded at the adjacent feature no. 7SE-A/C353 which locates 45m to southeast of the Feature, on 4 July 1997. The landslide involved a debris volume of 40m3 and the possible cause of failure was infiltration. Urgent repair work of diverting surface runoff away from the failure area, covering the failure scar with tarpaulin, trimming back the failure surface, providing surface protection to the trimmed failure surface and reconstructing the drainage system were recommended. **Appendix D** refers.

## 3.4 Natural Terrain Landslide Inventory

No record of natural terrain instability in the vicinity of the Feature could be found from the Natural Terrain Landslide Inventory in GEO.

## 3.5 Aerial Photograph Interpretation (API)

Aerial photographs from 1945 to 2004 were identified and the API report is enclosed. **Appendix E** refers.

The Feature was formed by cutting between 1945 and 1963. It was probably formed in associated with the houses and platform formation at its toe. It appeared to be mostly sealed with surface protection since its formation. It was subsequently covered by dense vegetation from 1974 to 2003.

No topographic depression and drainage line were identified in the vicinity of the Feature.

# 4. GEOTECHNICAL REVIEW

## 4.1 Site Topography

Topographical profiles of the Feature was conducted by Henry Chan Surveyors Ltd. in 2005. Four critical sections were inferred for permanent upgrading works design. Crest levels of the sections vary from +13.0mPD to +34mPD. Toe levels of the sections vary from +6.2mPD to +8.3mPD. Location of the Feature is illustrated in a GEOMAP in **Appendix F**. Geological profiles of the sections illustrated in the as-built slope upgrading works drawings are also enclosed in **Appendix F**.

## 4.2 Ground Condition

According to the 1:20000 scale HGM 20 series geological map of Hong Kong, Sheet 7 (GEO-Edition 1, 1986), the Site is underlain by coarse grained GRANITE. Part printed of geological map is enclosed in **Appendix G**.

## 4.3 Stability Assessment of the Existing Feature

Stage 3 Study and design of the Landslip Preventive Measure (LPM) works for the Feature were conducted under Agreement No. CE23/2003 (GE).

Landslip Preventive Measures including installation of soil nail on the entire Feature; cutting back to maximum 40 degree to the western portion of the Feature; provision of surface drainage and raking drains; and, provision of landscaping works were completed in 2008. Assessment results are enclosed in **Appendix H**.

The existing feature was designed and upgraded with adequate factor of safety up to current geotechnical standards. Its slope stability is satisfactory in geotechnical point of view.

## 4.4 Existing Surface Drainage

Surface drainage system including 300mm stepped channels, 225mm and 300mm U-channel along the crest and toe of the Feature; and, 300mm stepped channel within the feature no. 7SE-A/C353 were designed and constructed for 1 in 200 years return period storm. Surface drainage design is enclosed in **Appendix I**. And, prescriptive Type 3 raking drains were constructed as a contingency measure to cater for uncertainties in groundwater conditions and dissipate excessive hydrostatic pressure. The surface drainage system contributes an important role of slope safety.

## 4.5 Proposed Development

MPHK is a columbarium to serve as a place to pay respect to the deceased.

It formerly was a village house and now becomes a columbaria. Structural assessment of the building is checked. It is generally in good condition and satisfies requirements as specified in the "Guidelines for the Compliance with Building-related Requirements for Applying for a License or an Exemption under the Private Columbaria Ordinance (CAP.630)".

The building locates at the toe of the registered feature 7SE-A/CR352 with undeveloped green belt at its upslope. Constructed soil nails and retaining walls stabilize the slope features in the vicinity of the building up to current geotechnical standards. Surface drainage system diverts surface runoff away from the features/ building.

No record of natural terrain instability in the vicinity of the Feature/ the building could be found from the Natural Terrain Landslide Inventory in GEO.

# 5. CONCLUSION

On the basis of engineering consideration discussed above, it is considered that the building, Memorial Park Hong Kong, would not affect or be affected by geotechnical features in the vicinity.

# APPENDIX A

## Slope Information Record

## BASIC INFORMATION

| | |
|---|---|
| Location: | Behind No. 93, Fo Tan Tsuen, Shatin |
| Registration Date: | 19-11-1997 |
| Ranking Score (NPRS): | 0 (EI) |
| Date of Construction/ Modification: | Pre-1977 |
| Data Source: | EI(Lands D) |
| Approximate Coordinates: | Easting : 838272 Northing : 828326 |

## CONSEQUENCE-TO-LIFE CATEGORY

| | |
|---|---|
| Facility at Crest: | Undeveloped green belt |
| Distance of Facility from Crest (m): | 0.1 |
| Facility at Toe: | Other densely populated buildings |
| Distance of Facility from Toe (m): | 2 |
| Consequence-to-life Category: | 1 |
| Remarks: | N/A |

## SLOPE PART

(1) Max. Height (m): 19 Length (m): 35 Average Angle (deg): 45

## WALL PART

(1) Max. Height (m): 3 Length (m): 23 Face Angle (deg): 90

## MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: DD176 LOT644RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 18-11-2008
(2) Sub Div.: 2 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 18-11-2008

## DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 28-11-2018

Data Source: EI(Lands D)

Slope Part Drainage: (1) Position: Crest Size(mm): 300
(2) Position: On slope Size(mm): 600

Wall Part Drainage: (1) Position: Toe Size(mm): 300

## SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 100 Chunam: 0 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

## WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete Wall Location: Wall at toe
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 75 Spacing (m): 1.5

## SERVICES

N/A

## CHECKING STATUS INFORMATION

N/A

## BACKGROUND INFORMATION

| | |
|---|---|
| GIU Cell Ref.: | 7SE6B7 |
| Map Sheet Reference (1:1000): | 7SE- 6B |
| Aerial Photos: | CN10880/1 (1995), |
| Nearest Rainguage Station (Station Number): | Shun Wo House, Wo Che Estate(N02) |
| Data Collected On: | 28-11-2018 |
| Date of Construction, Subsequent Modification and Demolition: | Modification: Constructed Before: 1963 After: N/A |
| Related Reports/Files or Documents: | File/Report: Development Ref. No.: GCMd 2/B2/218<br>File/Report: Development Ref. No.: GCMd 2/B2/218<br>File/Report: LA Ref. No.: GCMd 5/6/3 pt. 4 case 23<br>File/Report: LA Ref. No.: GCMd 5/6/3 pt. 4 case 23 |
| Remarks: | N/A |
| Follow Up Actions: | N/A |

DH-Order (To Be Confirmed with Buildings Department): None

Advisory Letter (To Be Confirmed with Buildings Department): None

LPMIS: Agreement No.: CE23/2003 Report No.: S3R 300/2006

## ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 17/12/2020)

## STAGE 1 STUDY REPORT

Inspected On: 28-02-1997
Weather: Mainly Fine
District: ME

Section No: 1-1
Height(m): H1 : 7 , H2 : 0
Type of Toe Facility: Other densely populated buildings

Distance from Toe(m): 2
Type of Crest Facility: Undeveloped green belt

Distance from Crest(m): 0.1
Consequence Category: 1
Engineering Judgement: P

Section No: 2-2
Type of Toe Facility: N/A

Distance from Toe(m): 0
Type of Crest Facility: N/A

Distance from Crest(m): 0
Consequence Category: 1
Engineering Judgement: P

| | |
|---|---|
| Sign of Seepage: | Slope : No signs of seepage<br>Wall : N/A |
| Criterion A satisfied: | N |
| Sign of Distress: | Slope : Reasonable (near crest, mid-portion, at toe)<br>Wall : N/A |
| Criterion D satisfied: | N |
| Non-routine maintenance required: | N |
| Note: | N/A |
| Masonry wall/Masonry facing: | N |
| Note: | N/A |
| Consequence category (for critical section): | 1 |
| Observations: | N/A |
| Emergency Action Required: | N |
| Action By: | N/A |

## ACTION TO INITIATE PREVENTIVE WORKS

| | |
|---|---|
| Criterion A/Criterion D: | N/A |
| Action By: | N/A |
| Further Study: | Y |
| Action By: | Mixed |

## OTHER EXTERNAL ACTION

| | |
|---|---|
| Check / repair Services: | N |
| Action By: | N/A |
| Non-routine Maintenance: | N |
| Action By: | N/A |

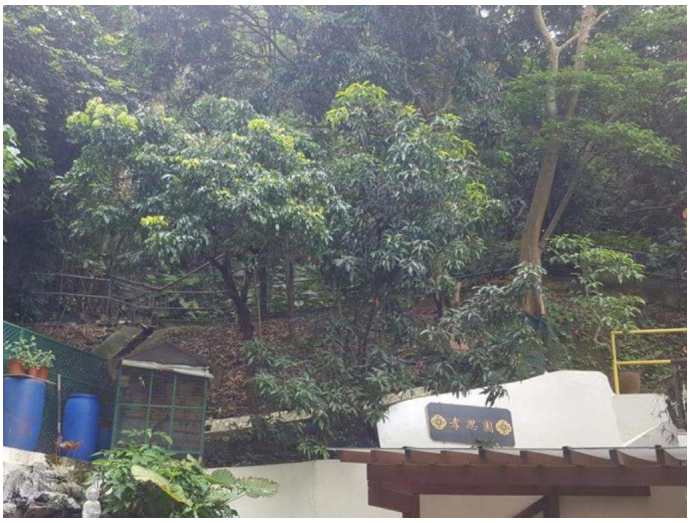
## eLPMIS

LPM/LPMit Details Report
- LPM Study Feature No.: 7SE-A/C 352
- Location: BEHIND NO. 93 OF FO TAN TSUEN, SHATIN
- District Council: Sha Tin
- Maintenance Responsibility (At the Time of Selection): Government
- Responsible Party for Maintenance of Government Portion: Lands D
- Private Lot No.: N/A

LPM/LPMit Study
- Agreement No.: CE23/2003
- Study Type: Stage 3 Study Under Schedule of Rates Contract
- Consultant: Maunsell Geotechnical Services Ltd.
- GEO Managing Section / Engineer: LPM2 / CM43
- Study Status: Study completed
- Design Approach: Conventional (GI + Analysis)
- Option Assessment Accepted: N/A
- Study Report No.: S3R 300/2006
- Programme / Actual Commencement: 19-10-2005
- Programme / Actual Completion: 20-01-2008
- Report Recommendation (For Stage 2 Study): Upgrading Works
- District Check Status: Exempted from checking
- Checking Certificate No.: GEO/LPM119/2008
- GEO Engineer's Remarks: N/A

LPM/LPMit Works
- Works Contract No.: GE/2005/33
- GEO Managing Section / Engineer: LPM2 / CM43
- Contractor: Geotech Engineering Limited
- Progress Status: Maintenance completed
- Reason of Study Termination / Works Deletion (If Necessary): N/A
- Forecast Commencement Date: 15-01-2007
- Forecast Completion Date: 30-06-2007
- Completion Cert. Issued: N/A
- Site Handed Over to Maintenance Department on: 20-07-2007
- Estimated Cost for Upgrading (HK$M): 1.19
- Maintenance Manual No.: MM 119/2008
- Actual Works: Cut back,Cut-off drain,Raking drain,Skin wall,Soil nail,Typical rock slope treatment,Vegetated cover
- No. of Tree Felled: N/A
- No. of Tree Planted (Incl. Transplant): N/A
- % Bare of Slope Surfacing: N/A
- % Vegetated of Slope Surfacing: N/A
- % Shotcrete of Slope Surfacing: N/A
- Other Hard Surface of Slope Surfacing: N/A

## PHOTO



7SE-A/CR 581
7SE-A/F 159
7SE-A/CR 352
7SE-A/C 353
7SE-A/C 524
838 250E
828 350N
838 300E
828 300N
FO TAN ROAD

# APPENDIX B

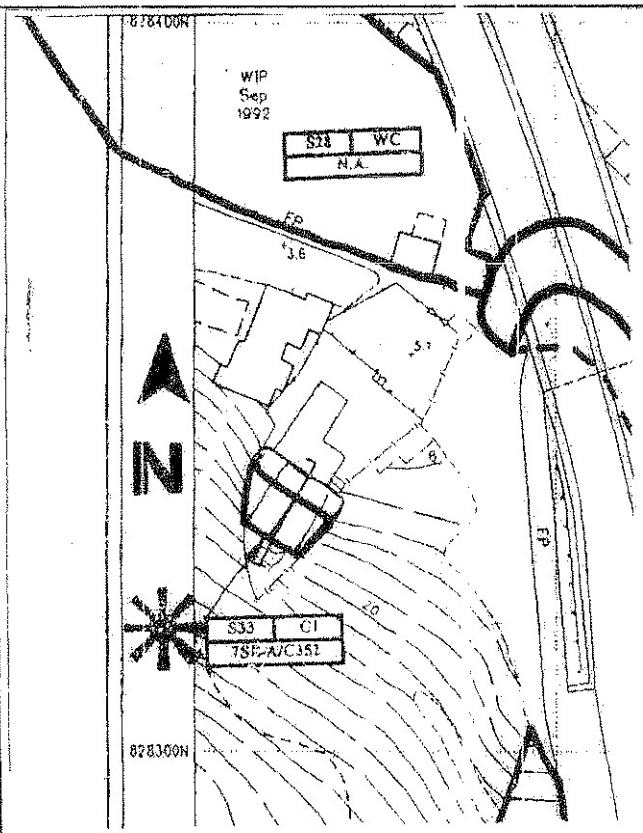
## Stage 1 Study Report

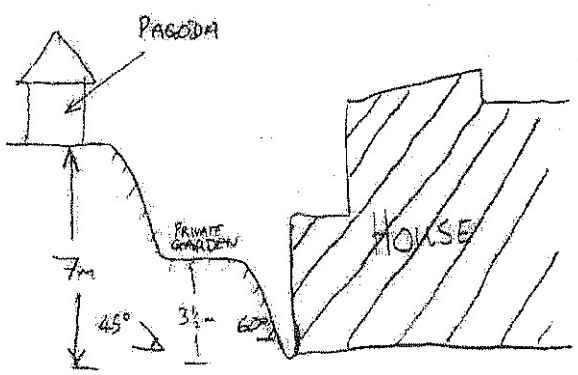
# STAGE 1 STUDY REPORT FOR C, CR AND R FEATURES

Feature Reference No. : 7SE-A/C 352

Location BEHIND NO. 94, OF TAN TSUEN, SHATIN

Inspected by : Davis, A.C. on 28 FEB 1997 | Weather Mainly Fine | District ME | GE Area : ME20




| Section No. | Height (m) H1 | Height (m) H2 | Type of Toe Facility | Distance from Toe (m) | Type of Crest Facility | Distance from Crest (m) | Consequence Category # | Engineering Judgement # |
|---|---|---|---|---|---|---|---|---|
| 1-1 | 7 | 0 | Residential | 0 | Heavily used playground | 0 | 1 | P |

Sign of Seepage : ***Slope : None***

Criterion A satisfied ? **NO**

Sign of Distress : ***Slope : Reasonable (near crest, mid-portion, at toe)***

Crack chunam

Criterion D satisfied ? **NO**

Non-routine maintenance required : *NO*

Note :

Masonry wall/Masonry facing ? *NO*

Note :

Consequence category (for critical section) : **1**

Observations : Part of the slope is inaccessible because of dogs. Private garden is on the berm.

| | | | | | |
|---|---|---|---|---|---|
| Emergency action required | *NO* | Private : ☐ BD | Government : ☐ | | |
| Action to initiate preventive works/ Study | Criterion A/ Criterion D ☐ | Action by: Private ☐ Government ☐ | Further Study ☑ | Action by: Private Owner(s) ☑ Government ☑ | |
| Other external action | Check/repair service ☐ Action by | | Engineer Inspection ☑ | Non-routine Maintenance ☐ | |
| | | | Private ☑ | Government : ☑ | |

| BASIC INFORMATION | Feature Ref. No. : 7SE-A/C 352 |
|---|---|

**Location:** Behind No. 93 of Fo Tan Village, Shatin.

**Approximate Coordinates** **Northing** 828330 **Easting** 838276

## SLOPE PART

**Max. Height ( m ) :** 9 **Length ( m ) :** 35 **Avg. Angle ( deg ) :** 50

## WALL PART

**Max. Height ( m ) :** **Length ( m ) :**

## CONSEQUENCE-TO-LIFE CATEGORY

**Facility at Crest :** Undeveloped green belt

**Distance of Facility from Crest ( m ) :** 0

**Facility at Toe :** Other densely populated buildings

**Distance of Facility from Toe ( m ) :** 0

**Consequence-to-life Category :** 1

**Sift Class :** C1

**Remark :** NIL

**Maintenance Responsibility :** **Sub Div. No :** 0 **Main. Parties :** Lands D

## Other Information

**Feature Ref. No. :** 7SE-A/C 352

**CNPCS :** 8.38 **SIFT Ref. :** 7SE- 6B/S 33

**CNPCS Source :** SIRST record : Provided by SIRST Consultants

## ENHANCED MAINTENANCE

**Upgraded by**

| Prescriptive Design Using GEO Report No. 56 | Non-prescriptive Design including Conventional Design |
|---|---|
| NULL | NULL |

**Improved by**

| Type 1 /Type 2 Prescriptive Measures | Type 3 Prescriptive Measures (not up to upgrading standard) | Actual Completion Date |
|---|---|---|
| NULL | NULL | NULL |

## DADS

**DH Order**

| Recommendation Date | Served Date | Defaulted Date | Lot Address | File Reference | Notice No. | Discharged Date |
|---|---|---|---|---|---|---|
| NULL | NULL | NULL | NULL | NULL | NULL | NULL |

**Advisory Letter**

| Recommendation Date | Served Date | Lot Address | File Reference | Status of Letter |
|---|---|---|---|---|
| NULL | NULL | NULL | NULL | NULL |

## CHECKING STATUS

**Relevant Files :**

**Part :** NULL

**Checking Status :** NULL

## LPMIS

**Agreement No.:** CE23/2003 **Study Type:** Stage 3 Study Under Schedule of Rates Contract **GE/Consultant:** MGS

**Study Status:** Study has not commenced yet

**Report No.:** **Draft Report Date:** **Study Completion Date:**

**Recommendation:**

**Remarks:**

**LPM Contract No.:** GE/2005/33

**Works Status:** Works not started

**Works Commencement Date:** **Works Completion Date:**

**Type of Upgrading Works:**

**Drawing No.:** **Maintenance Manual No.:**

| Slope / Wall Detail Data | Feature Ref. No. : 7SE-A/C 352 |
|---|---|

## SLOPE PART

| | | | | |
|---|---|---|---|---|
| **Material Description :** | Material Type: | Soil | Geology: | |
| **Dimensions :** | Max. Height (m): | 9 | Length (m): | 35 |
| | Average Angle (deg): | 50 | | |
| | No. of Berms: | | Min. Berm Width (m): | |
| **Surface Protection :** | % Bare: | 0 | % Shotcrete: | 0 |
| | % Vegetated: | 100 | % Other Cover: | 0 |
| | % Chunam: | 0 | | |
| **Weepholes :** | Size (mm): | | Spacing (m): | |

**Drainage :**

| Type | Size (mm) |
|---|---|
| NULL | NULL |

## WALL PART

NULL

## SERVICES

| Utilities Type | Size | Location | Remark |
|---|---|---|---|
| NULL | NULL | NULL | NULL |

# APPENDIX C

## GEO Incident Report No. ME97/7/58

S/NT 2

URGENT BY HAND

Amended Mar., 97

# GEO INCIDENT REPORT

To: ☑ CGE/~~P~~/~~ME~~/~~HW~~* (See also section 16)

Done ☑ PM/LIC (Fax : 2827 8352) 23 JUL 199?

*(to be filled in by District Division)*
File No. GCME 2/E2/97(E)/ME
Incident No. ME 97/7/58 Use
Feature No. 7SE-A/C352

**FILL IN OR TICK OR DELETE (FOR ~~ITEM MARKED~~ *) AS APPROPRIATE**

1. Incident Reported: Date ...../...../199..... Time .....:..... hrs
☐ thro' Pager No. 4554*/6780* ☐ from ETC Mr ..... (ETC Incident No. .....)
☐ from Mr/~~Mrs/Ms~~ Alan Wong Tel. No. 2604 8078 ext 6.6
of ☐ Arch SD ☐ DLO/..... ☐ BD ☑ DO/Shatin ☐ HD
☐ HyD/..... ☐ Police ☐ FSD ☐ WSD ☐ .....

2. Location of Failure No. 75 Fo Tan Villas, Shatin
Co-ordinates of centre of failure 835263E 1829332N 7SE-6B
(Attach a 1:1000 survey plan to show location of failure, and Slope Reference Number if possible)

3. Date of Inspection 10/7/199?
with Mr/~~Mrs/Ms~~ Alan Wong of P/S/S.T. Inspection by C.K. Siu
Mr/~~Mrs/Ms~~ Y.P. Lam of D+B/S.T. Tel. No. ..... Time arrived on site ..... hrs
Mr/~~Mrs/Ms~~ Y.C. Ku of Hy/W.T. Tel. No. ..... Time left site ..... hrs
Mr/Mrs/Ms ..... of ..... Tel. No. .....
Mr/Mrs/Ms ..... of ..... Tel. No. .....

4. Time and Date of Failure .....:...../...../..... Weather Condition at time of inspection cloudy
(It is important to give exact time if possible; ask residents or others)

5. Type of Failure ☐ Significant sign of distress with no failure mass ..... ☐ Washout
☐ Landslide ☐ Boulder fall from natural slope ☐ Retaining wall failure ☐ Rock fall
☐ Non landslip case ( tree fall/ building collapse*/ .....) ☐
surface erosion
(Circle ☐ to indicate principal type of failure if more than one type is involved)

6. Feature Type ☐ Natural slope ☐ Rock slope ☐ RC Retaining wall ☐ Masonry wall
☐ Fill slope ☑ Soil cut slope ☐ Soil/rock cut slope ☐ Others .....
(Circle ☐ to indicate principal feature type if more than one type is involved)

7. Material and Mass Description of the Feature (The Geoguide 3 classification system should be adopted)
☐ Fill ..... ☐ Colluvium ..... ☐ Residual Soil .....
☑ Partially Weathered Rock ( (PW 0/30), __PW 30/50, __PW 50/90, __PW 90/100, __unclear)
☐ Others .....
(Circle ☐ to indicate dominant material if more than one material is involved)

8. Scale of Failure <10 m³ (Volume of slip scar*/debris*) - surface erosion only
For boulder fall from natural slope (Approx. trajectory to be shown in Item 15)
Number of boulders involved ..... Dimension and shape of boulders .....

9. Feature Condition
Evidence of poor state of maintenance: ☐ Damaged chunam/shotcrete/stone-pitching*, location .....
☐ Bare slope surface (poorly maintained vegetation), location .....
☐ Blocked/broken drains, location ..... ☐ Others ....., location .....
Capacity of surface drainage system ☐ adequate ☐ inadequate ☐ not present ☑ not known
Coverage of hard protection surface against infiltration ☐ adequate ☐ inadequate ☐ not present
Surface Protection Material .....
Field evidence of past instability at or adjoining the failure location ☐ yes ☐ no
Groundwater seepage observed at the failure location ☐ yes (location to be shown in item 15) ☐ no

10. Possible Contributing Causes of Failure (tick one or more) ☐ Infiltration ☐ wash-out
☐ seepage behind an impermeable surface ☐ groundwater (main/perched/unclassified)* ☐ rupture of watermai
☐ Insufficient maintenance contributed to failure ..... ☐ Others .....
(Circle ☐ to indicate primary cause if more than one cause is involved)

11. Consequence of Failure ☐ ..... person(s) killed ☐ ..... person(s) injured ☐ Squatter huts affected ☐ Carparks affec
☐ ..... lane(s) of road blocked ☐ Building lot affected ☐ Construction site affected ☐ Pedestrian pavement affected
☐ Country park affected ☑ Open space affected ☐ Building access affected ☐ .....

Amended Mar.,

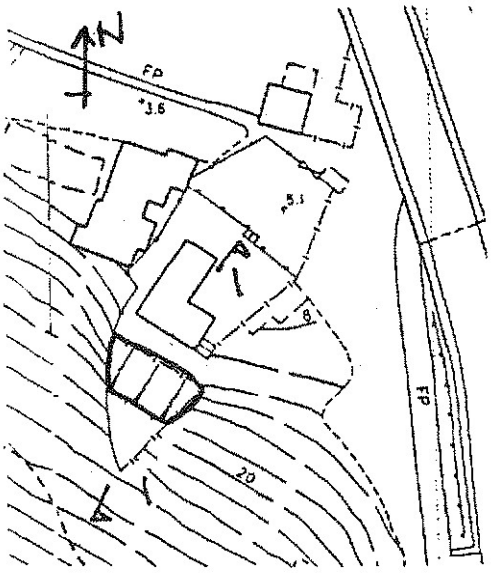
Immediate Advice Given To: Mr/~~Mrs/Ms~~ Y.B Lam of DLO/Sha Tin & Y.C. Ku of CHE/NT

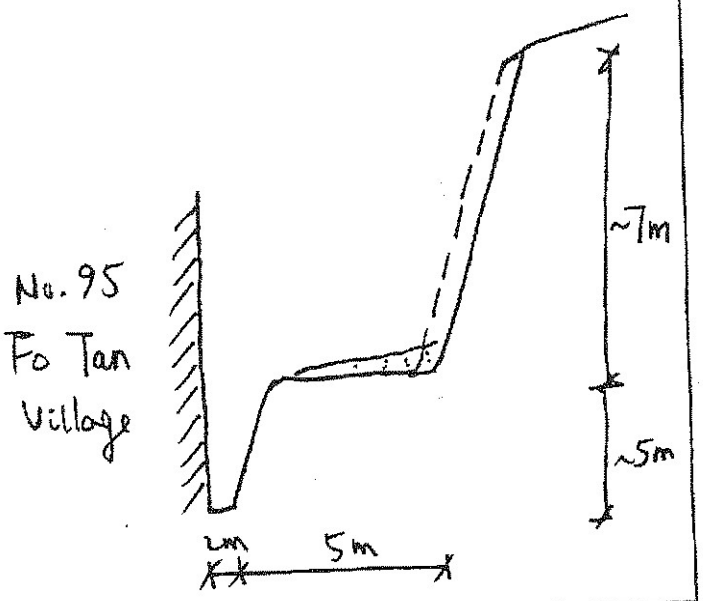
- ☐ Squatter huts permanently evacuated Hut No(s) .....
- ☐ Squatter huts temporarily evacuated Hut No(s) .....
- ☐ Flats evacuated/Closure Order Recommended. Building/Flat No. .....
- ☐ Close ..... lane(s) of road
- ☐ Close pedestrian pavement
- ☐ Divert surface runoff from reaching failure area
- ☐ Cover failure scar with tarpaulin properly secured against wind
- ☐ Fence off area in danger
- ☐ Trim back failure surface
- ☑ Provide surface protection (with weepholes) to trimmed failure surface
- ☐ Provide/reconstruct drainage system
- ☐ Isolate water-carrying services
- ☑ Check land status
- ☐ Buttressing
- ☐ Warn nearby occupants of possible danger during heavy rainstorm
- ☐ .....

3. Is Further Inspection by District GE Required? ☐ Yes ☑ No
   if Yes, Reason .....

4. Is Landslip Record Card Required: ☐ Yes (for debris vol. > 50 $m^3$ or involving death)

5. Details of Failure (location plan & section with approx. dimensions of slope height, gradients, depth of failure, debris run out etc.)




Inspection Officer's Signature — C.K. Siu, GE/CPM(ME) — NAME IN BLOCK LETTER, POST — 14.7.97 — DATE

16. District Action Required *(to be filled in by District Division)*

16.1 Feature to be registered (GEO Circular *8/96*)? ☐ Yes ☑ No (Decision to be made by District GE) already registered.

16.2 Feature previously studied, upgraded or checked by GEO ☐ *Yes* ☐ *No (TO to carry out file search)*

*If Yes, state action taken in file* _____

*Additional Remarks* _____

District GE's Signature — C.K. Siu (GE/CPM) — NAME IN BLOCK LETTER — 14/7/97 — Date

District SGE's Signature — W.K. Lau SGE/CNT — NAME IN BLOCK LETTER — 14/7/97 — Date

C.C. ☑ CGE/SP (with photo) thro' GGE/PM* GCME 21E/7SE-A/C35L .PGGE

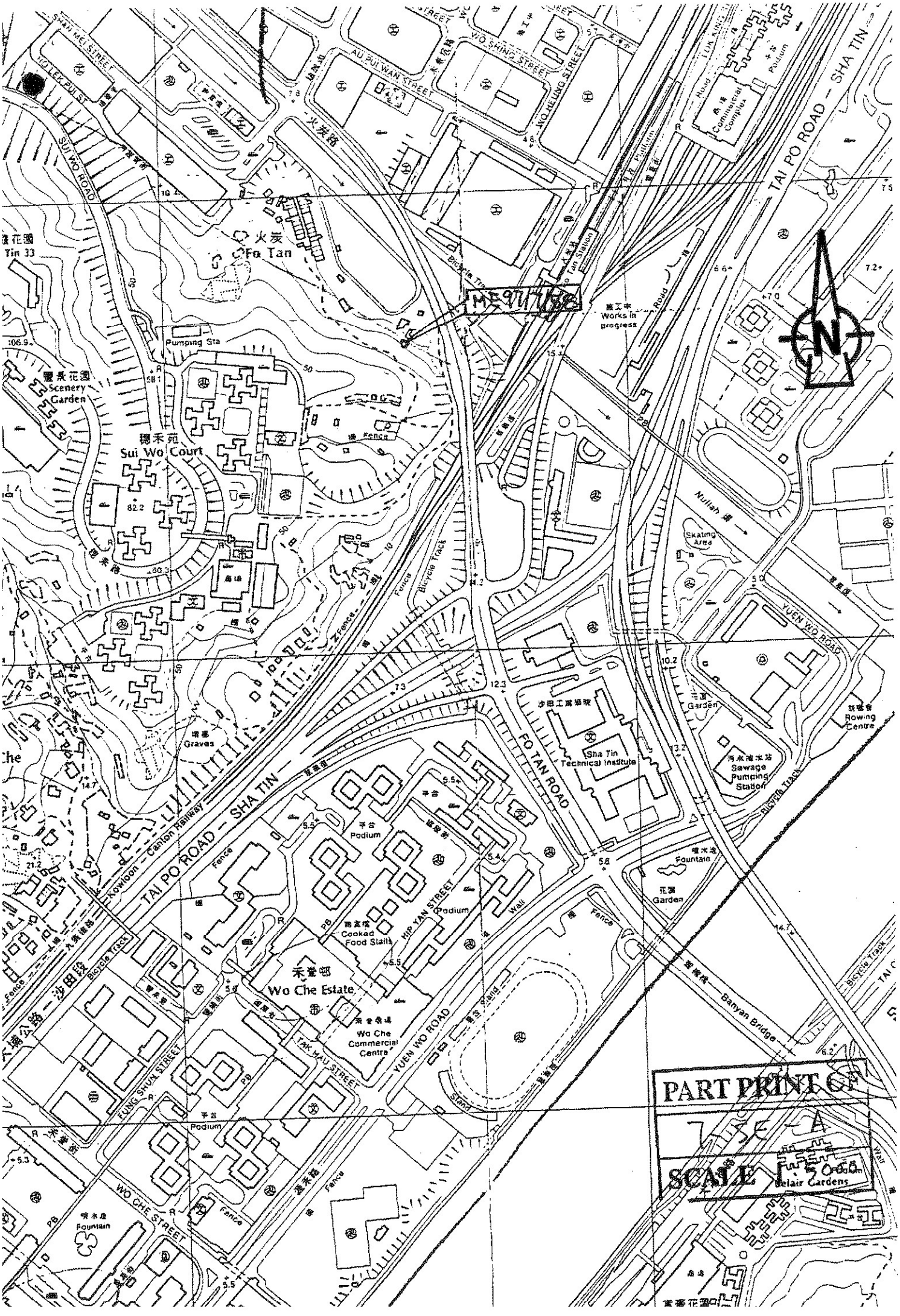
☑ CGE/LI (with photo) CL

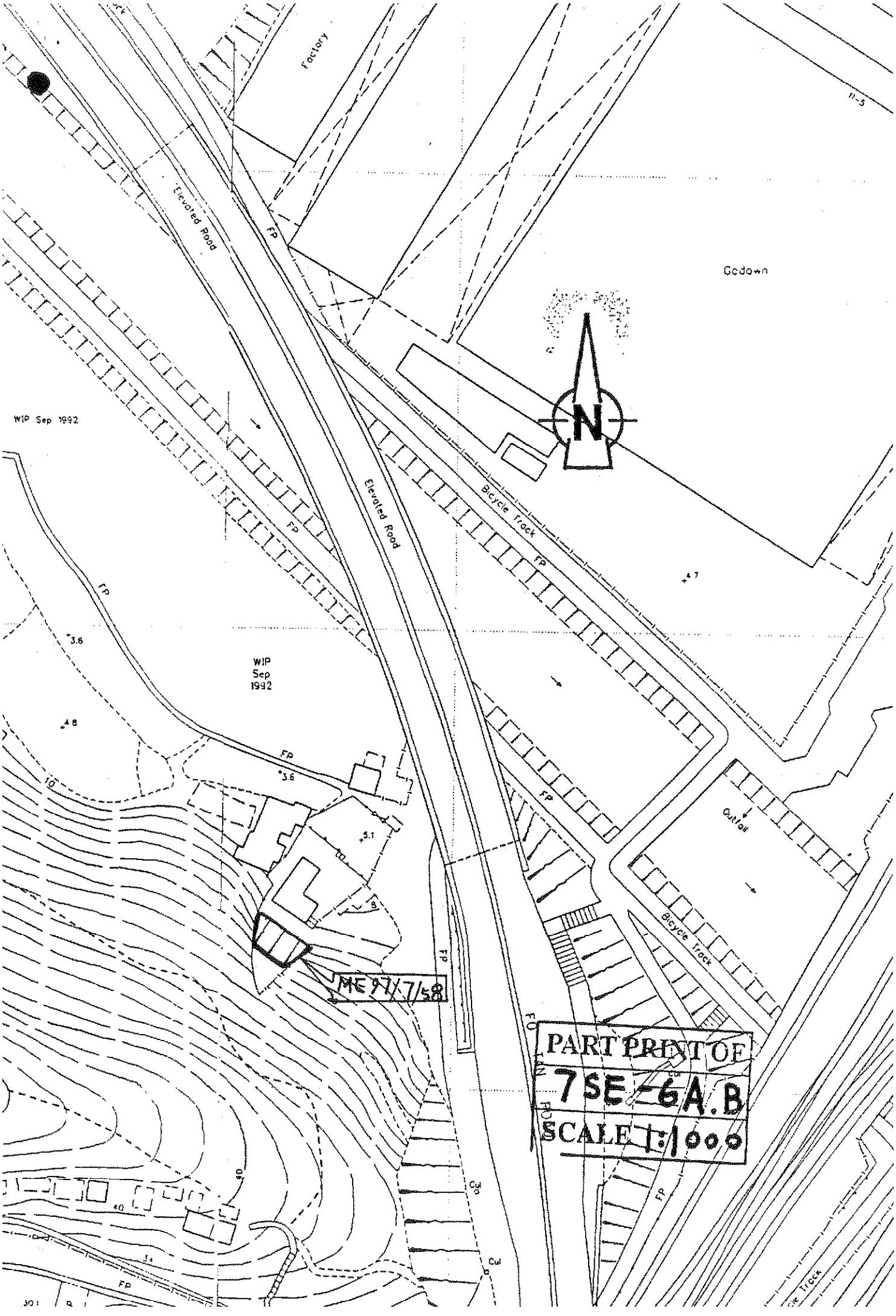
☐ CGE/SS (for boulder fall from natural slope only)

☐ CBS/~~DB~~ SS (for private site only)

1/. One incident report should be filled in for each incident. Report to be continued on supplementary sheets if necessary.

2/. Section 1 to 15 to be filled in by Inspecting GE. On returning to the office, the copy should be despatched to CGE/District and PM/LIC asap. The [illegible] sections (Tag box & Section 16) to be completed by District GE and despatched accordingly.


SHAM MEI STREET
TO LEK PUI ST
SUI WO ROAD
AU PUI WAN STREET
WO SHING STREET
WO HEUNG STREET
TAI PO ROAD – SHA TIN
Commercial Complex
Podium
火灰地
Fo Tan
Tin 33
Pumping Sta
Scenery Garden
Sui Wo Court
Bicycle Track
Fence
Works in progress
Road
Skating Area
YUEN WO ROAD
Rowing Centre
Sha Tin Technical Institute
FO TAN ROAD
Sewage Pumping Station
Fountain
Graves
Kowloon – Canton Railway
Cooked Food Stalls
HIP YAN STREET
Wo Che Estate
Wo Che Commercial Centre
TAK HAU STREET
FUNG SHUN STREET
WO CHE STREET
Banyan Bridge
Stand
Wall
PART PRINT OF
SCALE
Belair Gardens


Factory
Elevated Road
FP
Godown
N
WIP Sep 1992
Elevated Road
Bicycle Track
FP
WIP
Sep
1992
FP
FP
FP
Outfall
Bicycle Track
ME 97/7/58
PART PRINT OF
7SE-6A.B
SCALE 1:1000
Cul
FP

# APPENDIX D

## GEO Incident Report No. ME97/7/27

SCNT 2

URGENT BY HAND

Amended Mar. '97

# GEO INCIDENT REPORT

To: ☑ CGE/~~A*/ME*/MW*~~ (See also section 16)
☑ PM/LIC (Fax : 2827 8352)

23 JUL 97

*(to be filled in by District Division)*
File No. GCME 2/E2/17(E)/ME
Incident No. ME 97/7/27 WL
Feature No. 7SE-A/C353

**FILL IN OR TICK OR DELETE (FOR ITEM MARKED *) AS APPROPRIATE**

1. Incident Reported: Date 5/7/1997 Time 10:00 hrs
☐ thro' Pager No. 4554*/6780* ☐ from ETC Mr ..... (ETC Incident No. .....)
☑ from Mr/Mrs/Ms Y.C. KU Tel. No. 90233526/27623938
of ☐ Arch SD ☐ DLO/..... ☐ BD ☐ DO/..... ☐ HD
☑ HyD/NT ☐ Police ☐ FSD ☐ WSD ☐ .....

2. Location of Failure FO TAN ROAD (Lamp Pst 6722-52) Shatin
Co-ordinates of centre of failure 7-SE-6A.6 838295E 822290N
(Attach a 1:1000 survey plan to show location of failure, and Slope Reference Number if possible)

3. Date of Inspection 5/7/1997 Inspection by M.K. LEE
with Mr/~~Mrs/Ms~~ Y.C. KU of HyD Tel. No. 27623138 Time arrived on site 10:45 hrs
Mr/Mrs/Ms ..... of ..... Tel. No. ..... Time left site 11:15 hrs
Mr/Mrs/Ms ..... of ..... Tel. No. .....
Mr/Mrs/Ms ..... of ..... Tel. No. .....
Mr/Mrs/Ms ..... of ..... Tel. No. .....

4. Time and Date of Failure 16:00 4/7/97 Weather Condition at time of inspection Rainy
(It is important to give exact time if possible; ask residents or others)

5. Type of Failure
☑ Landslide ☐ Significant sign of distress with no failure mass ☐ Washout
☐ Boulder fall from natural slope ☐ Retaining wall failure ☐ Rock fall
☐ Non landslip case ( tree fall/ building collapse*/ .....) ☐
.....
(Circle ☐ to indicate principal type of failure if more than one type is involved)

6. Feature Type
☐ Natural slope ☐ Rock slope ☐ RC Retaining wall ☐ Masonry wall
☐ Fill slope ☑ Soil cut slope ☐ Soil/rock cut slope ☐ Others .....
(Circle ☐ to indicate principal feature type if more than one type is involved)

7. Material and Mass Description of the Feature (The Geoguide 3 classification system should be adopted)
☐ Fill ..... ☐ Colluvium ..... ☑ Residual Soil .....
☑ Partially Weathered Rock (☑ PW 0/30, ☐ PW 30/50, ☐ PW 50/90, ☐ PW 90/100, ☐ unclear)
☐ Others .....
(Circle ☐ to indicate dominant material if more than one material is involved)

8. Scale of Failure 40 $m^3$ (Volume of slip ~~scar~~*/debris*)
For boulder fall from natural slope (Approx. trajectory to be shown in Item 15)
Number of boulders involved ..... Dimension and shape of boulders .....

9. Feature Condition
Evidence of poor state of maintenance: ☐ Damaged chunam/shotcrete/stone-pitching*, location .....
☐ Bare slope surface (poorly maintained vegetation), location .....
☐ Blocked/broken drains, location ..... ☐ Others ....., location .....
Capacity of surface drainage system ☐ adequate ☐ inadequate ☐ not present ☑ not known
Coverage of hard protection surface against infiltration ☐ adequate ☐ inadequate ☐ not present
Surface Protection Material Grass
Field evidence of past instability at or adjoining the failure location ☐ yes ☑ no
Groundwater seepage observed at the failure location ☐ yes (location to be shown in item 15) ☑ no

10. Possible Contributing Causes of Failure (tick one or more)
☑ Infiltration ☐ wash-out
☐ seepage behind an impermeable surface ☐ groundwater (main/perched/unclassified)* ☐ rupture of watermains
☐ Insufficient maintenance contributed to failure ..... ☐ Others .....
(Circle ☐ to indicate primary cause if more than one cause is involved)

11. Consequence of Failure
☐ ..... person(s) killed ☐ ..... person(s) injured ☐ Squatter huts affected ☐ Carparks affected
☐ ..... lane(s) of road blocked ☐ Building lot affected ☐ Construction site affected ☑ Pedestrian pavement affected
☐ Country park affected ☐ Open space affected ☐ Building access affected ☑ Bus stop affected

Amended Mar., 97

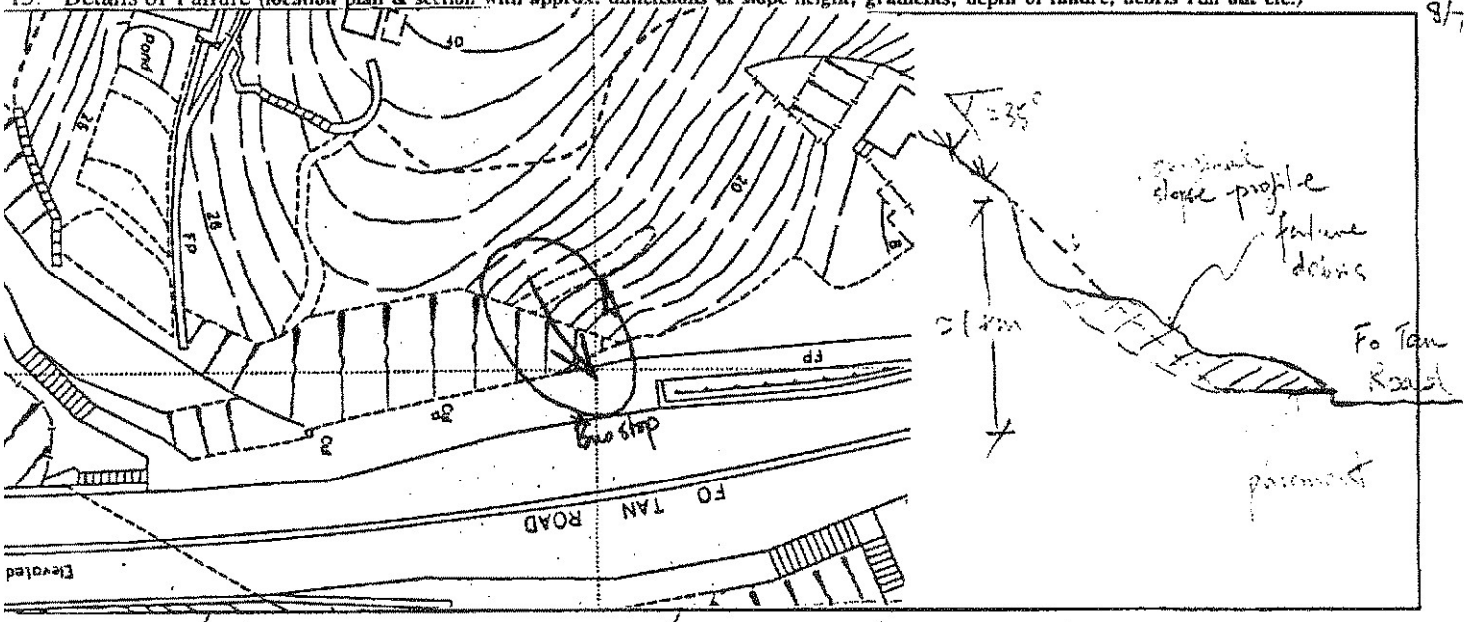
12. Immediate Advice Given To: Mr/Mrs/Ms ..... Y. C. KU ..... of ..... HyD .....

- ☐ Squatter huts permanently evacuated Hut No(s) .....
- ☐ Squatter huts temporarily evacuated Hut No(s) .....
- ☐ Flats evacuated/Closure Order Recommended. Building/Flat No. .....
- ☐ Close ..... lane(s) of road
- ☑ Close pedestrian pavement
- ☑ Divert surface runoff from reaching failure area
- ☑ Cover failure scar with tarpaulin properly secured against wind
- ☑ Fence off area in danger
- ☑ Trim back failure surface
- ☑ Provide surface protection (with weepholes) to trimmed failure surface
- ☑ Provide/reconstruct drainage system
- ☐ Isolate water-carrying services
- ☐ Check land status
- ☐ Buttressing
- ☐ Warn nearby occupants of possible danger during heavy rainstorm
- ☑ Maintain closure of the bus stop

13. Is Further Inspection by District GE Required? ☒ Yes ☑ No * Remark
if Yes, Reason ..... to recommend slope remedial works ..... District GE (S.C. Leung) visited the site on 7.7.97 and advice given to HyD.

14. Is Landslip Record Card Required: ☐ Yes (for debris vol. > 50 m³ or involving death)

15. Details of Failure (location plan & section with approx. dimensions of slope height, gradients, depth of failure, debris run out etc.)




Inspection Officer's Signature

LEE MAN KEUNG GE/CNT — NAME IN BLOCK LETTER, POST

8/7/97 — DATE

16. District Action Required *(to be filled in by District Division)*

16.1 Feature to be registered (GEO Circular *8/96*)? ☐ Yes ☑ No (Decision to be made by District GE) registered already

16.2 Feature previously studied, upgraded or checked by GEO ☑ *Yes* ☐ *No (TO to carry out file search)*

*If Yes, state action taken in file* GCME 2/B2/218 (Final checking is still outstanding)

*Additional Remarks* _____

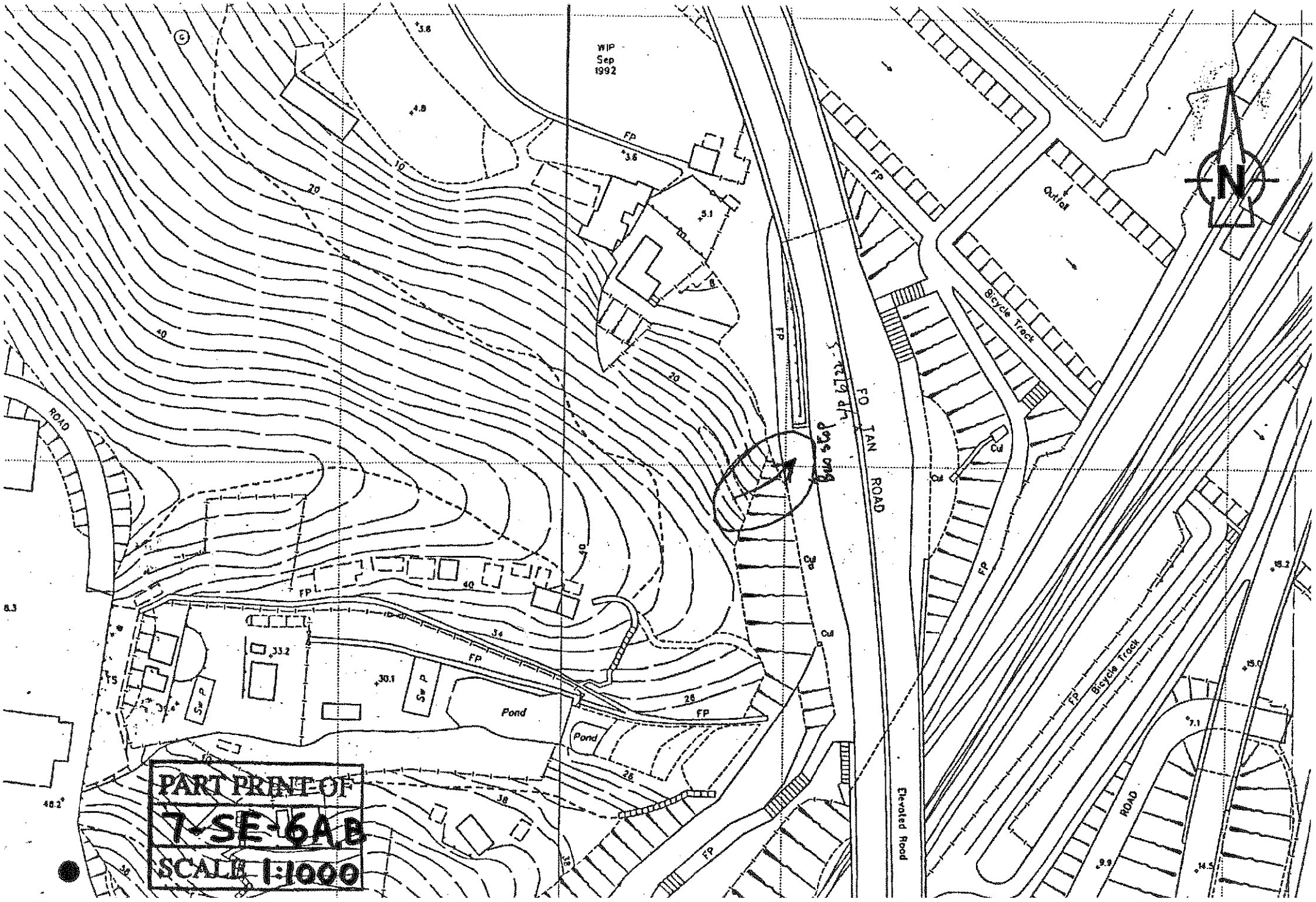
| | | |
|---|---|---|
| District GE's Signature | M.K. Lee GE/CNT — NAME IN BLOCK LETTER | 8.7.97 — Date |
| District SGE's Signature | NAME IN BLOCK LETTER | 9/7/97 — Date |

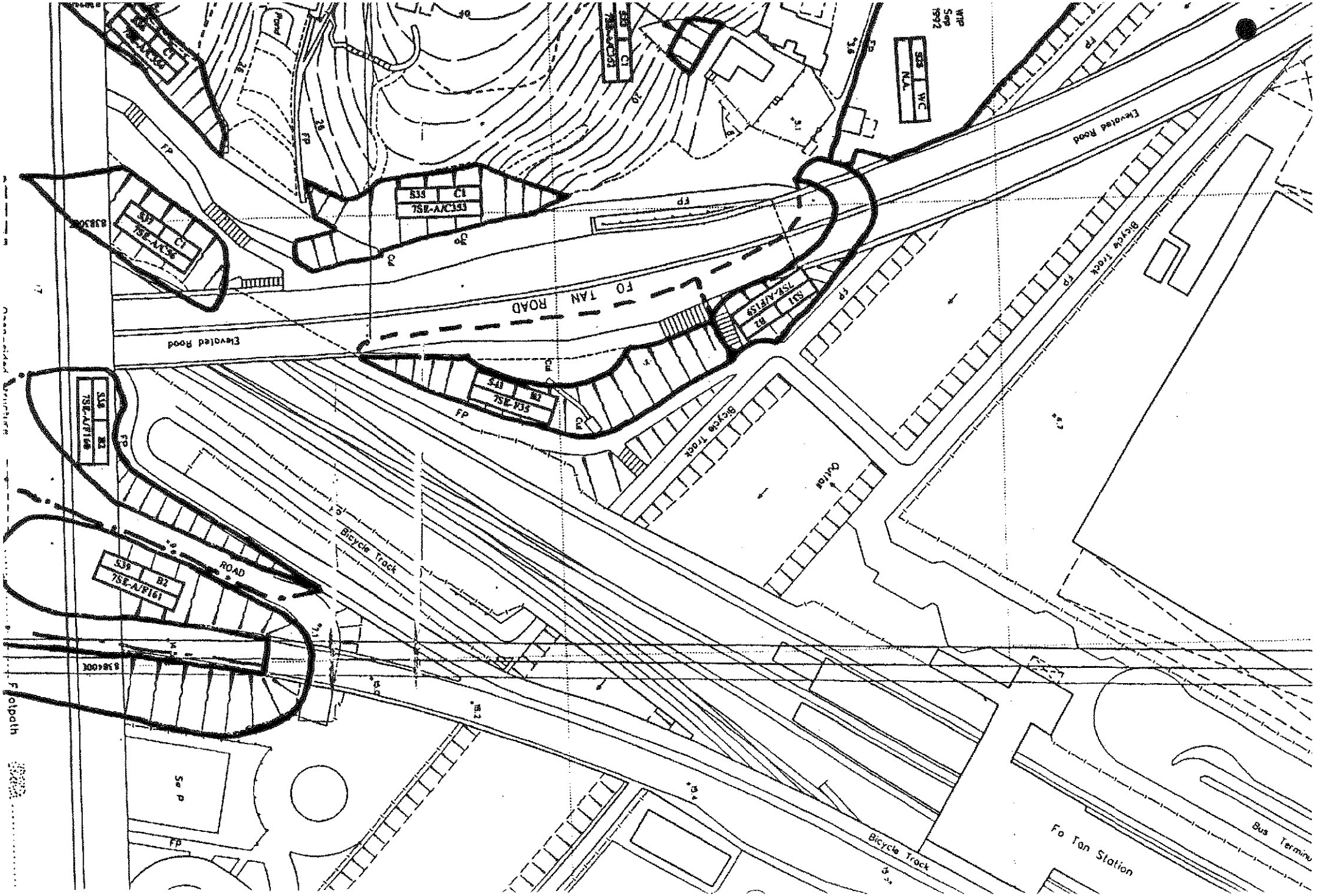
C.C.
- ☑ CGE/SP (with photo) thro' GGE I/M* ,PGGE
- ☑ CGE/LI (with photo) C
- ☐ CGE/SS (for boulder fall from natural slope only)
- ☐ CBS/~~DB~~SS (for private site only)

**1/. One incident report should be filled in for each incident. Report to be continued on supplementary sheets if necessary.**

**2/. Section 1 to 15 to be filled in by Inspecting GE. On returning to the office, the copy should be despatched to CGE/District and PM/LIC asap. The remaining sections (Top box & Section 16) to be completed by District GE and despatched accordingly.**

**3/. Useful observation which supplement information given in the Incident Report to be made on separate sheets.**


WIP
Sep
1992
FP
Outfall
Bicycle Track
FO JAN ROAD
Elevated Road
Pond
Pond
ROAD
PART PRINT OF
7-SE-6A,B
SCALE 1:1000


FO TAN ROAD
Elevated Road
Bicycle Track
Outlet
Fo Tan Station
Bus Terminu
Footpath
FP
ROAD

# APPENDIX E

## API Report

]

**Aerial Photographic Interpretation Report**
**Feature No. 7SE-A/C352**

1. SITE HISTORY

The captioned feature 7SE-A/C352 was formed by cutting between 1945 and 1963. It was probably formed in association with the houses and platform formations at its toe. It is generally facing the north. It appears to be mostly sealed with surface protection since its formation, and it is subsequently obscured by dense vegetation from 1974 to 2003. Referring to the 1963 & 1964 aerial photographs, a bare area with a gentle slope gradient is evident on the eastern end of feature. It is probably suggesting the fill placement of the area. The thickness of the fill material is estimated to be approximately 0.5 m. Referring to the 2003 and 2004 aerial photographs, vegetation clearance is evident on the western-end of the captioned feature, and a berm is evident on the western end of feature.

A cut-feature (7SE-A/C524) was being formed in 1977. It was probably formed in association with the formation of the Fo Tan Road, which was being constructed during 1977 to 1980

2. INSTABILITY AND EROSION

No past instability can be identified on the captioned feature and its vicinity from the available aerial photographs.

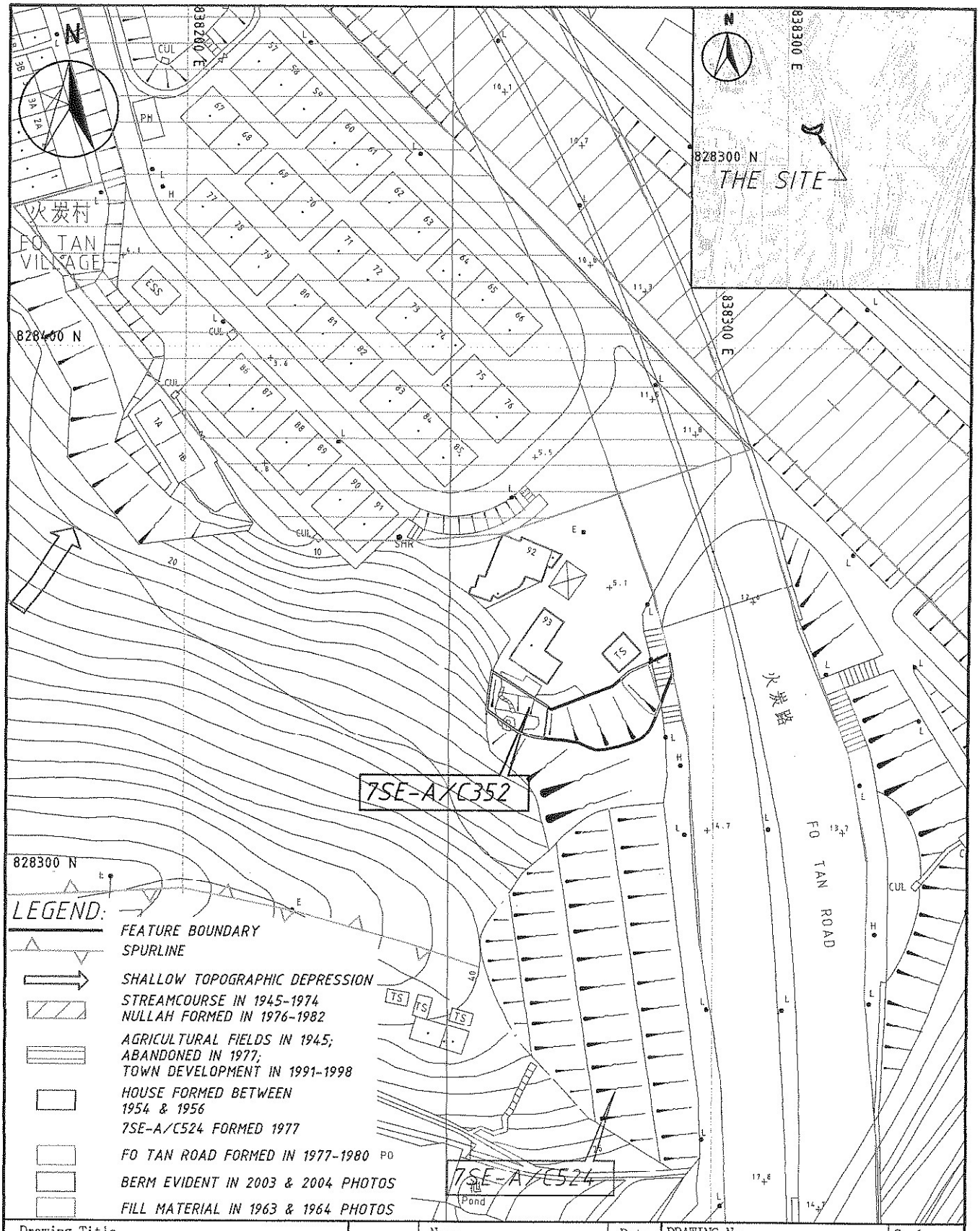
3. NATURAL TERRAIN

The captioned feature was formed on the toe of the NE-facing flank of an E-W trending spur. A shallow topographic depression is evident at about 100 m to the west. A streamcourse, generally running from the northwest to southeast, has located at about 50 m to the east of the captioned feature. It was partially covered by alluvial deposits in 1945. A nullah, superimposing the streamcourse, was being constructed from 1976 to 1982. The toe area of the natural slope had been developed with houses and agricultural fields in 1949. The agricultural fields were abandoned in 1977, and the area was subsequently developed with the formations of roads and low-rise buildings. The natural terrain of the study area was generally covered by sparse vegetation in 1949. The vegetation density of the study area had increased to dense since 1964.

**Aerial Photographic Interpretation Report**
**Feature No. 7SE-A/C352**

Table 1- Aerial photographs reviewed as part of this aerial photograph interpretation.

| Date | Altitude (ft) | Photo No. |
|---|---|---|
| 01 Nov. 1945 | 20000 | Y00651 |
| 1963 | Un-specified | Y8764 |
| 16 Dec. 1964 | 1800 | Y12445-Y12448 |
| 28 Feb. 1974 | 12500 | 8246-8247 |
| 26 Jan. 1976 | 4000 | 12568-12569 |
| 12 Dec. 1977 | 2500 | 20158-20159 |
| 15 April 1980 | 2000 | 29572-29574 |
| 28 July 1982 | 4000 | 43233-43234 |
| 29 Nov. 1983 | 4000 | 51128-51129 |
| 29 Aug. 1984 | 4000 | 55991-55992 |
| 28 April 1986 | 4000 | A4844 |
| 10 Dec. 1987 | 4000 | A11063 |
| 4 Nov. 1988 | 4000 | A15411 |
| 3 Dec. 1990 | 10000 | A24350 |
| 19 Sept. 1991 | 4000 | A27104 |
| 6 Oct. 1992 | 4000 | A31909-A31910 |
| 9 Jan 1992 | 3000 | CN 2733 – CN2734 |
| 8 Oct 1993 | 4000 | CN 4550 |
| 4 Oct 1993 | 20000 | CN 4522 |
| 5 Sep 1995 | 2500 | CN 10878 – CN 10879 |
| 24 Oct 1996 | 4000 | CN 14923 – CN 14924 |
| 3 Sep 1999 | 5500 | A 49895 |
| 10 Aug 2000 | 3000 | CN 27849 |
| 18 Jun 2001 | 7000 | CW 31722 |
| 25 Nov 2003 | 4000 | CW 53062 – CW 53063 |
| 11 Sep 2004 | 4000 | CW 58963 – CW 58964 |



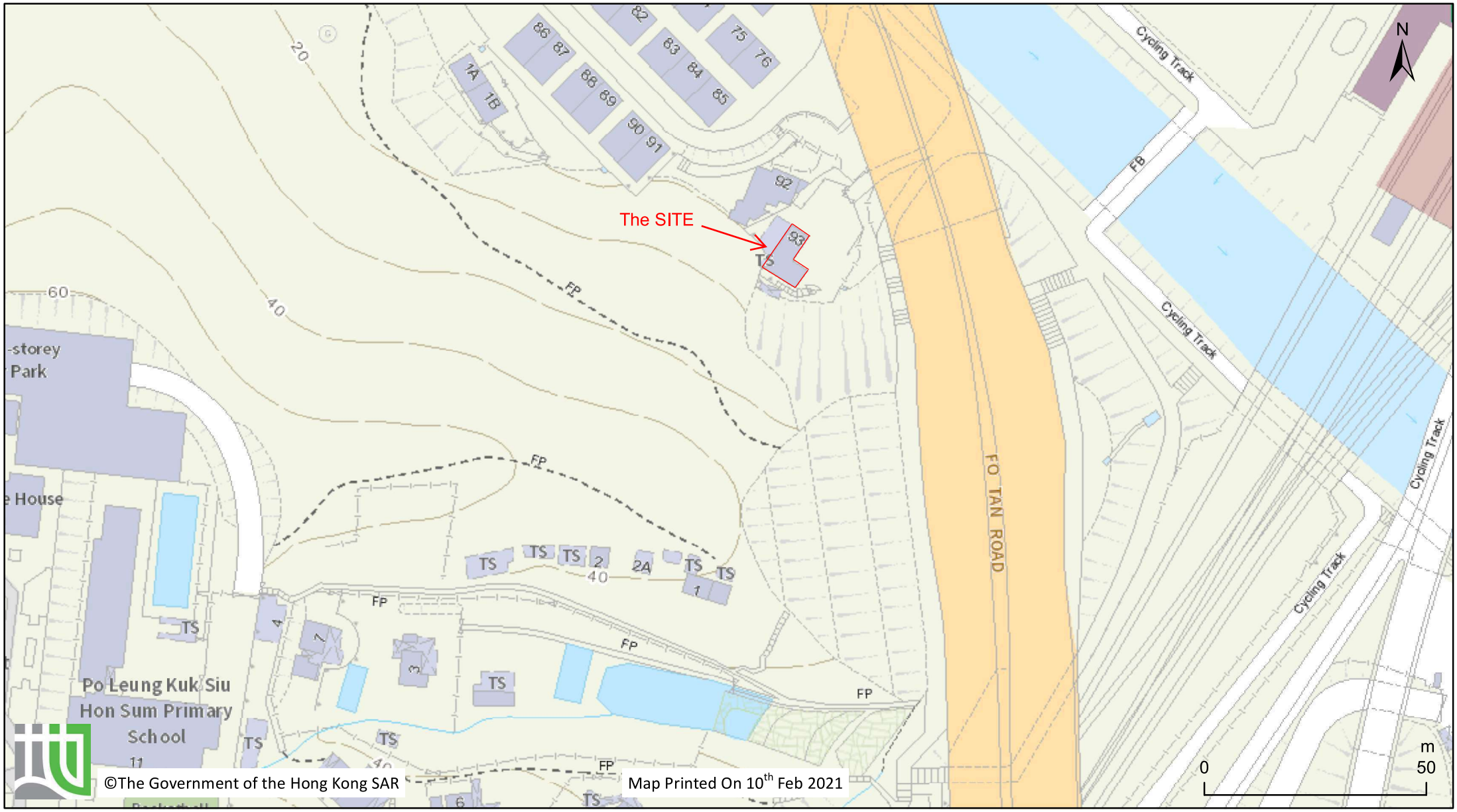

| Drawing Titie | | Name | Date | DRAWING No. | Scale |
|---|---|---|---|---|---|
| API PLAN | Designed | FKHC | 02/06 | 52004/API-318 | 1:1000 |
| | Drawn | ZLF | 02/06 | GEOTECHNICAL ENGINEERING OFFICE | |
| MAUNSELL GEOTECHNICAL SERVICES LTD. 茂盛土力工程顧問有限公司 | Checked | KLT | 02/06 | CEDD Civil Engineering and Development Department | |
| | Approved | CHL | 02/06 | | |

# APPENDIX F

## GEOMAP and Geological Profile

GEOINFO MAP
地理資訊地圖

Go to map: https://www.map.gov.hk/gm/geo:22.3940,114.1962?z=1128




Powered by GeoInfo Map: https://www.map.gov.hk

*Note: The use of this map is subject to the Terms and Conditions and the IP Rights Notice of GeoInfo Map.*

N

838270 E

838300 E

828330 N

644A

551A

551RP

644B

644RP

640

12.6

CONNECTED TO EXISTING 300 U-CHANNEL

CONNECTED TO NEAREST 900 DIA. STORMWATER MANHOLE DRAINAGE SYSTEM

AS-CONSTRUCTED GRADE 30/20 MASS CONCRETE (MAX. 3m DEPTH)

AS-CONSTRUCTED HANDRAILING

AS-CONSTRUCTED 225ϕ CUT-OFF DRAIN

AS-CONSTRUCTED LOCKABLE GATE AS PER STANDARD DRAWING C2508A

SLOPE REGISTRATION SIGN PLATE

7SE-A/CR352 (PREVIOUSLY NAMED AS FEATURE NO. 7SE-A/C352)

AS-CONSTRUCTED 40° (MAX.) CUT SLOPE

AS-CONSTRUCTED MAINTENANCE STAIRCASE AS PER STANDARD DRAWING C2101C & C2103E

AS-CONSTRUCTED 100 THK. GRADE 20/10 PAVING

AS-CONSTRUCTED 55° (MAX.) CUT SLOPE

AS-CONSTRUCTED HYDROSEEDING WITH EROSION CONTROL MAT

7SE-A/C353

7SE-A/C524

A

B

C

D

## NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE P.D.

## LEGEND

- FEATURE BOUNDARY
- EXISTING CONTOUR LINE
- EXISTING SLOPE
- DH1 — RECENT VERTICAL DRILLHOLE (DH1 TO DH2)
- LOT BOUNDARY
- 375UC — EXISTING 375mm U-CHANNEL
- EXISTING SUMP PIT
- +10.3 — AS-CONSTRUCTED FORMATION LEVEL
- AS-CONSTRUCTED SOIL NAIL
- CP — AS-CONSTRUCTED CATCHPIT
- 300UC — AS-CONSTRUCTED 300mm U-CHANNEL
- 300SC — AS-CONSTRUCTED 300mm STEPPED CHANNEL
- AS-CONSTRUCTED 600mm WIDE MAINTENANCE STAIRCASE
- OR1 — AS-CONSTRUCTED PRESCRIPTIVE TYPE 3 RAKING DRAINS
- A A — SECTION MARK A-A
- HYDROSEEDED SLOPE SURFACE COVERD WITH EROSION CONTROL MAT
- HYDROSEEDED SLOPE SURFACE COVERD WITH EROSION CONTROL MAT AND WIRE MESH
- AS-CONSTRUCTED 40°(MAX.) CUT SLOPE
- AS-CONSTRUCTED LOCKABLE GATE
- AS-CONSTRUCTED 225mm CUT-OFF DRAIN
- BOUNDARY OF FEATURE NO. 7SE-A/C524
- BOUNDARY OF FEATURE NO. 7SE-A/C353
- AS-CONSTRUCTED GRADE 30/20 MASS CONCRETE
- AS-CONSTRUCTED HANDRAILING
- AS-CONSTRUCTED ROCK DOWEL
- 225UC — AS-CONSTRUCTED 225mm U-CHANNEL WITH CAST IRON GRATING
- AS-CONSTRUCTED 200mm THICK GRADE 30/20 CONCRETE SKIN WALL

SCALE 1 : 200

| No. | Date | Description | Initial |
|---|---|---|---|
| A | 08/08 | AS-BUILT DRAWING | TCCT |

REVISION

| | Name | Date |
|---|---|---|
| Designed | KLT | 12/06 |
| Drawn | RT | 12/06 |
| Checked | SLC | 12/06 |
| Approved | TCCT | 12/06 |
| Contract No. | GE/2005/33 | - |
| Drawing No. | LPM200533/318-03A | 12/06 |

Drawing Title

Feature No. 7SE-A/CR352
Behind No. 93 Fo
Tan Tsuen, Sha Tin

PLAN OF WORKS

GEOTECHNICAL ENGINEERING OFFICE

CEDD Civil Engineering and Development Department

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PART PRINT OF SURVEY SHEET NO. 7SE6A, 7SE6B

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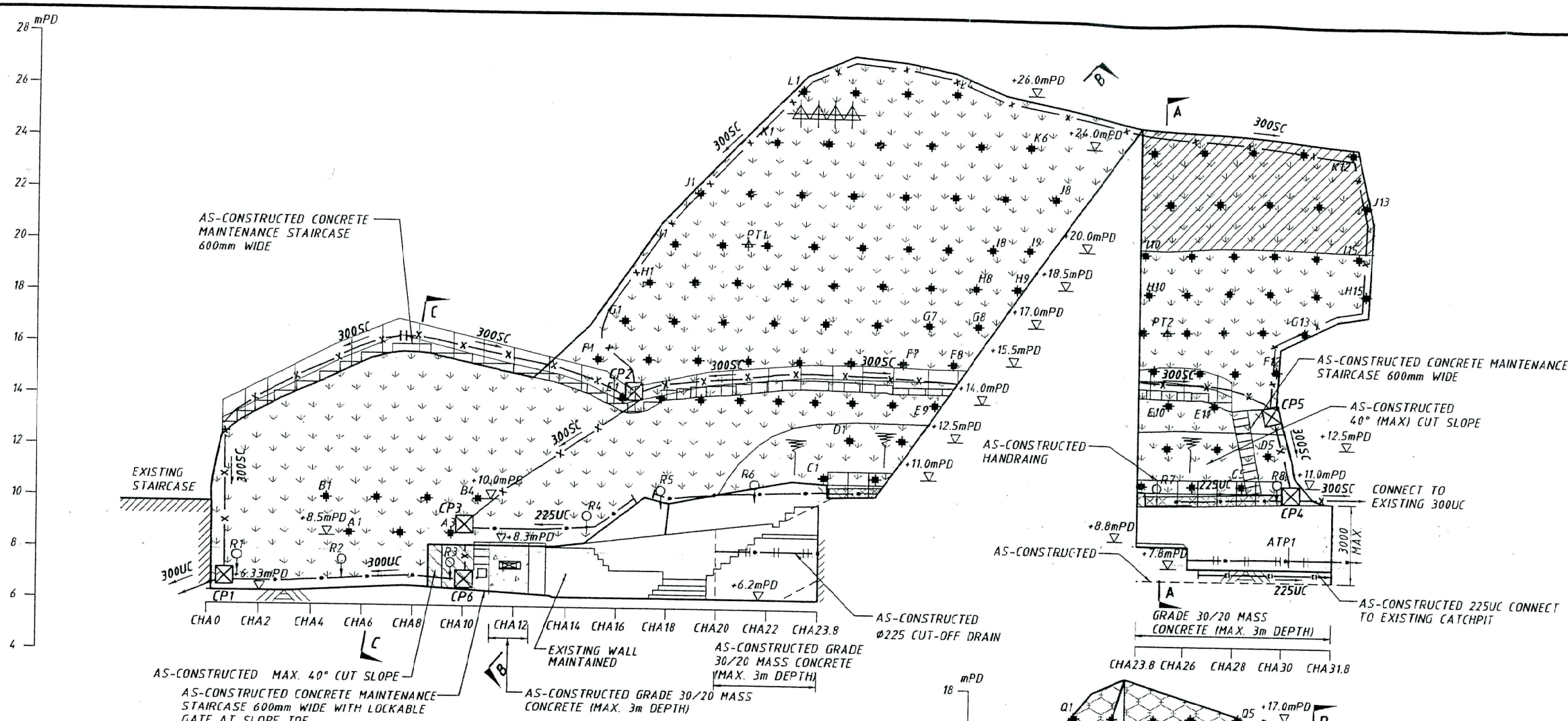
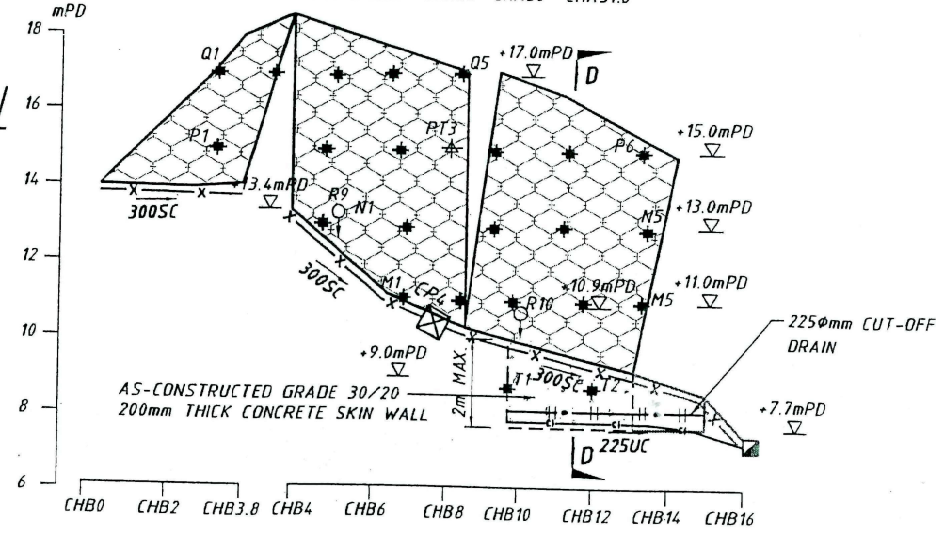



# DEVELOPED ELEVATION

SCALE: 1 : 200




## SOIL NAIL SCHEDULE

| SOIL NAIL NOS. | ELEVATION (mPD) | NO. OF NAILS | HORIZONTAL SPACING (m) | INCLINATION TO HORIZONTAL (DEG) | BAR DIAMETER (mm) | LENGTH (m) | SOIL NAIL HEAD SIZE (mm) | DRILLHOLE DIAMETER (MM) |
|---|---|---|---|---|---|---|---|---|
| A1-A3 | +8.5 | 3 | 2.0 | 20 | 25 | 6 | 600 x 600 | 150 |
| B1-B4 | +10.0 | 4 | 2.0 | 20 | 25 | 7 | 600 x 600 | 150 |
| C1-C5 | +11.0 | 5 | 2.0 | 20 | 40 | 16 | 800 x 800 | 150 |
| D1-D5 | +12.5 | 5 | 2.0 | 20 | 40 | 15 | 800 x 800 | 150 |
| E1-E11 | +14.0 | 11 | 2.0 | 20 | 40 | 20 | 800 x 800 | 150 |
| F1-F7 | +15.5 | 7 | 2.0 | 20 | 40 | 19 | 800 x 800 | 150 |
| F8-F12 | +15.5 | 5 | 2.0 | 20 | 40 | 14 | 800 x 800 | 150 |
| G1-G7 | +17.0 | 7 | 2.0 | 20 | 40 | 18 | 800 x 800 | 150 |
| G8-G13 | +17.0 | 6 | 2.0 | 20 | 40 | 14 | 800 x 800 | 150 |
| H1-H7 | +18.5 | 7 | 2.0 | 20 | 40 | 16 | 800 x 800 | 150 |
| H8-H15 | +18.5 | 8 | 2.0 | 20 | 40 | 14 | 800 x 800 | 150 |
| I1-I7 | +20.0 | 7 | 2.0 | 20 | 40 | 15 | 800 x 800 | 150 |
| I8-I15 | +20.0 | 8 | 2.0 | 20 | 40 | 14 | 800 x 800 | 150 |
| J1-J13 | +22.0 | 13 | 2.0 | 20 | 25 | 6 | 600 x 600 | 150 |
| K1-K12 | +24.0 | 12 | 2.0 | 20 | 25 | 6 | 600 x 600 | 150 |
| L1-L4 | +26.0 | 4 | 2.0 | 20 | 25 | 6 | 600 x 600 | 150 |
| M1-M5 | +11.0 | 5 | 2.0 | 20 | 25 | 8 | 600 x 600 | 150 |
| N1-N5 | +13.0 | 5 | 2.0 | 20 | 25 | 8 | 600 x 600 | 150 |
| P1-P6 | +15.0 | 6 | 2.0 | 20 | 25 | 8 | 600 x 600 | 150 |
| Q1-Q5 | +17.0 | 5 | 2.0 | 20 | 25 | 8 | 600 x 600 | 150 |
| T1-T2 | +9.0 | 2 | 2.0 | 20 | 25 | 7 | NA | 150 |

## RAKING DRAIN SCHEDULE

| RAKING DRAIN NOS. | ELEVATION (mPD) | INCLINATION TO HORIZONTAL (DEG) | LENGTH (m) |
|---|---|---|---|
| R1-R3 | +7.0 | 10 | 7 |
| R4 | +9.2 | 10 | 7 |
| R5 | +10.9 | 10 | 7 |
| R6-R8 | +10.8 | 10 | 7 |
| R9 | +13.4 | 10 | 5 |
| R10 | +10.9 | 10 | 5 |

## NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE P.D.

## LEGEND

- FEATURE BOUNDARY
- CP — AS-CONSTRUCTED SOIL NAIL
- CP — AS-CONSTRUCTED CATCHPIT
- 225UC — AS-CONSTRUCTED 225mm U-CHANNEL
- 300SC — AS-CONSTRUCTED 300mm STEPPED CHANNEL
- AS-CONSTRUCTED STAIRCASE
- R1 — AS-CONSTRUCTED TYPE 3 RAKING DRAINS
- A A — SECTION MARK A-A
- HYDROSEEDED SLOPE SURFACE COVERD WITH EROSION CONTROL MAT
- HYDROSEEDED SLOPE SURFACE COVERD WITH EROSION CONTROL MAT AND WIRE MESH
- AS-CONSTRUCTED LOCKABLE GATE AS PER STANDARD DRAWING C2508A
- AS-CONSTRUCTED 40°(MAX.) CUT SLOPE
- AS-CONSTRUCTED 225Ømm CUT-OFF DRAIN
- AS-CONSTRUCTED ROCK DOWEL
- 225UC — AS-CONSTRUCTED 225mm U-CHANNEL WITH CAST IRON GRATING
- SLOPE REGISTRATION SIGN PLATE
- AS-CONSTRUCTED HANDRAILING

| No. | Date | Description | Initial |
|---|---|---|---|
| A | 08/08 | AS-BUILT DRAWING | TCCT |

REVISION

| | | |
|---|---|---|
| Designed | KLT | 12/06 |
| Drawn | RT | 12/06 |
| Checked | SLC | 12/06 |
| Approved | TCCT | 12/06 |
| Contract No. | GE/2005/33 | - |
| Drawing No. | LPM200533/318-04A | 12/06 |

Drawing Title

Feature No. 7SE-A/CR352
Behind No. 93 Fo
Tan Tsuen, Sha Tin

DEVELOPED ELEVATION

GEOTECHNICAL ENGINEERING OFFICE

CEDD Civil Engineering and Development Department

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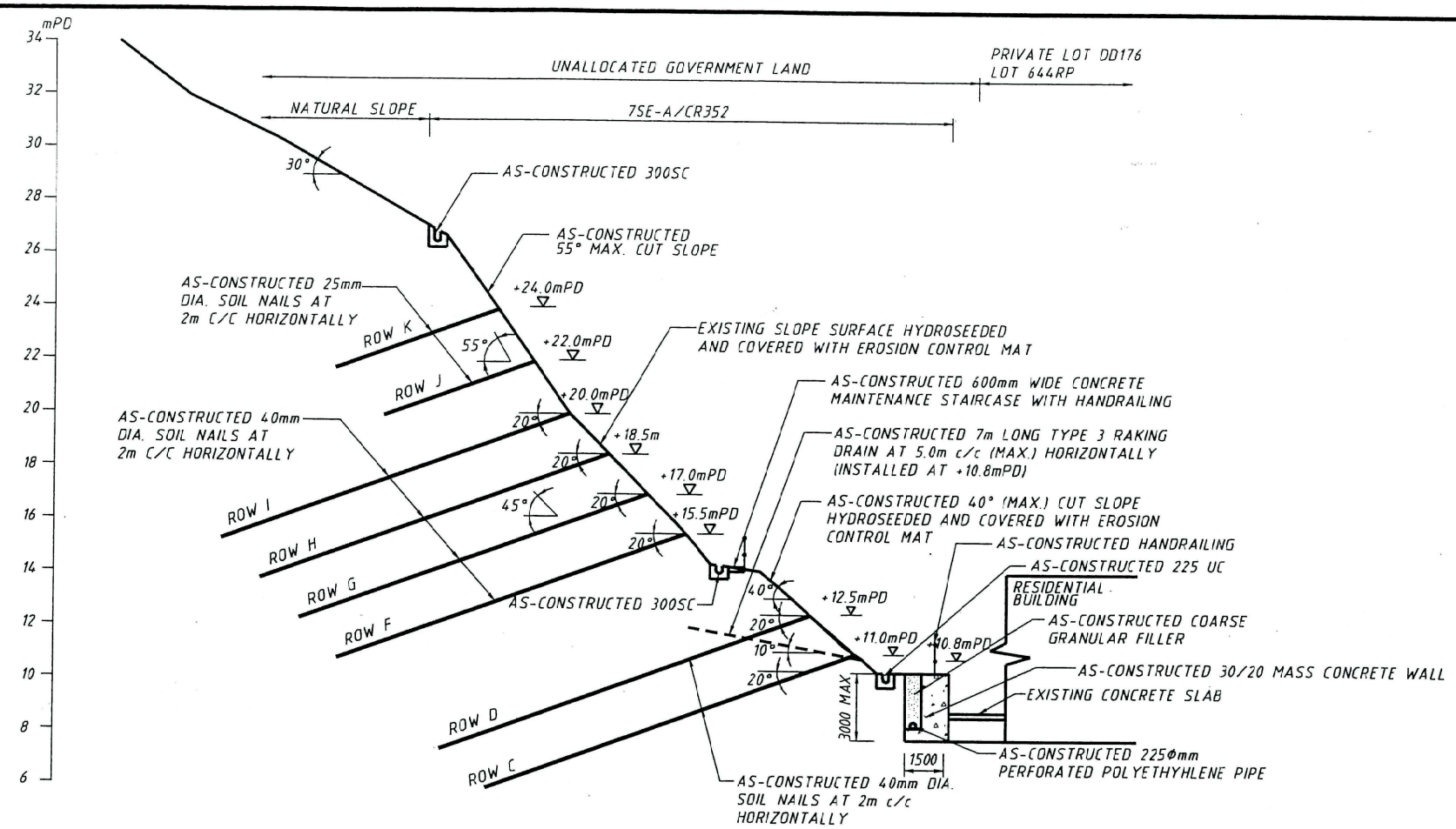
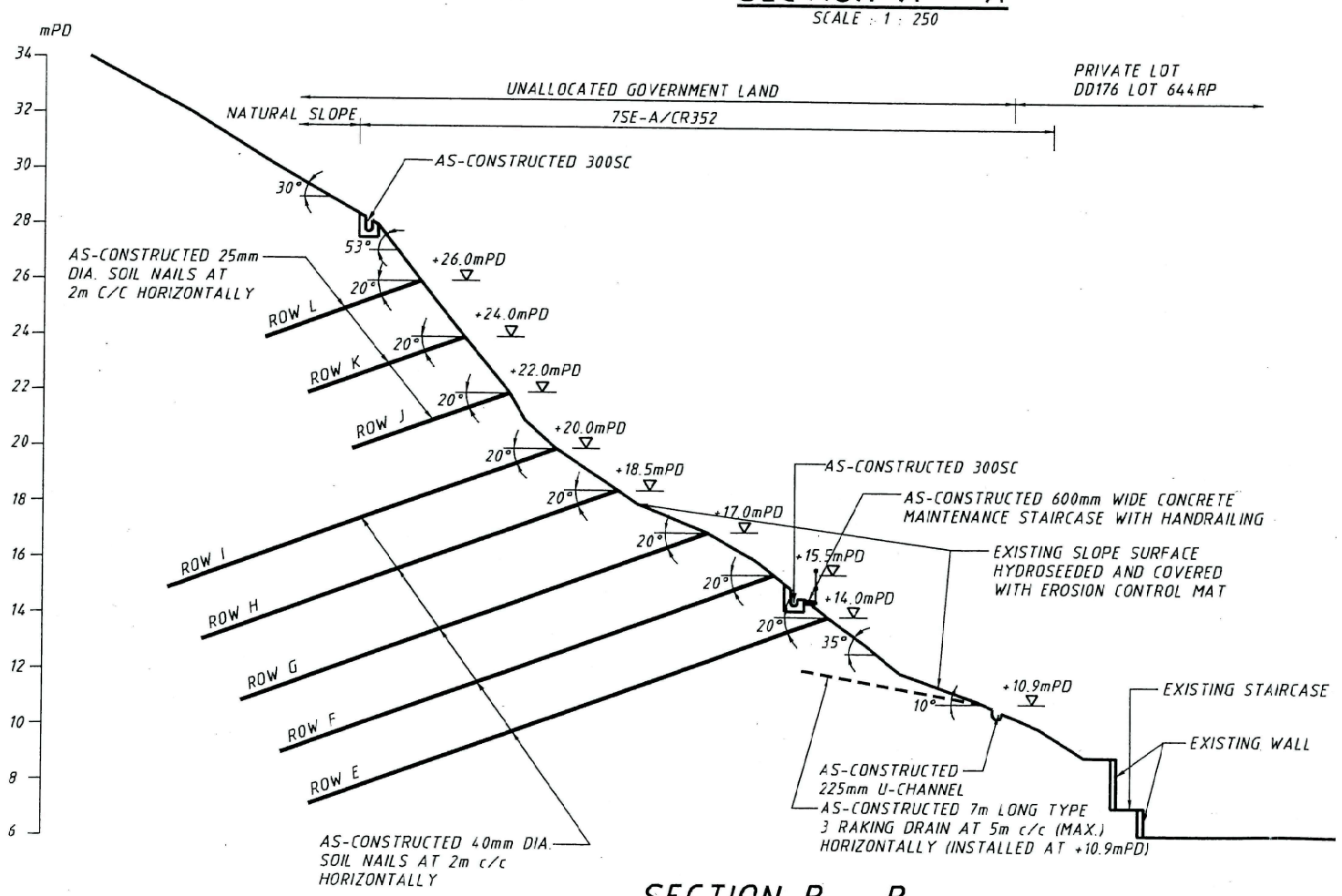



## SECTION A - A

SCALE : 1 : 250




## SECTION B - B

SCALE : 1 : 250

\57001\AS BUILT\GE200533-AsConstructed\318-7SE-AC352XDB2008.dgn 08.24

## NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE P.D.

| No. | Date | Description | Initial |
|---|---|---|---|
| A | 08/08 | AS-BUILT DRAWING | KLT |

REVISION

| | Name | Date |
|---|---|---|
| Designed | KLT | 12/06 |
| Drawn | WY | 12/06 |
| Checked | SLC | 12/06 |
| Approved | TCCT | 12/06 |
| Contract No. | GE/2005/33 | - |
| Drawing No. | LPM200533/318-05A | 12/06 |

Drawing Title

Feature No. 7SE-A/CR352
Behind No. 93 Fo
Tan Tsuen, Sha Tin

**SECTIONS (SHEET 1 OF 2)**

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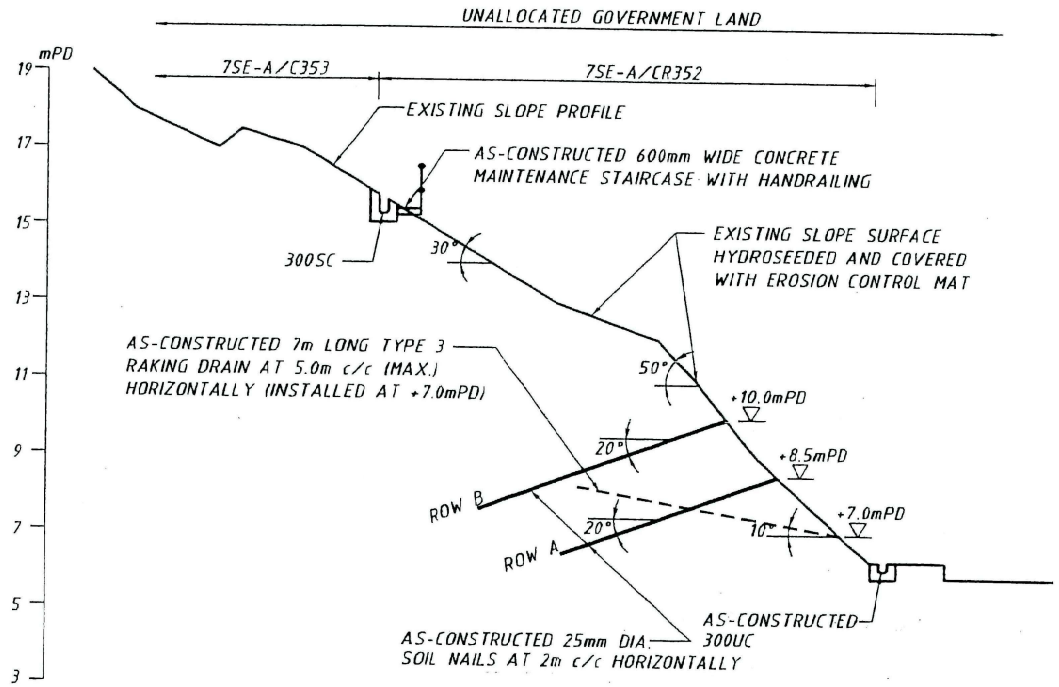
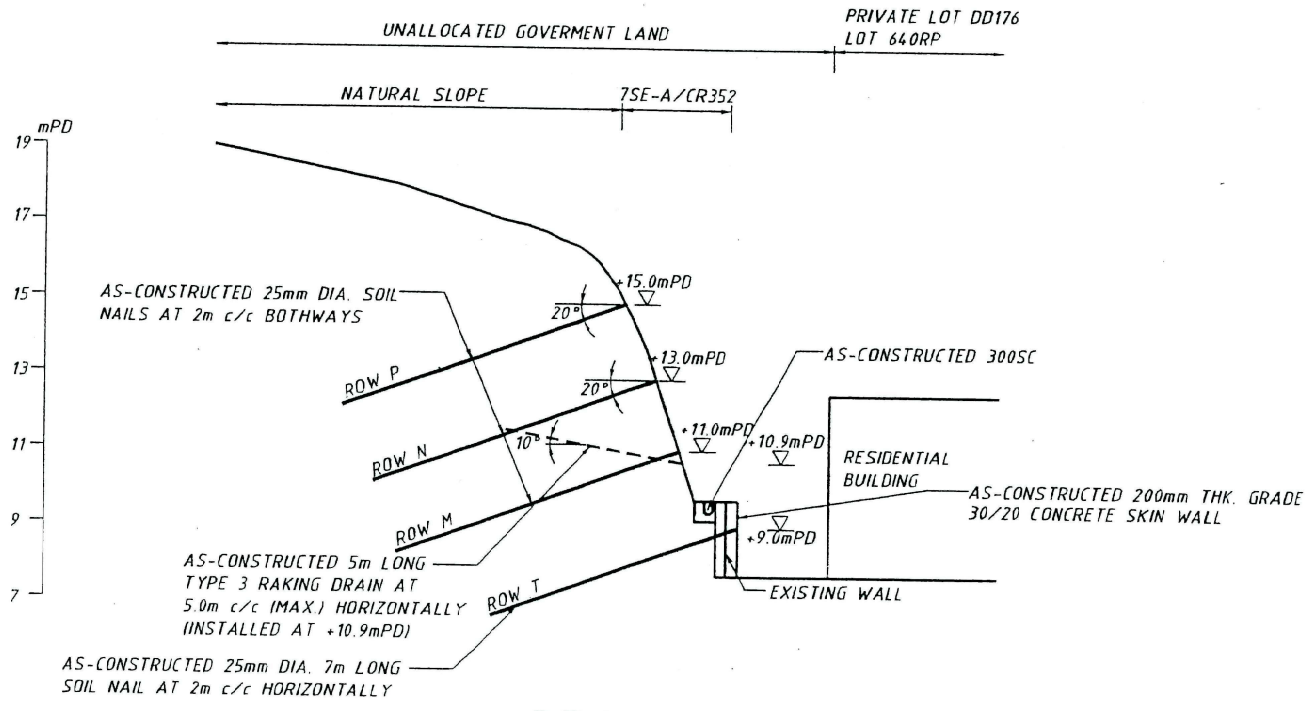
PART PRINT OF SURVEY SHEET NO. :




## SECTION C - C

SCALE : 1 : 200




## SECTION D - D

SCALE : 1 : 200

### NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE P.D.

| No. | Date | Description | Initial |
|---|---|---|---|
| A | 08/08 | AS-BUILT DRAWING | TCCT |

REVISION

| | Name | Date |
|---|---|---|
| Designed | KLT | 12/06 |
| Drawn | WY | 12/06 |
| Checked | SLC | 12/06 |
| Approved | TCCT | 12/06 |
| Contract No. | GE/2005/33 | - |
| Drawing No. | LPM200533/318-06A | 12/06 |

Drawing Title

Feature No. 7SW-A/CR352
Behind No. 93 Fo
Tan Tsuen, Sha Tin

SECTIONS (SHEET 2 OF 2)

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PART PRINT OF SURVEY SHEET NO.

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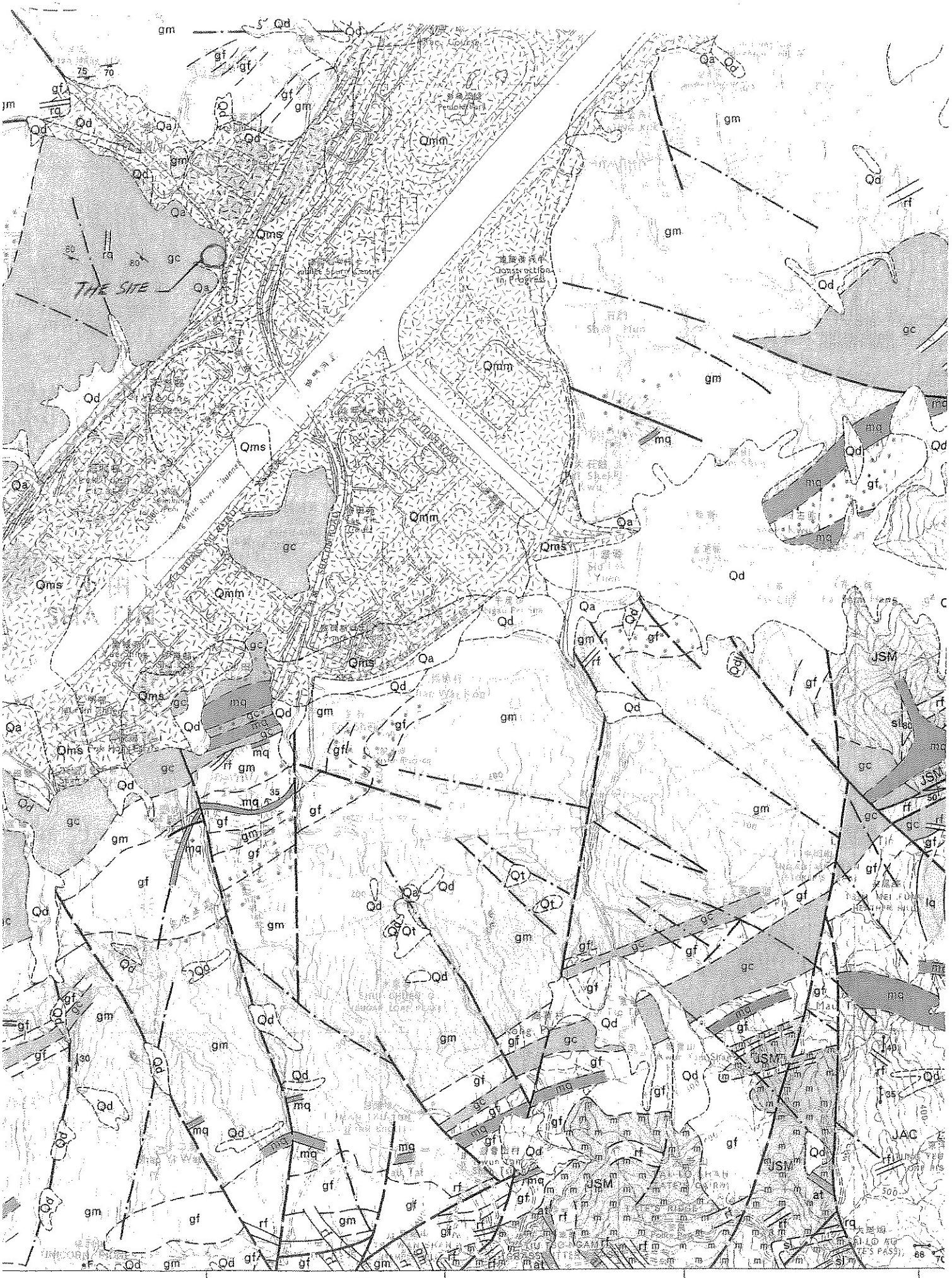
# APPENDIX G

## Geological Map


THE SITE
Qd
Qa
Qms
Qmm
gm
gf
gc
mq
rf
JSM
JAC
Qt
114°12'
838
839
840
841

# HONG KONG GEOLOGICAL SURVEY
# 香港地質調查
# SHA TIN 沙田
## Sheet 7 編號
## SOLID AND SUPERFICIAL GEOLOGY 基岩和表土地質圖

Series HGM20 組別

Scale 1:20 000 比例

## SUPERFICIAL DEPOSITS 地表沉積

| | GENETIC CLASSIFICATION 成因類型 | | 主要物質成份 PRINCIPAL MATERIALS |
|---|---|---|---|
| 第四系 QUATERNARY — 全新統 HOLOCENE | Fill; sanitary fill (Qfs) ····· 填土 | | 填泥和廢物 ····· Natural earth and waste |
| | Marine sand ····· 海相砂 | Qms | 含貝殼砂 ····· Sand, shelly |
| | Marine mud ····· 海相泥 | Qmm | 含貝殼粘土 / 粉砂 ····· Clay/silt, shelly |
| | Estuarine mud and sand ····· 河口淤泥砂 | Qams | 粘土 / 粉砂和砂 ····· Clay/silt and sand |
| 更新-全新統 PLEISTOCENE AND HOLOCENE | Alluvium ····· 冲積物 | Qa | 分選性良好至中等的粘土、粉砂、砂和礫石 ····· Clay/silt, sand and gravel; well-sorted to semi-sorted |
| | Debris flow deposits ····· 坡積、洪積物 | Qd | 未分選的砂、礫至漂礫、基質爲粘土 / 粉砂 ····· Unsorted sand, gravel, cobbles and boulders; clay/silt matrix |
| | Talus (rockfall) deposits ···· 岩屑(岩崩)堆積物 | Qt | 具稀少細粒基質的礫石至漂礫 ····· Gravel, cobbles and boulders; sparse finer-grained matrix |
| | Mixed debris flow and talus deposits ····· 坡積、崩積物 | Qdt | Qd 和 Qt 的混合物 ····· Mixed Qd and Qt |
| | Slide deposits ····· 滑坡堆積物 | Qdl | 基岩和浮土物質 ····· Materials of the regolith and bedrock |

## SOLID GEOLOGY 基岩地質

### SEDIMENTARY AND VOLCANIC ROCKS 沉積岩和火山岩

| | NAMED ROCK DIVISIONS 地層單位名稱 | | 主要岩石類型 / 特徵 PRINCIPAL ROCK TYPES/CHARACTERS |
|---|---|---|---|
| 中生界 MESOZOIC — 上侏羅統 UPPER JURASSIC — 淺水灣群 REPULSE BAY VOLCANIC GROUP | Tai Mo Shan Formation, undivided ····· 大帽山組(未分) | JTM | 黑雲母晶屑凝灰岩 ····· Crystal tuff, with biotite |
| | Ap Lei Chau Formation, undivided ····· 鴨脷洲組(未分) | JAC | 具火焰構造的玻屑凝灰岩 ····· Vitric tuff, with fiamme |
| | Shing Mun Formation, undivided ····· 城門組(未分) | JSM | 晶岩屑凝灰岩，凝灰角礫岩和層凝灰岩 ····· Crystal and lithic tuff, tuff-breccia and tuffite |
| | Yim Tin Tsai Formation, undivided ····· 鹽田仔組(未分) | JYT | 角閃石晶屑凝灰岩 ····· Crystal tuff, with hornblende |
| | | t | 未分凝灰岩和層凝灰岩 ····· Undifferentiated tuff and tuffite |
| | | bt | 含火山塊凝灰岩和層凝灰岩 ····· Block-bearing tuff and tuffite |
| | | a | 安山質熔岩 ····· Andesite lava |
| | | s | 砂岩 ····· Sandstone |
| | | sl | 粉砂岩和泥岩 ····· Siltstone and mudstone |
| | | br | 沉積角礫岩 ····· Sedimentary breccia |
| 下侏羅統 LOWER JURASSIC | Tolo Channel Formation ····· 赤門海峽組 | JTC | 泥岩和粉砂岩 ····· Mudstone and siltstone |
| 古生界 PALAEOZOIC — 二疊系 PERMIAN | Tolo Harbour Formation, undivided ····· 大埔海組(未分) | PTH | 泥岩、粉砂岩和砂岩 ····· Mudstone, siltstone and sandstone |
| | | s | 砂岩 ····· Sandstone |

中生代 MESOZOIC
侏羅-白堊紀 JURASSIC-CRETACEOUS

Inequigranular texture 不等粒結構

| | | |
|---|---|---|
| gf | 細粒花崗岩，<2毫米 | Fine-grained granite, <2mm |
| gm | 中粒花崗岩，2-6毫米 | Medium-grained granite, 2-6mm |
| gc | 粗粒花崗岩，>6毫米 | Coarse-grained granite, >6mm |
| mq | 石英二長岩 | Quartz monzonite |
| gd | 花崗閃長岩 | Granodiorite |

## MINOR INTRUSIVE IGNEOUS ROCKS 次要侵入火成岩（脈岩）

TERTIARY 第三紀

| | | |
|---|---|---|
| b | 輝綠岩 | Basalt |

中生代 MESOZOIC
侏羅-白堊紀 JURASSIC-CRETACEOUS

| | | |
|---|---|---|
| rq | 石英斑岩 | Quartzphyric rhyolite |
| rf | 長石斑岩 | Feldsparphyric rhyolite |
| lq | 石英二長斑岩 | Quartz latite |

## METAMORPHIC ROCKS 變質岩

Thermally altered rock around granitic intrusions 圍繞花崗岩體的熱力變質岩石

| | | |
|---|---|---|
| m m m | 角頁岩 | Hornfels |
| at | 蝕變凝灰岩和沉積岩 | Altered tuff and sedimentary rock |

White wave ornament indicates water cover 白色波紋表示受水遮蓋

## GEOLOGICAL LINES 地質界綫

| | |
|---|---|
| Geological boundary, superficial deposit | 地表沉積地質界綫 |
| Fill boundary | 壞土界綫 |
| Geological boundary, solid rock | 基岩地質界綫 |
| Fault (crossmark indicates downthrow side) | 斷裂（短劃指向下降盤） |
| Mineral vein | 礦脈 |
| Photogeological lineament | 航攝地質綫性影像 |

Broken lines on map face denote uncertainty * 圖內虛綫表示推測界綫

## STRUCTURAL SYMBOLS 構造符號

| | 水平 Horizontal | 傾斜 Inclined | 垂直 Vertical | 倒轉 Overturned | |
|---|---|---|---|---|---|
| Bedding | + | 20 | ⊥ | 85 | 層理 |
| Flow fabric | + | 40 | ⊥ | | 流動組構 |
| Intrusive contact | | 22 | | | 侵入接觸 |
| Metamorphic foliation | | 40 | | | 變質葉理 |
| Jointing | | 60 | ⊥ | | 節理 |
| Slickenside | | 20 | | | 擦痕 |
| Anticline (minor) | | 65 | | | 背斜（小型） |
| Syncline (minor) | | 75 | | | 向斜（小型） |

All dips and plunges measured in degrees from horizontal 所有傾角和傾伏角的角度均從水平位置起計

## MINERAL, FOSSIL AND MISCELLANEOUS SYMBOLS 礦產，化石和其他符號

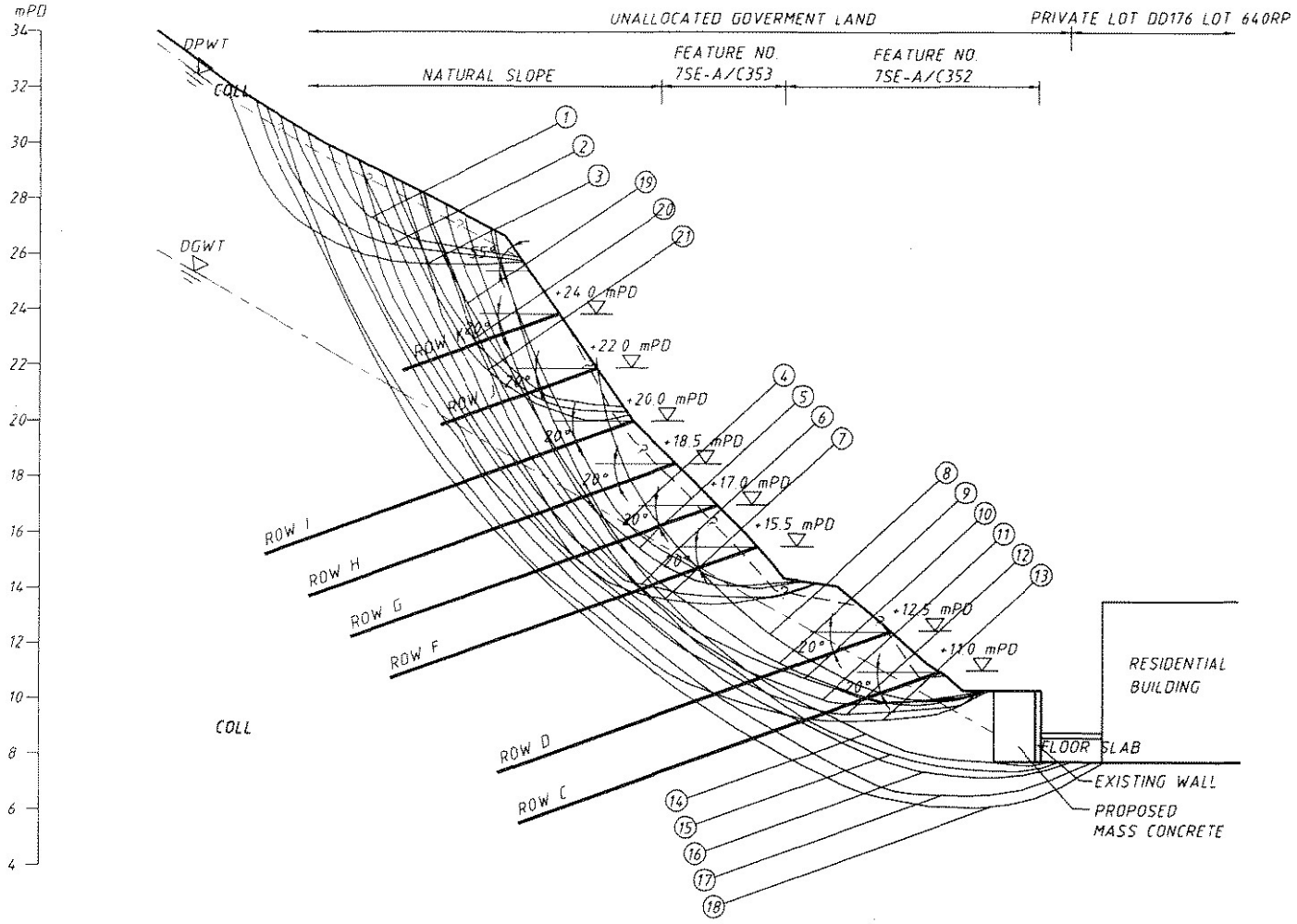
Mineral occurrence ∘W 礦產

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Fluorite | F | 螢石 | Magnetite | Fe | 磁鐵礦 | Molybdenite | Mo | 輝鉬礦 |
| Galena | Pb | 方鉛礦 | Wolframite | W | 黑鎢礦 | Quartz | q | 石英 |

| | |
|---|---|
| Mine shaft, abandoned | 廢棄礦山豎井 |
| Mine adit, abandoned | 廢棄礦山平峒 |
| Fossil locality | 化石產地 |
| Landslide backscar: scarp of | |

# APPENDIX H

## Stability Assessment of the Existing Feature




ADOPTED SOIL PARAMETERS

| SOIL TYPE | C' (kPa) | φ' (DEG) | γ (kN/m³) |
|---|---|---|---|
| COLL | 3 | 33 | 19 |
| CDG | 3 | 38 | 19 |

STABILITY ASSESSMENT OF FEATURE WITH UPGRATED FEATURE

| SLIP NO. | FOS |
|---|---|
| 1 | 2.268 |
| 2 | 2.198 |
| 3 | 2.275 |
| 4 | >1.400 |
| 5 | >1.400 |
| 6 | >1.400 |
| 7 | >1.400 |
| 8 | >1.895 |
| 9 | >1.895 |
| 10 | 1.895 |
| 11 | 1.713 |
| 12 | 1.601 |
| 13 | 1.621 |
| 14 | 1.815 |
| 15 | 1.571 |
| 16 | 1.439 |
| 17 | 1.426 |
| 18 | 1.430 |
| 19 | 1.434 |
| 20 | 1.417 (MIN.) |
| 21 | 1.484 |

**LEGEND**

| | |
|---|---|
| (1) | SLIP SURFACE NO.1 (NO.1 TO 21) |
| COLL | COLLUVIUM |
| CDG | COMPLETELY DECOMPOSED GRANITE |
| DGWT ▽ | DESIGN GROUND WATER TABLE |
| DPWT ▽ | DESIGN PERCHED WATER TABLE |

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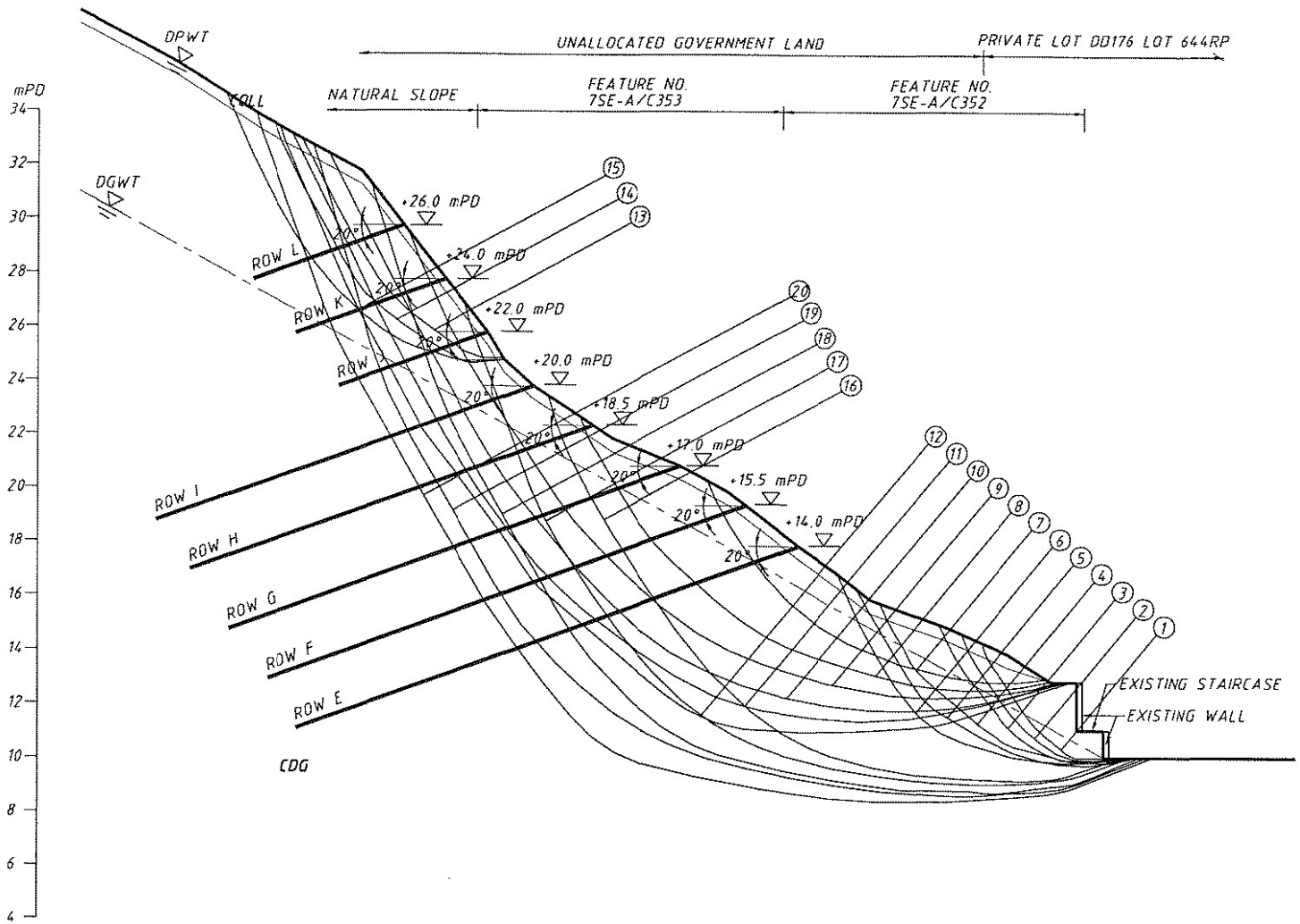
AGREEMENT NO. CE 23/2003(GE)
10-YEAR EXTENDED LPM PROJECT
PHASE 4, PACKAGE G - SHA TIN
LANDSLIP PREVENTIVE WORKS ON
GOVERNMENT SLOPES AND RELATED STUDIES-
INVESTIGATION, DESIGN AND CONSTRUCTION

| | | | |
|---|---|---|---|
| Drawn : CHB | | SCALE : 1 : 250 | FIGURE : 11 |
| Checked : KLT | | TITLE : STABILITY ASSESSMENT OF UPGRATED SECTION A - A | |
| Date : 12/06 | | | |
| Ref. : 52004/318 | | FEATURE NO. : 7SE-A/C352 | |




ADOPTED SOIL PARAMETERS

| SOIL TYPE | C' (kPa) | ø' (DEG) | γ (kN/m³) |
|---|---|---|---|
| COLL | 3 | 33 | 19 |
| CDG | 3 | 38 | 19 |

STABILITY ASSESSMENT OF UPGRATED FEATURE

| SLIP NO. | FOS |
|---|---|
| 1 | 1.667 |
| 2 | 1.674 |
| 3 | 1.641 |
| 4 | 1.585 |
| 5 | 1.587 |
| 6 | 1.649 |
| 7 | >1.724 |
| 8 | >1.430 |
| 9 | 2.202 |
| 10 | 1.802 |
| 11 | 1.679 |
| 12 | 1.682 |
| 13 | 1.418 |
| 14 | 1.410(MIN.) |
| 15 | 1.467 |
| 16 | 1.626 |
| 17 | 1.555 |
| 18 | 1.501 |
| 19 | 1.413 |
| 20 | 1.427 |

**LEGEND:**

| | |
|---|---|
| ① | SLIP SURFACE NO.1 (NO.1 TO 20) |
| COLL | COLLUVIUM |
| CDG | COMPLETELY DECOMPOSED GRANITE |
| DGWT ▽ | DESIGN GROUND WATER TABLE |
| DPWT ▽ | DESIGN PERCHED WATER TABLE |

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茂盛土力工程顧問有限公司

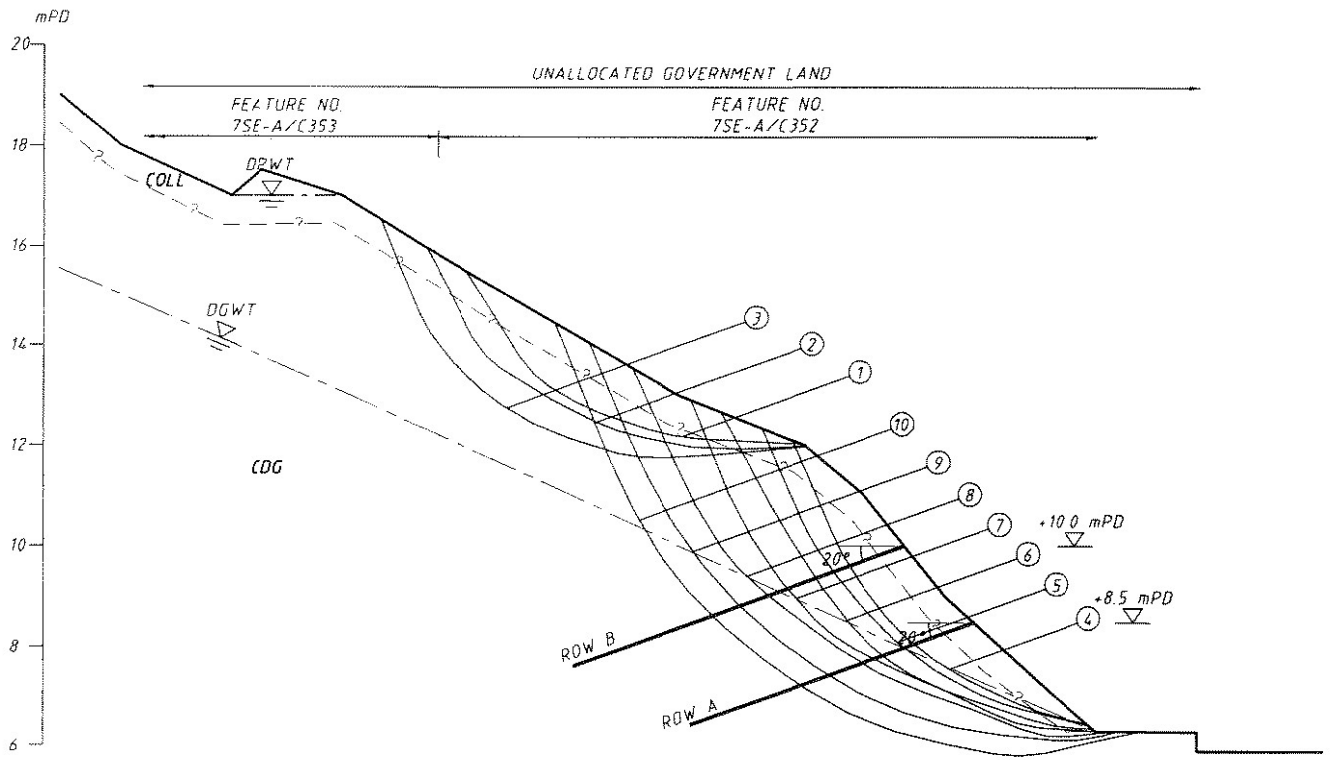
AGREEMENT NO. CE 23/2003(GE)
10-YEAR EXTENDED LPM PROJECT
PHASE 4, PACKAGE G - SHA TIN
LANDSLIP PREVENTIVE WORKS ON
GOVERNMENT SLOPES AND RELATED STUDIES-
INVESTIGATION, DESIGN AND CONSTRUCTION

Drawn : CHB
Checked : KLT
Date : 12/06
Ref. : 52004/318

SCALE : 1 : 250
FIGURE : 12

TITLE :
**STABILITY ASSESSMENT OF UPGRATED SECTION B - B**

FEATURE NO. : 7SE-A/C352




ADOPTED SOIL PARAMETERS

| SOIL TYPE | C' (kPa) | φ' (DEG) | γ (kN/m³) |
|---|---|---|---|
| COLL | 3 | 33 | 19 |
| CDG | 3 | 38 | 19 |

STABILITY ASSESSMENT OF UPGRATED FEATURE

| SLIP NO | FOS |
|---|---|
| 1 | 2.210 |
| 2 | 2.175 |
| 3 | 2.303 |
| 4 | 1.610 |
| 5 | 1.513 |
| 6 | 1.428 |
| 7 | 1.490 |
| 8 | 1.430 |
| 9 | 1.415 (MIN.) |
| 10 | 1.431 |

**LEGEND:**

| | |
|---|---|
| (1) | SLIP SURFACE NO.1 (NO.1 TO 10) |
| COLL | COLLUVIUM |
| CDG | COMPLETELY DECOMPOSED GRANITE |
| DGWT | DESIGN GROUND WATER TABLE |
| DPWT | DESIGN PERCHED WATER TABLE |

MAUNSELL | AECOM

Maunsell Geotechnical Services Ltd.
茂盛土力工程顧問有限公司

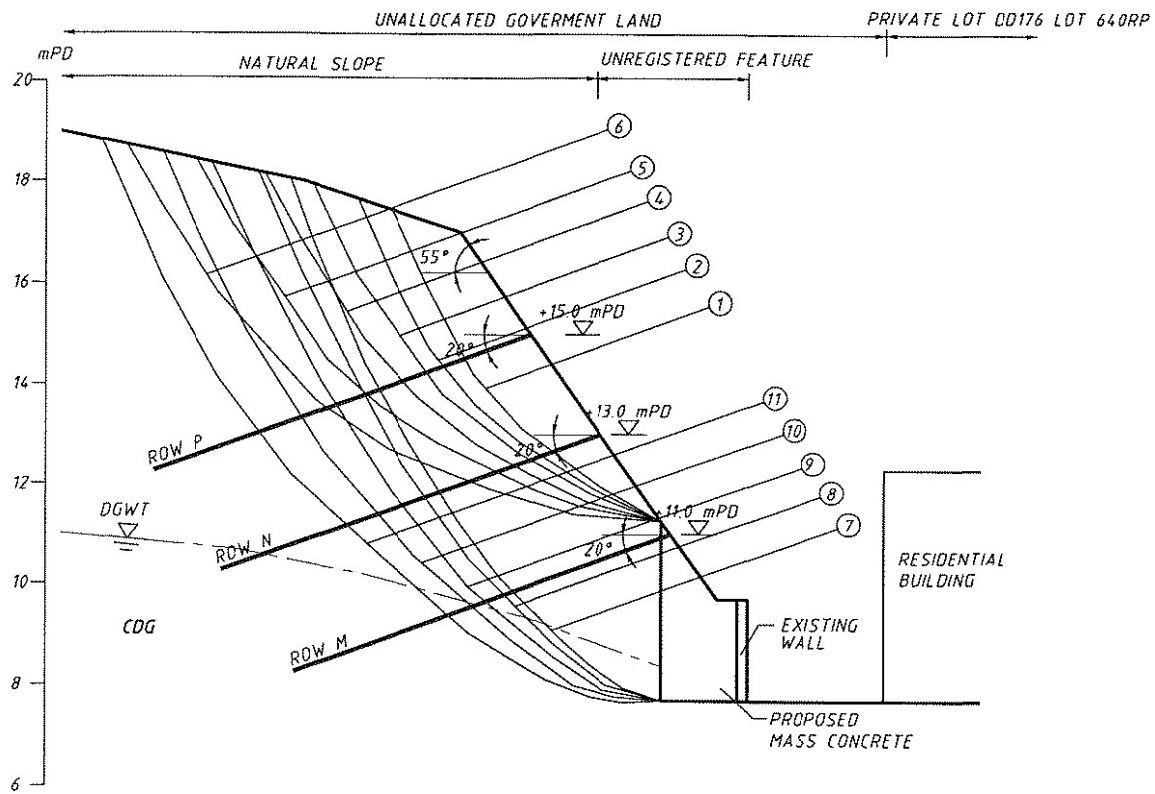
AGREEMENT NO. CE 23/2003(GE)
10-YEAR EXTENDED LPM PROJECT
PHASE 4, PACKAGE G - SHA TIN
LANDSLIP PREVENTIVE WORKS ON
GOVERNMENT SLOPES AND RELATED STUDIES-
INVESTIGATION, DESIGN AND CONSTRUCTION

| | |
|---|---|
| Drawn : | JZJ |
| Checked : | KLT |
| Date : | 12/06 |
| Ref. : | 52004/318 |

SCALE : 1 : 150 | FIGURE : 13

TITLE : STABILITY ASSESSMENT OF UPGRATED SECTION C - C

FEATURE NO. : 7SE-A/C352




ADOPTED SOIL PARAMETERS

| SOIL TYPE | C' (kPa) | φ' (DEG) | γ (kN/m³) |
|---|---|---|---|
| CDG | 3 | 38 | 19 |

STABILITY ASSESSMENT OF UPGRATED FEATURE

| SLIP NO. | FOS |
|---|---|
| 1 | 1.646 |
| 2 | 1.606 |
| 3 | 1.571 |
| 4 | 1.588 |
| 5 | 1.724 |
| 6 | 1.899 |
| 7 | 1.515 |
| 8 | 1.484 |
| 9 | 1.467 (min.) |
| 10 | 1.475 |
| 11 | 1.500 |

**LEGEND:**

(1) SLIP SURFACE NO.1 (NO.1 TO 12)

CDG COMPLETELY DECOMPOSED GRANITE

DGWT DESIGN GROUND WATER TABLE

MAUNSELL | AECOM
Maunsell Geotechnical Services Ltd.
茂盛土力工程顧問有限公司

AGREEMENT NO. CE 23/2003(GE)
10-YEAR EXTENDED LPM PROJECT
PHASE 4, PACKAGE G - SHA TIN
LANDSLIP PREVENTIVE WORKS ON
GOVERNMENT SLOPES AND RELATED STUDIES-
INVESTIGATION, DESIGN AND CONSTRUCTION

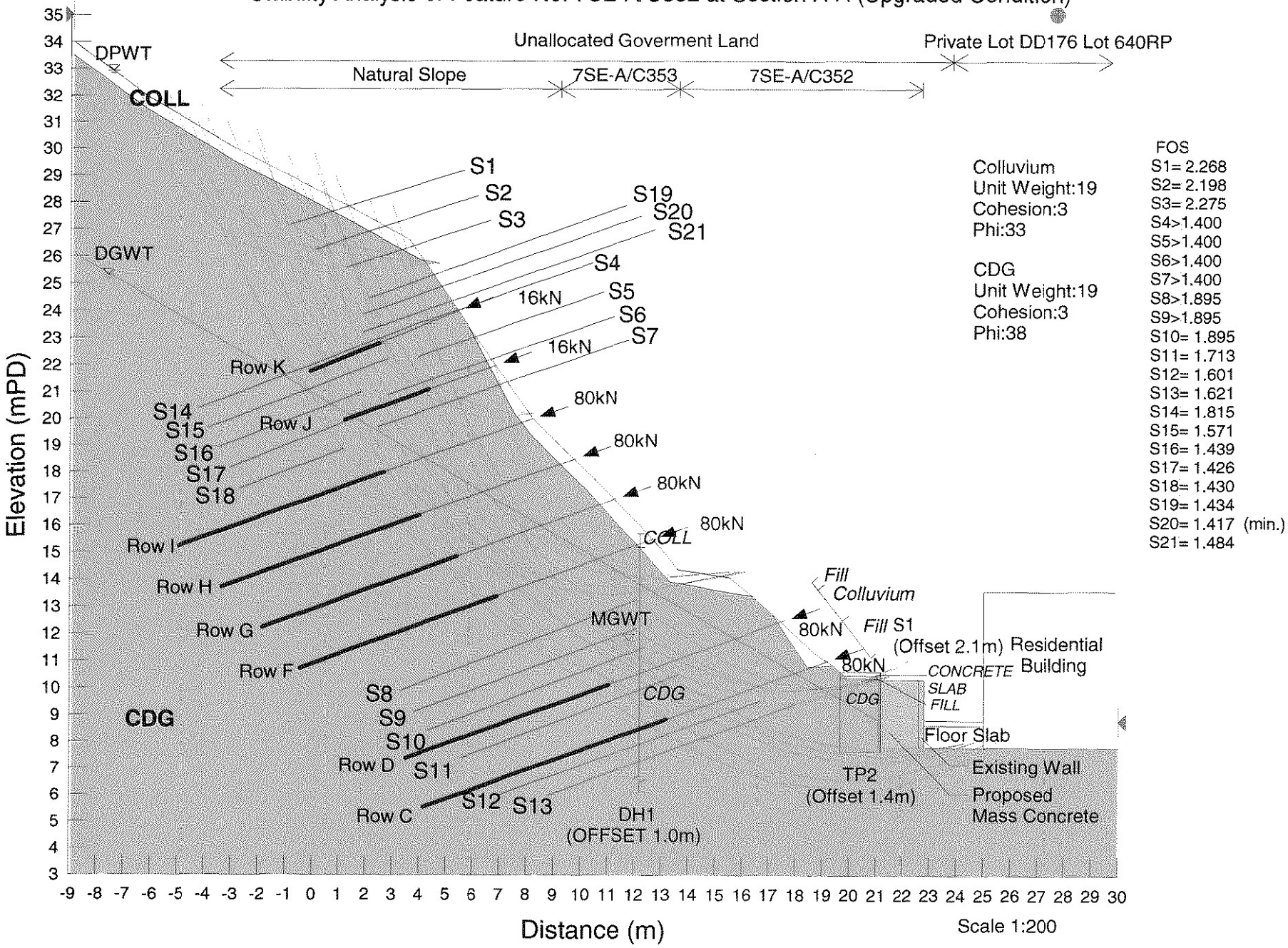
Drawn : JZJ
Checked : KLT
Date : 12/06
Ref. : 52004/318

SCALE : 1 : 150
FIGURE : 14

TITLE :
**STABILITY ASSESSMENT OF UPGRATED SECTION D - D**

FEATURE NO. : 7SE-A/C352

# Stability Analysis of Feature No. 7SE-A/C352 at Section A-A (Upgraded Condition)




Colluvium
Unit Weight:19
Cohesion:3
Phi:33

CDG
Unit Weight:19
Cohesion:3
Phi:38

FOS
S1= 2.268
S2= 2.198
S3= 2.275
S4>1.400
S5>1.400
S6>1.400
S7>1.400
S8>1.895
S9>1.895
S10= 1.895
S11= 1.713
S12= 1.601
S13= 1.621
S14= 1.815
S15= 1.571
S16= 1.439
S17= 1.426
S18= 1.430
S19= 1.434
S20= 1.417 (min.)
S21= 1.484

```
Section A-A (Upgraded Condition)

FILEINFO
SLOPEW 4.24
PAGE
MM
+2.8790e+002 +2.0070e+002
+7.0000e+001 +5.0000e+000 +0.0000e+000 +0.0000e+000
ENGINEERING
M
+2.0000e+002 +2.0000e+002
WINDOW
-1246 -7638
VIEW
1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1
FONTVIEW
Arial
  400   0   0   0
+6.0000e+000 +1.0000e+001
AXIS
  1   0   0   1   1
Distance (m)
Elevation (mPD)
   39    32 -9.0000e+000 +3.0000e+001 +3.5000e+001 +3.0000e+000
ZOOM
+2.7700e+000
GRID
  1   1 +1.0000e-002 +1.0000e-002
TEXT          68
    1 +1.6160e+001 +3.2389e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
7SE-A/C352
    2 +2.5950e+001 +1.0500e+001 -1.0000e+001     0   400     2     0
Arial
  0   0  34
Residential
  Building
  0   0   0
S16
   13 +2.0450e+001 +1.1920e+001 -1.0000e+001     0   400     1     0
Arial
255   0  34
Fill
   14 -8.1601e+000 +3.3160e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
DPWT
   15 +2.4100e+001 +8.0000e-001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Scale 1:200
   16 -6.9500e+000 +8.3500e+000 -1.2000e+001     0   700     1     0
Arial
  0   0  34
CDG
   17 +7.6000e+000 +2.4100e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
16kN
   18 +7.4000e+000 +3.3700e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Unallocated Goverment Land
   19 +2.4500e+001 +2.6650e+001 -1.0000e+001     0   400     1     1
Arial
  0   0  34
    3    58     0
   20 -6.9000e+000 +3.1400e+001 -1.2000e+001     0   700     1     0
Arial
  0   0  34
COLL
   21 -8.1400e+000 +2.5680e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
DGWT
    3 -2.4500e+000 +3.5350e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
Stability Analysis of Feature No. 7SE-A/C352 at Section A-A (Upgraded Condition)
    4 +9.6000e+000 +3.2400e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
7SE-A/C353
    5 +5.8000e+000 +2.8900e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S1
    6 +6.3500e+000 +2.7900e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S2
    7 +6.8500e+000 +2.6900e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S3
    8 +2.4530e+001 +2.2850e+001 -1.0000e+001     0   400     1     1
Arial
  0   0  34
    4    58     0
    9 -5.9600e+000 +1.9760e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S14
   10 -4.3500e+000 +1.6600e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S18
   11 -5.5000e+000 +1.9060e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S15
   12 -5.1800e+000 +1.8190e+001 -1.2000e+001     0   400     1     0
Arial
   22 +1.4000e+000 +3.2400e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Natural Slope
   23 -4.7000e+000 +1.7400e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S17
   24 +5.6000e+000 +5.3000e+000 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S12
   25 +9.5000e+000 +4.1000e+000 -1.0000e+001     0   400     2     0
Arial
  0   0  34
      DH1
(OFFSET 1.0m)
   26 +1.2300e+001 +9.4000e+000 -1.0000e+001     0   400     1     0
Arial
255   0  34
CDG
   27 +1.2250e+001 +1.5150e+001 -1.0000e+001     0   400     1     0
Arial
255   0  34
COLL
   28 +1.0400e+001 +2.5300e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S4
   29 +2.2660e+001 +3.3700e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Private Lot DD176 Lot 640RP
   30 +1.0930e+001 +2.4280e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
S5
   31 +1.1350e+001 +2.3420e+001 -1.2000e+001     0   400     1     0
```

```
Arial
  0   0   0
S6
    32 +1.1820e+001 +2.2630e+001 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S7
    33 +2.0000e+000 +9.3000e+000 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S8
    34 +2.5000e+000 +8.4000e+000 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S9
    35 +2.7600e+000 +7.4900e+000 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S10
    36 +3.8000e+000 +6.4000e+000 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S11
    37 +2.2800e+001 +7.9000e+000 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Floor Slab
    38 +1.9000e+001 +1.3800e+001 -1.0000e+001      0   400     1     0
Arial
255   0  34
Fill
    39 +1.9340e+001 +1.3120e+001 -1.0000e+001      0   400     1     0
Arial
255   0  34
Colluvium
    40 +2.1600e+001 +1.1200e+001 -1.0000e+001      0   400     2     0
Arial
  0   0  34
```

```
S1
(Offset 2.1m)
    41 +7.5000e+000 +5.1000e+000 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S13
    42 +1.0350e+001 +1.2150e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
MGWT
    43 +1.8400e+001 +5.6000e+000 -1.0000e+001      0   400     2     0
Arial
  0   0  34
      TP2
(Offset 1.4m)
    44 +1.9850e+001 +9.3000e+000 -8.0000e+000      0   400     1     0
Arial
255   0  34
CDG
    45 +2.3000e+001 +9.1000e+000 -8.0000e+000      0   400     1     0
Arial
255   0  34
FILL
    46 +2.2900e+001 +9.7000e+000 -8.0000e+000      0   400     2     0
Arial
255   0  34
CONCRETE
SLAB
    47 +8.7000e+000 +2.2300e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
16kN
    48 +2.4580e+001 +6.6700e+000 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Existing Wall
    49 -2.0000e+000 +1.9400e+001 -1.0000e+001      0   400     1     0
Arial
```

```
  0   0  34
Row J
    50 -3.1000e+000 +2.1500e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Row K
    51 +3.1100e+001 +1.5100e+001 -9.0000e+000      0   400    22     0
Arial
  0   0  34
 FOS
S1= 2.268
S2= 2.198
S3= 2.275
S4>1.400
S5>1.400
S6>1.400
S7>1.400
S8>1.895
S9>1.895
S10= 1.895
S11= 1.713
S12= 1.601
S13= 1.621
S14= 1.815
S15= 1.571
S16= 1.439
S17= 1.426
S18= 1.430
S19= 1.434
S20= 1.417  (min.)
S21= 1.484
    52 +1.7000e+000 +4.8000e+000 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Row C
    53 +1.0000e+000 +6.7000e+000 -1.0000e+001      0   400     1     0
Arial
  0   0  34
```

```
Row D
    54 -2.7000e+000 +1.0200e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Row F
    55 -4.3000e+000 +1.1700e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Row G
    56 -5.8000e+000 +1.3300e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Row H
    57 -6.9000e+000 +1.4800e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
Row I
    58 +9.7000e+000 +2.0400e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
80kN
    59 +1.1200e+001 +1.8800e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
80kN
    60 +1.2800e+001 +1.7200e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
80kN
    61 +1.4400e+001 +1.5700e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
80kN
    62 +1.8100e+001 +1.1800e+001 -1.0000e+001      0   400     1     0
Arial
  0   0  34
80kN
    63 +1.9700e+001 +1.0500e+001 -1.0000e+001      0   400     1     0
```

```
Arial
  0   0  34
80kN
   64 +1.1850e+001 +2.7850e+001 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S19
   65 +1.2600e+001 +2.7200e+001 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S20
   66 +1.3150e+001 +2.6450e+001 -1.2000e+001      0   400     1     0
Arial
  0   0   0
S21
   68 +2.4600e+001 +4.9000e+000 -1.0000e+001      0   400     2     0
Arial
  0   0  34
Proposed
Mass Concrete
LINE          95
    1 -8.5225e-001 +2.7151e+001 +5.6000e+000 +2.9200e+001
    2 +5.0056e-002 +2.6250e+001 +6.1493e+000 +2.8253e+001
    3 +1.3100e+001 +3.1950e+001 +1.4100e+001 +3.2550e+001
    4 +1.3100e+001 +3.2550e+001 +1.4100e+001 +3.1950e+001
    5 +1.6687e+001 +9.5202e+000 +6.9998e+000 +5.9998e+000
    6 +1.3600e+001 +3.1951e+001 +1.3600e+001 +3.2549e+001
    7 +1.2200e+001 +6.7001e+000 +1.1950e+001 +6.5879e+000
    8 +5.5440e+000 +7.3550e+000 +1.3650e+001 +1.0470e+001
    9 +2.2650e+001 +3.1950e+001 +2.2650e+001 +3.2546e+001
   10 +2.1000e+001 +1.0500e+001 +2.2900e+001 +1.0500e+001
   11 +2.2800e+001 +8.8000e+000 +2.5000e+001 +8.8000e+000
   12 +1.2484e+000 +2.5589e+001 +6.5999e+000 +2.7350e+001
   13 +4.1294e+000 +2.3589e+001 +1.0392e+001 +2.5773e+001
   14 +3.9001e+000 +2.2300e+001 +1.0797e+001 +2.4700e+001
   15 +2.1000e+001 +1.0400e+001 +2.2900e+001 +9.4000e+000
   16 -3.4992e+000 +3.3300e+001 +2.9691e+001 +3.3300e+001
   17 +2.2650e+001 +3.2251e+001 +2.2150e+001 +3.2550e+001
   18 +2.2650e+001 +3.2250e+001 +2.2150e+001 +3.1950e+001
   19 +1.1600e+001 +1.1730e+001 +1.2000e+001 +1.1730e+001
   20 +3.8014e+000 +9.1014e+000 +1.2098e+001 +1.2199e+001
   21 +2.9700e+001 +3.3300e+001 +2.9200e+001 +3.3600e+001
   22 +2.9700e+001 +3.3300e+001 +2.9200e+001 +3.3000e+001
   23 +1.1675e+001 +1.1640e+001 +1.1925e+001 +1.1640e+001
   24 +1.1750e+001 +1.1565e+001 +1.1850e+001 +1.1565e+001
   25 +1.2050e+001 +1.5700e+001 +1.2350e+001 +1.5700e+001
   26 +1.2200e+001 +1.5701e+001 +1.2200e+001 +6.7003e+000
   27 +1.1950e+001 +6.5879e+000 +1.2450e+001 +6.5549e+000
   28 +1.2450e+001 +6.5549e+000 +1.2200e+001 +6.4502e+000
   29 +1.2200e+001 +6.4500e+000 +1.2200e+001 +6.1005e+000
   30 +1.1864e+001 +6.1000e+000 +1.2600e+001 +6.1000e+000
   31 -3.4998e+000 +3.2250e+001 +2.2650e+001 +3.2250e+001
   32 +1.2050e+001 +1.5200e+001 +1.2350e+001 +1.5200e+001
   33 -7.8000e+000 +2.5290e+001 -7.4000e+000 +2.5290e+001
   34 -7.6000e+000 +2.5290e+001 -7.8000e+000 +2.5490e+001
   35 -7.8000e+000 +2.5490e+001 -7.4000e+000 +2.5490e+001
   36 -7.4000e+000 +2.5490e+001 -7.6000e+000 +2.5290e+001
   37 -7.7000e+000 +2.5190e+001 -7.5000e+000 +2.5190e+001
   38 -7.6301e+000 +3.3110e+001 -7.2301e+000 +3.3110e+001
   39 -7.2301e+000 +3.3110e+001 -7.4302e+000 +3.2910e+001
   40 -7.4300e+000 +3.2910e+001 -7.6303e+000 +3.3110e+001
   41 -7.6301e+000 +3.2910e+001 -7.2300e+000 +3.2910e+001
   42 -7.5301e+000 +3.2850e+001 -7.3302e+000 +3.2850e+001
   43 -7.6251e+000 +2.5115e+001 -7.5751e+000 +2.5115e+001
   44 +2.3800e+001 +3.3600e+001 +2.3800e+001 +3.3000e+001
   45 +2.4301e+001 +3.3599e+001 +2.3301e+001 +3.3000e+001
   46 +2.3301e+001 +3.3599e+001 +2.4301e+001 +3.3000e+001
   47 -3.0009e+000 +3.3600e+001 -3.5000e+000 +3.3300e+001
   48 -3.9003e+000 +1.9643e+001 +2.8198e+000 +2.2240e+001
   49 +4.3007e+000 +8.4045e+000 +1.2401e+001 +1.1499e+001
   50 +2.2800e+001 +8.6000e+000 +2.5000e+001 +8.6000e+000
   51 +2.0800e+001 +1.1140e+001 +2.0990e+001 +1.1310e+001
   52 +2.0800e+001 +1.1140e+001 +1.8600e+001 +1.3910e+001
   53 -4.2471e+000 +2.0373e+001 +4.0897e+000 +2.3601e+001
   54 -3.5400e+000 +1.8890e+001 +1.7917e+000 +2.0978e+001
   55 +2.5000e+001 +7.7468e+000 +2.5000e+001 +1.3550e+001
   56 +2.4998e+001 +1.3550e+001 +2.9862e+001 +1.3550e+001
   57 -3.0800e+000 +1.8145e+001 +1.4000e+000 +1.9950e+001
   58 +1.8600e+001 +1.3910e+001 +1.8828e+001 +1.4110e+001
   59 +2.4195e+000 +1.9680e+001 +1.1743e+001 +2.2949e+001
   60 -2.6960e+000 +1.7367e+001 +1.1500e+000 +1.8850e+001
   61 +1.8019e+001 +9.4016e+000 +8.7999e+000 +5.9800e+000
   62 +1.8500e+000 +2.3200e+001 +1.2700e+001 +2.7000e+001
   63 +9.2000e+000 +3.2550e+001 +9.2000e+000 +3.1950e+001
   64 -3.0000e+000 +3.1950e+001 -3.5000e+000 +3.2250e+001
   65 -3.5000e+000 +3.3300e+001 -3.0009e+000 +3.3000e+001
   66 +9.7001e+000 +3.2550e+001 +8.7001e+000 +3.1950e+001
   67 +1.1800e+001 +1.1730e+001 +1.1600e+001 +1.1980e+001
   68 +1.1600e+001 +1.1980e+001 +1.2000e+001 +1.1980e+001
   69 +1.2000e+001 +1.1980e+001 +1.1800e+001 +1.1730e+001
   70 +8.7001e+000 +3.2550e+001 +9.7001e+000 +3.1950e+001
   71 -3.5000e+000 +3.2250e+001 -3.0000e+000 +3.2550e+001
   72 +1.8500e+000 +2.3850e+001 +1.2200e+001 +2.7500e+001
   73 +1.8820e+001 +1.3630e+001 +1.9050e+001 +1.3840e+001
   74 +1.9730e+001 +1.2490e+001 +1.9970e+001 +1.2700e+001
   75 +2.1150e+001 +1.0599e+001 +2.1150e+001 +7.6001e+000
   76 +1.9650e+001 +1.0600e+001 +1.9650e+001 +7.6000e+000
   77 +1.9650e+001 +7.6000e+000 +2.1150e+001 +7.6000e+000
   78 +1.9650e+001 +1.0600e+001 +2.1150e+001 +1.0600e+001
   79 +1.9650e+001 +1.0450e+001 +2.1150e+001 +1.0450e+001
   80 +1.9650e+001 +1.0350e+001 +2.1150e+001 +1.0350e+001
   81 +2.1000e+000 +2.4450e+001 +1.1650e+001 +2.7900e+001
   83 -7.4801e+000 +3.2800e+001 -7.3801e+000 +3.2800e+001
   86 -2.8000e+000 +2.0900e+001 +1.1201e+001 +2.3804e+001
   87 +3.3059e+000 +9.8955e+000 +1.2083e+001 +1.3249e+001
   91 +2.1500e+001 +8.3500e+000 +2.3750e+001 +6.0500e+000
   92 +2.3750e+001 +6.0500e+000 +2.4400e+001 +6.0500e+000
   93 +2.2600e+001 +1.0300e+001 +2.2600e+001 +7.7502e+000
   94 +2.2700e+001 +8.1700e+000 +2.3760e+001 +7.1200e+000
   95 +2.3760e+001 +7.1200e+000 +2.4440e+001 +7.1200e+000
CIRCLE        0
ARC           0
CUSTSTRINGS     2
    2,
    51,:
IMAGE         1
OBJECT
CUSTCOLORS
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
```

Section A-A (Upgraded Condition)

04/01/2007
15:13:43

| Center_X | Center_Y | Radius | Slip_Surface | Method |
|---|---|---|---|---|
| 2.765000e+001 | 3.505000e+001 | 2.888642e+001 | 20 | 3 |

| Sl.# | X_Left | Y_L_Top | Y_L_Bottom | X_Right | Y_R_Top | Y_R_Bottom | Mid_Height |
|---|---|---|---|---|---|---|---|
| 1 | -5.511688e-001 | 2.879547e+001 | 2.879546e+001 | -2.613586e-001 | 2.864685e+001 | 2.814685e+001 | 2.500000e-001 |
| 2 | -2.613586e-001 | 2.864685e+001 | 2.814685e+001 | 5.398107e-002 | 2.848514e+001 | 2.744109e+001 | 7.720242e-001 |
| 3 | 5.398107e-002 | 2.848514e+001 | 2.744109e+001 | 3.693207e-001 | 2.832343e+001 | 2.673533e+001 | 1.316072e+000 |
| 4 | 3.693207e-001 | 2.832343e+001 | 2.673533e+001 | 6.846604e-001 | 2.816171e+001 | 2.602957e+001 | 1.860119e+000 |
| 5 | 6.846604e-001 | 2.816171e+001 | 2.602957e+001 | 1.000000e+000 | 2.800000e+001 | 2.532381e+001 | 2.404167e+000 |
| 6 | 1.000000e+000 | 2.800000e+001 | 2.532381e+001 | 1.100000e+000 | 2.794592e+001 | 2.510000e+001 | 2.761053e+000 |
| 7 | 1.100000e+000 | 2.794592e+001 | 2.510000e+001 | 1.375000e+000 | 2.779718e+001 | 2.465000e+001 | 2.996548e+000 |
| 8 | 1.375000e+000 | 2.779718e+001 | 2.465000e+001 | 1.650000e+000 | 2.764844e+001 | 2.420000e+001 | 3.297812e+000 |
| 9 | 1.650000e+000 | 2.764844e+001 | 2.420000e+001 | 1.925000e+000 | 2.749971e+001 | 2.375000e+001 | 3.599075e+000 |
| 10 | 1.925000e+000 | 2.749971e+001 | 2.375000e+001 | 2.200000e+000 | 2.735097e+001 | 2.330000e+001 | 3.900341e+000 |
| 11 | 2.200000e+000 | 2.735097e+001 | 2.330000e+001 | 2.474000e+000 | 2.720278e+001 | 2.297707e+001 | 4.138342e+000 |
| 12 | 2.474000e+000 | 2.720278e+001 | 2.297707e+001 | 2.748000e+000 | 2.705458e+001 | 2.265414e+001 | 4.313074e+000 |
| 13 | 2.748000e+000 | 2.705458e+001 | 2.265414e+001 | 3.022000e+000 | 2.690639e+001 | 2.233121e+001 | 4.487810e+000 |
| 14 | 3.022000e+000 | 2.690639e+001 | 2.233121e+001 | 3.296000e+000 | 2.675820e+001 | 2.200829e+001 | 4.662542e+000 |
| 15 | 3.296000e+000 | 2.675820e+001 | 2.200829e+001 | 3.570000e+000 | 2.661000e+001 | 2.168536e+001 | 4.837276e+000 |
| 16 | 3.570000e+000 | 2.661000e+001 | 2.168536e+001 | 3.600000e+000 | 2.656718e+001 | 2.165000e+001 | 4.920910e+000 |
| 17 | 3.600000e+000 | 2.656718e+001 | 2.165000e+001 | 3.860000e+000 | 2.619603e+001 | 2.146000e+001 | 4.826603e+000 |
| 18 | 3.860000e+000 | 2.619603e+001 | 2.146000e+001 | 4.120000e+000 | 2.582489e+001 | 2.127000e+001 | 4.645458e+000 |
| 19 | 4.120000e+000 | 2.582489e+001 | 2.127000e+001 | 4.380000e+000 | 2.545374e+001 | 2.108000e+001 | 4.464314e+000 |
| 20 | 4.380000e+000 | 2.545374e+001 | 2.108000e+001 | 4.640000e+000 | 2.508260e+001 | 2.089000e+001 | 4.283167e+000 |
| 21 | 4.640000e+000 | 2.508260e+001 | 2.089000e+001 | 4.900000e+000 | 2.471145e+001 | 2.070000e+001 | 4.102022e+000 |
| 22 | 4.900000e+000 | 2.471145e+001 | 2.070000e+001 | 5.194000e+000 | 2.429177e+001 | 2.061400e+001 | 3.844610e+000 |
| 23 | 5.194000e+000 | 2.429177e+001 | 2.061400e+001 | 5.488000e+000 | 2.387209e+001 | 2.052800e+001 | 3.510929e+000 |
| 24 | 5.488000e+000 | 2.387209e+001 | 2.052800e+001 | 5.782001e+000 | 2.345241e+001 | 2.044200e+001 | 3.177252e+000 |
| 25 | 5.782001e+000 | 2.345241e+001 | 2.044200e+001 | 6.076001e+000 | 2.303273e+001 | 2.035600e+001 | 2.843571e+000 |
| 26 | 6.076001e+000 | 2.303273e+001 | 2.035600e+001 | 6.370000e+000 | 2.261305e+001 | 2.027000e+001 | 2.509893e+000 |
| 27 | 6.370000e+000 | 2.261305e+001 | 2.027000e+001 | 6.710000e+000 | 2.212771e+001 | 2.024000e+001 | 2.115381e+000 |
| 28 | 6.710000e+000 | 2.212771e+001 | 2.024000e+001 | 7.050000e+000 | 2.164237e+001 | 2.021000e+001 | 1.660040e+000 |
| 29 | 7.050000e+000 | 2.164237e+001 | 2.021000e+001 | 7.270384e+000 | 2.132777e+001 | 2.021373e+001 | 1.273203e+000 |
| 30 | 7.270384e+000 | 2.132777e+001 | 2.021373e+001 | 7.490767e+000 | 2.101318e+001 | 2.021747e+001 | 9.548740e-001 |
| 31 | 7.490767e+000 | 2.101318e+001 | 2.021747e+001 | 7.500000e+000 | 2.100000e+001 | 2.021763e+001 | 7.890415e-001 |
| 32 | 7.500000e+000 | 2.100000e+001 | 2.021763e+001 | 7.770619e+000 | 2.061340e+001 | 2.022221e+001 | 5.867805e-001 |
| 33 | 7.770619e+000 | 2.061340e+001 | 2.022221e+001 | 8.041239e+000 | 2.022680e+001 | 2.022680e+001 | 1.955948e-001 |

| Sl.# | L_Load_X | L_Load_Y | A_Load_X | A_Load_Y | P_Load_X | P_Load_Y | A_Modifier |
|---|---|---|---|---|---|---|---|
| 1 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 2 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 3 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 4 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 5 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 6 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 7 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 8 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 9 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 10 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 11 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 12 | 0.0000e+000 | 0.0000e+000 | -1.4835e+001 | -5.9945e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 13 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 14 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 15 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 16 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 17 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 18 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 19 | 0.0000e+000 | 0.0000e+000 | -1.5035e+001 | -5.4720e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 20 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 21 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 22 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 23 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 24 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 25 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 26 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 27 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 28 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 29 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 30 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 31 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 32 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 33 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |

| SL# | Weight | Pore_Water | Alpha | Force Fn. | Seismic_F | Seismic_Y | Pore_Air | Phi_B |
|---|---|---|---|---|---|---|---|---|
| 1 | 1.3766e+000 | 1.7418e+000 | 6.5924e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 2 | 4.6255e+000 | 0.0000e+000 | 6.5925e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 3 | 7.8852e+000 | 0.0000e+000 | 6.5924e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 4 | 1.1145e+001 | 0.0000e+000 | 6.5925e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 5 | 1.4404e+001 | 0.0000e+000 | 6.5924e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 6 | 5.2460e+000 | 0.0000e+000 | 6.5925e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 7 | 1.5657e+001 | 0.0000e+000 | 5.8570e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 8 | 1.7231e+001 | 0.0000e+000 | 5.8570e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e-000 |
| 9 | 1.8805e+001 | 0.0000e+000 | 5.8570e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 10 | 2.0379e+001 | 0.0000e+000 | 5.8570e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 11 | 2.1544e+001 | 0.0000e+000 | 4.9686e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 12 | 2.2454e+001 | 0.0000e+000 | 4.9686e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 13 | 2.3364e+001 | 0.0000e+000 | 4.9686e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 14 | 2.4273e+001 | 0.0000e+000 | 4.9686e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 15 | 2.5183e+001 | 0.0000e+000 | 4.9686e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 16 | 2.8049e+000 | 0.0000e+000 | 4.9685e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 17 | 2.3843e+001 | 0.0000e+000 | 3.6158e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 18 | 2.2949e+001 | 0.0000e+000 | 3.6158e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 19 | 2.2054e+001 | 0.0000e+000 | 3.6158e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 20 | 2.1159e+001 | 0.0000e+000 | 3.6158e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 21 | 2.0264e+001 | 0.0000e+000 | 3.6158e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 22 | 2.1476e+001 | 0.0000e+000 | 1.6305e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 23 | 1.9612e+001 | 0.0000e+000 | 1.6305e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 24 | 1.7748e+001 | 0.0000e+000 | 1.6305e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 25 | 1.5884e+001 | 0.0000e+000 | 1.6305e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 26 | 1.4020e+001 | 0.0000e+000 | 1.6305e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 27 | 1.3665e+001 | 0.0000e+000 | 5.0426e+000 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 28 | 1.0724e+001 | 0.0000e+000 | 5.0426e+000 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 29 | 5.3313e+000 | 0.0000e+000 | -9.7083e-001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 30 | 3.9983e+000 | 0.0000e+000 | -9.7133e-001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 31 | 1.3841e-001 | 7.1453e-002 | -9.7052e-001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 32 | 3.0171e+000 | 1.5575e+000 | -9.7111e-001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 33 | 1.0057e+000 | 5.1918e-001 | -9.7111e-001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |

Ordinary_Method_Fm= 1.108 Applied_Lambda= 0.0000

| SL# | Normal_M | ShearMob | Phi_Angle | Cohesion |
|---|---|---|---|---|
| 1 | 5.6158e-001 | -1.2312e+000 | 3.3000e+001 | 3.0000e+000 |
| 2 | 1.8869e+000 | -3.4220e+000 | 3.8000e+001 | 3.0000e+000 |
| 3 | 3.2167e+000 | -4.3592e+000 | 3.8000e+001 | 3.0000e+000 |
| 4 | 4.5464e+000 | -5.2964e+000 | 3.8000e+001 | 3.0000e+000 |
| 5 | 5.8762e+000 | -6.2336e+000 | 3.8000e+001 | 3.0000e+000 |
| 6 | 2.1400e+000 | -2.1718e+000 | 3.8000e+001 | 3.0000e+000 |
| 7 | 8.1643e+000 | -7.1816e+000 | 3.8000e+001 | 3.0000e+000 |
| 8 | 8.9852e+000 | -7.7601e+000 | 3.8000e+001 | 3.0000e+000 |
| 9 | 9.8059e+000 | -8.3387e+000 | 3.8000e+001 | 3.0000e+000 |
| 10 | 1.0627e+001 | -8.9172e+000 | 3.8000e+001 | 3.0000e+000 |
| 11 | 1.3939e+001 | -1.0970e+001 | 3.8000e+001 | 3.0000e+000 |
| 12 | 2.9717e+001 | -2.2091e+001 | 3.8000e+001 | 3.0000e+000 |
| 13 | 1.5116e+001 | -1.1800e+001 | 3.8000e+001 | 3.0000e+000 |
| 14 | 1.5704e+001 | -1.2215e+001 | 3.8000e+001 | 3.0000e+000 |
| 15 | 1.6293e+001 | -1.2630e+001 | 3.8000e+001 | 3.0000e+000 |
| 16 | 1.8147e+000 | -1.4045e+000 | 3.8000e+001 | 3.0000e+000 |
| 17 | 1.9251e+001 | -1.4440e+001 | 3.8000e+001 | 3.0000e+000 |
| 18 | 1.8529e+001 | -1.3931e+001 | 3.8000e+001 | 3.0000e+000 |
| 19 | 3.1095e+001 | -2.2788e+001 | 3.8000e+001 | 3.0000e+000 |
| 20 | 1.7083e+001 | -1.2912e+001 | 3.8000e+001 | 3.0000e+000 |
| 21 | 1.6361e+001 | -1.2403e+001 | 3.8000e+001 | 3.0000e+000 |
| 22 | 2.0612e+001 | -1.5357e+001 | 3.8000e+001 | 3.0000e+000 |
| 23 | 1.8823e+001 | -1.4096e+001 | 3.8000e+001 | 3.0000e+000 |
| 24 | 1.7034e+001 | -1.2835e+001 | 3.8000e+001 | 3.0000e+000 |
| 25 | 1.5245e+001 | -1.1574e+001 | 3.8000e+001 | 3.0000e+000 |
| 26 | 1.3456e+001 | -1.0313e+001 | 3.8000e+001 | 3.0000e+000 |
| 27 | 1.3612e+001 | -1.0518e+001 | 3.8000e+001 | 3.0000e+000 |
| 28 | 1.0682e+001 | -8.4528e+000 | 3.8000e+001 | 3.0000e+000 |
| 29 | 5.3305e+000 | -4.3535e+000 | 3.8000e+001 | 3.0000e+000 |
| 30 | 3.9978e+000 | -3.4142e+000 | 3.8000e+001 | 3.0000e+000 |
| 31 | 1.3839e-001 | -6.4206e-002 | 3.3000e+001 | 3.0000e+000 |
| 32 | 3.0167e+000 | -1.5873e+000 | 3.3000e+001 | 3.0000e+000 |
| 33 | 1.0056e+000 | -1.0174e+000 | 3.3000e+001 | 3.0000e+000 |

Bishop_Method_Fm= 1.289 Applied_Lambda= 0.0000

| SL# | Normal_M | ShearMob | Phi_Angle | Cohesion | SideLeft | ShearLeft | SideRight | ShearRight |
|---|---|---|---|---|---|---|---|---|
| 1 | 7.6879e-001 | -1.1633e+000 | 3.3000e+001 | 3.0000e+000 | 0.0000e+000 | 0.0000e+000 | -1.4232e-001 | 0.0000e+000 |
| 2 | 3.0998e+000 | -3.6781e+000 | 3.8000e+001 | 3.0000e+000 | 1.4232e-001 | 0.0000e+000 | -1.2268e+000 | 0.0000e+000 |
| 3 | 6.4889e+000 | -5.7324e+000 | 3.8000e+001 | 3.0000e+000 | 1.2268e+000 | 0.0000e+000 | -4.4304e+000 | 0.0000e+000 |
| 4 | 9.8779e+000 | -7.7866e+000 | 3.8000e+001 | 3.0000e+000 | 4.4304e+000 | 0.0000e+000 | -9.7533e+000 | 0.0000e+000 |
| 5 | 1.3267e+001 | -9.8409e+000 | 3.8000e+001 | 3.0000e+000 | 9.7533e+000 | 0.0000e+000 | -1.7195e+001 | 0.0000e+000 |
| 6 | 4.9122e+000 | -3.5481e+000 | 3.8000e+001 | 3.0000e+000 | 1.7195e+001 | 0.0000e+000 | -1.9996e+001 | 0.0000e+000 |
| 7 | 1.4059e+001 | -9.7493e+000 | 3.8000e+001 | 3.0000e+000 | 1.9996e+001 | 0.0000e+000 | -2.6274e+001 | 0.0000e+000 |
| 8 | 1.5574e+001 | -1.0668e+001 | 3.8000e+001 | 3.0000e+000 | 2.6274e+001 | 0.0000e+000 | -3.3306e+001 | 0.0000e+000 |
| 9 | 1.7089e+001 | -1.1586e+001 | 3.8000e+001 | 3.0000e+000 | 3.3306e+001 | 0.0000e+000 | -4.1092e+001 | 0.0000e+000 |
| 10 | 1.8604e+001 | -1.2504e+001 | 3.8000e+001 | 3.0000e+000 | 4.1092e+001 | 0.0000e+000 | -4.9632e+001 | 0.0000e+000 |
| 11 | 1.8739e+001 | -1.2344e+001 | 3.8000e+001 | 3.0000e+000 | 4.9632e+001 | 0.0000e+000 | -5.5136e+001 | 0.0000e+000 |
| 12 | 2.4961e+001 | -1.6116e+001 | 3.8000e+001 | 3.0000e+000 | 5.5136e+001 | 0.0000e+000 | -4.7865e+001 | 0.0000e+000 |
| 13 | 2.0379e+001 | -1.3338e+001 | 3.8000e+001 | 3.0000e+000 | 4.7865e+001 | 0.0000e+000 | -5.3912e+001 | 0.0000e+000 |
| 14 | 2.1198e+001 | -1.3835e+001 | 3.8000e+001 | 3.0000e+000 | 5.3912e+001 | 0.0000e+000 | -6.0230e+001 | 0.0000e+000 |
| 15 | 2.2018e+001 | -1.4332e+001 | 3.8000e+001 | 3.0000e+000 | 6.0230e+001 | 0.0000e+000 | -6.6819e+001 | 0.0000e+000 |
| 16 | 2.4537e+000 | -1.5952e+000 | 3.8000e+001 | 3.0000e+000 | 6.6819e+001 | 0.0000e+000 | -6.7555e+001 | 0.0000e+000 |
| 17 | 2.0081e+001 | -1.2922e+001 | 3.8000e+001 | 3.0000e+000 | 6.7555e+001 | 0.0000e+000 | -6.8116e+001 | 0.0000e+000 |
| 18 | 1.9313e+001 | -1.2456e+001 | 3.8000e+001 | 3.0000e+000 | 6.8116e+001 | 0.0000e+000 | -6.8630e+001 | 0.0000e+000 |
| 19 | 2.3241e+001 | -1.4837e+001 | 3.8000e+001 | 3.0000e+000 | 6.8630e+001 | 0.0000e+000 | -5.4347e+001 | 0.0000e+000 |

20 1.7777e+001 -1.1525e+001 3.8000e+001 3.0000e+000 5.4347e+001
0.0000e+000 -5.4768e+001 0.0000e+000
21 1.7009e+001 -1.1060e+001 3.8000e+001 3.0000e+000 5.4768e+001
0.0000e+000 -5.5143e+001 0.0000e+000
22 1.8826e+001 -1.2125e+001 3.8000e+001 3.0000e+000 5.5143e+001
0.0000e+000 -4.7923e+001 0.0000e+000
23 1.7177e+001 -1.1125e+001 3.8000e+001 3.0000e+000 4.7923e+001
0.0000e+000 -4.1272e+001 0.0000e+000
24 1.5528e+001 -1.0125e+001 3.8000e+001 3.0000e+000 4.1272e+001
0.0000e+000 -3.5188e+001 0.0000e+000
25 1.3878e+001 -9.1253e+000 3.8000e+001 3.0000e+000 3.5188e+001
0.0000e+000 -2.9673e+001 0.0000e+000
26 1.2229e+001 -8.1255e+000 3.8000e+001 3.0000e+000 2.9673e+001
0.0000e+000 -2.4726e+001 0.0000e+000
27 1.2955e+001 -8.6470e+000 3.8000e+001 3.0000e+000 2.4726e+001
0.0000e+000 -1.6588e+001 0.0000e+000
28 1.0152e+001 -6.9480e+000 3.8000e+001 3.0000e+000 1.6588e+001
0.0000e+000 -1.0026e+001 0.0000e+000
29 5.3962e+000 -3.7839e+000 3.8000e+001 3.0000e+000 1.0026e+001
0.0000e+000 -5.8468e+000 0.0000e+000
30 4.0493e+000 -2.9675e+000 3.8000e+001 3.0000e+000 5.8468e+000
0.0000e+000 -2.5726e+000 0.0000e+000
31 1.3938e-001 -5.5714e-002 3.3000e+001 3.0000e+000 2.5726e+000
0.0000e+000 -2.5100e+000 0.0000e+000
32 3.0409e+000 -1.3773e+000 3.3000e+001 3.0000e+000 2.5100e+000
0.0000e+000 -9.7080e-001 0.0000e+000
33 1.0208e+000 -8.8271e-001 3.3000e+001 3.0000e+000 9.7080e-001
0.0000e+000 -5.5820e-005 0.0000e+000

Janbu_Method_Ff= 1.199 Applied_Lambda= 0.0000
SL# Normal_F ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight
==========
1 6.7616e-001 -1.1999e+000 3.3000e+001 3.0000e+000 0.0000e+000
0.0000e+000 -1.4232e-001 0.0000e+000
2 2.8363e+000 -3.7809e+000 3.8000e+001 3.0000e+000 1.4232e-001
0.0000e+000 -1.2268e+000 0.0000e+000
3 6.0782e+000 -5.8926e+000 3.8000e+001 3.0000e+000 1.2268e+000
0.0000e+000 -4.4304e+000 0.0000e+000
4 9.3200e+000 -8.0042e+000 3.8000e+001 3.0000e+000 4.4304e+000
0.0000e+000 -9.7533e+000 0.0000e+000
5 1.2562e+001 -1.0116e+001 3.8000e+001 3.0000e+000 9.7533e+000
0.0000e+000 -1.7195e+001 0.0000e+000
6 4.6580e+000 -3.6472e+000 3.8000e+001 3.0000e+000 1.7195e+001
0.0000e+000 -1.9996e+001 0.0000e+000
7 1.3451e+001 -1.0081e+001 3.8000e+001 3.0000e+000 1.9996e+001
0.0000e+000 -2.6274e+001 0.0000e+000
8 1.4909e+001 -1.1030e+001 3.8000e+001 3.0000e+000 2.6274e+001
0.0000e+000 -3.3306e+001 0.0000e+000
9 1.6366e+001 -1.1980e+001 3.8000e+001 3.0000e+000 3.3306e+001
0.0000e+000 -4.1092e+001 0.0000e+000
10 1.7824e+001 -1.2929e+001 3.8000e+001 3.0000e+000 4.1092e+001
0.0000e+000 -4.9632e+001 0.0000e+000
11 1.8091e+001 -1.2843e+001 3.8000e+001 3.0000e+000 4.9632e+001
0.0000e+000 -5.5136e+001 0.0000e+000
12 2.4115e+001 -1.6767e+001 3.8000e+001 3.0000e+000 5.5136e+001
0.0000e+000 -4.7865e+001 0.0000e+000
13 1.9678e+001 -1.3877e+001 3.8000e+001 3.0000e+000 4.7865e+001
0.0000e+000 -5.3912e+001 0.0000e+000
14 2.0472e+001 -1.4394e+001 3.8000e+001 3.0000e+000 5.3912e+001
0.0000e+000 -6.0230e+001 0.0000e+000
15 2.1266e+001 -1.4911e+001 3.8000e+001 3.0000e+000 6.0230e+001
0.0000e+000 -6.6819e+001 0.0000e+000
16 2.3700e+000 -1.6597e+000 3.8000e+001 3.0000e+000 6.6819e+001
0.0000e+000 -6.7555e+001 0.0000e+000
17 1.9577e+001 -1.3557e+001 3.8000e+001 3.0000e+000 6.7555e+001
0.0000e+000 -6.8116e+001 0.0000e+000
18 1.8827e+001 -1.3069e+001 3.8000e+001 3.0000e+000 6.8116e+001
0.0000e+000 -6.8630e+001 0.0000e+000
19 2.2662e+001 -1.5567e+001 3.8000e+001 3.0000e+000 6.8630e+001
0.0000e+000 -5.4347e+001 0.0000e+000
20 1.7328e+001 -1.2092e+001 3.8000e+001 3.0000e+000 5.4347e+001
0.0000e+000 -5.4768e+001 0.0000e+000
21 1.6578e+001 -1.1604e+001 3.8000e+001 3.0000e+000 5.4768e+001
0.0000e+000 -5.5143e+001 0.0000e+000

22 1.8591e+001 -1.2876e+001 3.8000e+001 3.0000e+000 5.5143e+001
0.0000e+000 -4.7923e+001 0.0000e+000
23 1.6961e+001 -1.1814e+001 3.8000e+001 3.0000e+000 4.7923e+001
0.0000e+000 -4.1272e+001 0.0000e+000
24 1.5332e+001 -1.0753e+001 3.8000e+001 3.0000e+000 4.1272e+001
0.0000e+000 -3.5188e+001 0.0000e+000
25 1.3702e+001 -9.6910e+000 3.8000e+001 3.0000e+000 3.5188e+001
0.0000e+000 -2.9673e+001 0.0000e+000
26 1.2072e+001 -8.6292e+000 3.8000e+001 3.0000e+000 2.9673e+001
0.0000e+000 -2.4726e+001 0.0000e+000
27 1.2898e+001 -9.2551e+000 3.8000e+001 3.0000e+000 2.4726e+001
0.0000e+000 -1.6588e+001 0.0000e+000
28 1.0106e+001 -7.4366e+000 3.8000e+001 3.0000e+000 1.6588e+001
0.0000e+000 -1.0026e+001 0.0000e+000
29 5.4013e+000 -4.0696e+000 3.8000e+001 3.0000e+000 1.0026e+001
0.0000e+000 -5.8468e+000 0.0000e+000
30 4.0533e+000 -3.1915e+000 3.8000e+001 3.0000e+000 5.8468e+000
0.0000e+000 -2.5726e+000 0.0000e+000
31 1.3945e-001 -5.9912e-002 3.3000e+001 3.0000e+000 2.5726e+000
0.0000e+000 -2.5100e+000 0.0000e+000
32 3.0427e+000 -1.4811e+000 3.3000e+001 3.0000e+000 2.5100e+000
0.0000e+000 -9.7080e-001 0.0000e+000
33 1.0220e+000 -9.4921e-001 3.3000e+001 3.0000e+000 9.7080e-001
0.0000e+000 -5.5820e-005 0.0000e+000

M-P_Method_Fm= 1.417 Applied_Lambda= 0.7428
SL# Normal_M ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight
==========
1 7.1872e-001 -1.0353e+000 3.3000e+001 3.0000e+000 0.0000e+000
0.0000e+000 -1.8470e-001 1.3720e-001
2 2.5992e+000 -3.0701e+000 3.8000e+001 3.0000e+000 1.8470e-001 -1.3720e-001
-1.2070e+000 8.9661e-001
3 4.9244e+000 -4.3523e+000 3.8000e+001 3.0000e+000 1.2070e+000 -8.9661e-001
-3.7630e+000 2.7953e+000
4 7.2496e+000 -5.6345e+000 3.8000e+001 3.0000e+000 3.7630e+000 -2.7953e+000
-7.8527e+000 5.8332e+000
5 9.5749e+000 -6.9166e+000 3.8000e+001 3.0000e+000 7.8527e+000 -5.8332e+000
-1.3476e+001 1.0010e+001
6 3.5201e+000 -2.4601e+000 3.8000e+001 3.0000e+000 1.3476e+001 -1.0010e+001
-1.5578e+001 1.1572e+001
7 1.0763e+001 -7.0518e+000 3.8000e+001 3.0000e+000 1.5578e+001 -1.1572e+001
-2.0992e+001 1.5593e+001
8 1.1882e+001 -7.6688e+000 3.8000e+001 3.0000e+000 2.0992e+001 -1.5593e+001
-2.7030e+001 2.0078e+001
9 1.3001e+001 -8.2857e+000 3.8000e+001 3.0000e+000 2.7030e+001 -2.0078e+001
-3.3692e+001 2.5027e+001
10 1.4120e+001 -8.9027e+000 3.8000e+001 3.0000e+000 3.3692e+001 -2.5027e+001
-4.0978e+001 3.0440e+001
11 1.5570e+001 -9.4825e+000 3.8000e+001 3.0000e+000 4.0978e+001 -3.0440e+001
-4.6676e+001 3.4673e+001
12 2.8674e+001 -1.6708e+001 3.8000e+001 3.0000e+000 4.6676e+001 -3.4673e+001
-4.2832e+001 3.1817e+001
13 1.6900e+001 -1.0216e+001 3.8000e+001 3.0000e+000 4.2832e+001 -3.1817e+001
-4.9067e+001 3.6449e+001
14 1.7565e+001 -1.0583e+001 3.8000e+001 3.0000e+000 4.9067e+001 -3.6449e+001
-5.5571e+001 4.1280e+001
15 1.8231e+001 -1.0950e+001 3.8000e+001 3.0000e+000 5.5571e+001 -4.1280e+001
-6.2343e+001 4.6311e+001
16 2.0309e+000 -1.2181e+000 3.8000e+001 3.0000e+000 6.2343e+001 -4.6311e+001
-6.3099e+001 4.6872e+001
17 1.9235e+001 -1.1288e+001 3.8000e+001 3.0000e+000 6.3099e+001 -4.6872e+001
-6.5315e+001 4.8518e+001
18 1.8513e+001 -1.0891e+001 3.8000e+001 3.0000e+000 6.5315e+001 -4.8518e+001
-6.7428e+001 5.0088e+001
19 3.1211e+001 -1.7893e+001 3.8000e+001 3.0000e+000 6.7428e+001 -5.0088e+001
-5.6333e+001 4.1846e+001
20 1.7070e+001 -1.0095e+001 3.8000e+001 3.0000e+000 5.6333e+001 -4.1846e+001
-5.8238e+001 4.3261e+001
21 1.6348e+001 -9.6966e+000 3.8000e+001 3.0000e+000 5.8238e+001 -4.3261e+001
-6.0039e+001 4.4599e+001
22 2.3420e+001 -1.3563e+001 3.8000e+001 3.0000e+000 6.0039e+001 -4.4599e+001
-5.3559e+001 3.9785e+001
23 2.1413e+001 -1.2457e+001 3.8000e+001 3.0000e+000 5.3559e+001 -3.9785e+001
-4.7581e+001 3.5345e+001

24 1.9407e+001 -1.1350e+001 3.8000e+001 3.0000e+000 4.7581e+001 -3.5345e+001
-4.2104e+001 3.1276e+001
25 1.7401e+001 -1.0244e+001 3.8000e+001 3.0000e+000 4.2104e+001 -3.1276e+001
-3.7129e+001 2.7581e+001
26 1.5394e+001 -9.1376e+000 3.8000e+001 3.0000e+000 3.7129e+001 -2.7581e+001
-3.2656e+001 2.4258e+001
27 2.0191e+001 -1.1857e+001 3.8000e+001 3.0000e+000 3.2656e+001 -2.4258e+001
-2.2571e+001 1.6767e+001
28 1.5991e+001 -9.5405e+000 3.8000e+001 3.0000e+000 2.2571e+001 -1.6767e+001
-1.4434e+001 1.0722e+001
29 1.0030e+001 -5.9978e+000 3.8000e+001 3.0000e+000 1.4434e+001 -1.0722e+001
-8.2470e+000 6.1262e+000
30 7.6797e+000 -4.7015e+000 3.8000e+001 3.0000e+000 8.2470e+000 -6.1262e+000
-3.4001e+000 2.5257e+000
31 2.0129e-001 -7.9065e-002 3.3000e+001 3.0000e+000 3.4001e+000 -2.5257e+000
-3.3173e+000 2.4642e+000
32 4.5637e+000 -1.9510e+000 3.3000e+001 3.0000e+000 3.3173e+000 -2.4642e+000
-1.2808e+000 9.5140e-001
33 1.9784e+000 -1.2419e+000 3.3000e+001 3.0000e+000 1.2808e+000 -9.5140e-001
-3.1590e-005 2.3466e-005

Section A-A (Upgraded Condition)

04/01/2007
15:13:43

3=METHOD 21=NO. OF SLIP SURFACES 1=NO. OF RADII 1=SIDE FUNCTION TYPE

| SLIP NO. | X-COORD. | Y-COORD. | RADIUS | ITERATION NO. | LAMBDA | FACTOR OF SAFETY (MOMENT) | (FORCE) |
|---|---|---|---|---|---|---|---|
| 1 | 27.650 | 35.050 | 30.868 | 1 | 0.0000 | 1.733 | 2.469 |
| 1 | 27.650 | 35.050 | 30.868 | 6 | 0.0000 | 2.172 | 2.050 |
| 1 | 27.650 | 35.050 | 30.868 | 9 | 0.4664 | 2.268 | 2.274 |
| 2 | 27.650 | 35.050 | 32.934 | 1 | 0.0000 | 1.575 | 2.358 |
| 2 | 27.650 | 35.050 | 32.934 | 7 | 0.0000 | 2.142 | 1.963 |
| 2 | 27.650 | 35.050 | 32.934 | 12 | 0.4480 | 2.198 | 2.190 |
| 3 | 27.650 | 35.050 | 34.272 | 1 | 0.0000 | 1.462 | 2.473 |
| 3 | 27.650 | 35.050 | 34.272 | 8 | 0.0000 | 2.211 | 1.957 |
| 3 | 27.650 | 35.050 | 34.272 | 14 | 0.4362 | 2.275 | 2.266 |
| 4 | 27.650 | 35.050 | 26.002 | 1 | 0.0000 | 2.387 | 3.155 |
| 4 | 27.650 | 35.050 | 26.002 | 20 | 0.0000 | 2.474 | 999.000 |
| 4 | 27.650 | 35.050 | 26.002 | 51 | 0.8685 | 999.000 | 999.000 |
| 5 | 27.650 | 35.050 | 26.463 | 1 | 0.0000 | 1.986 | 2.769 |
| 5 | 27.650 | 35.050 | 26.463 | 16 | 0.0000 | 2.100 | 1.838 |
| 5 | 27.650 | 35.050 | 26.463 | 23 | 1.0196 | 999.000 | 999.000 |
| 6 | 27.650 | 35.050 | 28.597 | 1 | 0.0000 | 1.378 | 2.030 |
| 6 | 27.650 | 35.050 | 28.597 | 8 | 0.0000 | 1.633 | 1.424 |
| 6 | 27.650 | 35.050 | 28.597 | 15 | 1.0728 | 999.000 | 999.000 |
| 7 | 27.650 | 35.050 | 30.356 | 1 | 0.0000 | 1.235 | 1.695 |
| 7 | 27.650 | 35.050 | 30.356 | 6 | 0.0000 | 1.525 | 1.318 |
| 7 | 27.650 | 35.050 | 30.356 | 19 | 1.0466 | 999.000 | 999.000 |
| 8 | 27.650 | 35.050 | 24.600 | 1 | 0.0000 | 4.458 | 4.988 |
| 8 | 27.650 | 35.050 | 24.600 | 20 | 0.0000 | 4.399 | 999.000 |
| 8 | 27.650 | 35.050 | 24.600 | 31 | 0.2500 | 999.000 | 999.000 |
| 9 | 27.650 | 35.050 | 27.340 | 1 | 0.0000 | 1.812 | 2.249 |
| 9 | 27.650 | 35.050 | 27.340 | 8 | 0.0000 | 2.010 | 1.720 |
| 9 | 27.650 | 35.050 | 27.340 | 50 | 0.8372 | 999.000 | 999.000 |
| 10 | 27.650 | 35.050 | 27.963 | 1 | 0.0000 | 1.595 | 2.038 |
| 10 | 27.650 | 35.050 | 27.963 | 7 | 0.0000 | 1.794 | 1.547 |
| 10 | 27.650 | 35.050 | 27.963 | 49 | 0.7402 | 1.895 | 1.880 |
| 11 | 27.650 | 35.050 | 29.961 | 1 | 0.0000 | 1.347 | 1.671 |
| 11 | 27.650 | 35.050 | 29.961 | 6 | 0.0000 | 1.602 | 1.363 |
| 11 | 27.650 | 35.050 | 29.961 | 27 | 0.7636 | 1.713 | 1.705 |
| 12 | 27.650 | 35.050 | 31.623 | 1 | 0.0000 | 1.207 | 1.462 |
| 12 | 27.650 | 35.050 | 31.623 | 5 | 0.0000 | 1.466 | 1.254 |
| 12 | 27.650 | 35.050 | 31.623 | 15 | 0.6655 | 1.601 | 1.596 |
| 13 | 27.650 | 35.050 | 33.355 | 1 | 0.0000 | 1.064 | 1.338 |
| 13 | 27.650 | 35.050 | 33.355 | 5 | 0.0000 | 1.351 | 1.152 |
| 13 | 27.650 | 35.050 | 33.355 | 34 | 0.6330 | 1.621 | 1.631 |
| 14 | 27.650 | 35.050 | 25.728 | 1 | 0.0000 | 1.656 | 1.832 |
| 14 | 27.650 | 35.050 | 25.728 | 7 | 0.0000 | 1.731 | 1.619 |
| 14 | 27.650 | 35.050 | 25.728 | 46 | 0.6928 | 1.815 | 1.824 |
| 15 | 27.650 | 35.050 | 27.926 | 1 | 0.0000 | 1.349 | 1.550 |
| 15 | 27.650 | 35.050 | 27.926 | 6 | 0.0000 | 1.486 | 1.329 |
| 15 | 27.650 | 35.050 | 27.926 | 29 | 0.6885 | 1.571 | 1.565 |
| 16 | 27.650 | 35.050 | 29.877 | 1 | 0.0000 | 1.185 | 1.362 |
| 16 | 27.650 | 35.050 | 29.877 | 5 | 0.0000 | 1.360 | 1.202 |
| 16 | 27.650 | 35.050 | 29.877 | 14 | 0.6459 | 1.439 | 1.430 |
| 17 | 27.650 | 35.050 | 32.147 | 1 | 0.0000 | 1.048 | 1.195 |
| 17 | 27.650 | 35.050 | 32.147 | 4 | 0.0000 | 1.260 | 1.105 |
| 17 | 27.650 | 35.050 | 32.147 | 16 | 0.6075 | 1.426 | 1.423 |
| 18 | 27.650 | 35.050 | 32.484 | 1 | 0.0000 | 0.966 | 1.106 |
| 18 | 27.650 | 35.050 | 32.484 | 4 | 0.0000 | 1.189 | 1.043 |
| 18 | 27.650 | 35.050 | 32.484 | 27 | 0.5493 | 1.430 | 1.431 |
| 19 | 27.650 | 35.050 | 28.061 | 1 | 0.0000 | 1.097 | 1.376 |
| 19 | 27.650 | 35.050 | 28.061 | 5 | 0.0000 | 1.251 | 1.172 |
| 19 | 27.650 | 35.050 | 28.061 | 21 | 0.9942 | 1.434 | 1.441 |
| 20 | 27.650 | 35.050 | 28.886 | 1 | 0.0000 | 1.108 | 1.418 |
| 20 | 27.650 | 35.050 | 28.886 | 5 | 0.0000 | 1.289 | 1.199 |
| 20 | 27.650 | 35.050 | 28.886 | 9 | 0.7428 | 1.417 | 1.403 |
| 21 | 27.650 | 35.050 | 29.208 | 1 | 0.0000 | 1.108 | 1.439 |
| 21 | 27.650 | 35.050 | 29.208 | 5 | 0.0000 | 1.315 | 1.219 |
| 21 | 27.650 | 35.050 | 29.208 | 9 | 0.7229 | 1.484 | 1.475 |

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| SUMMARY OF MINIMUM FACTORS OF SAFETY |
|---|

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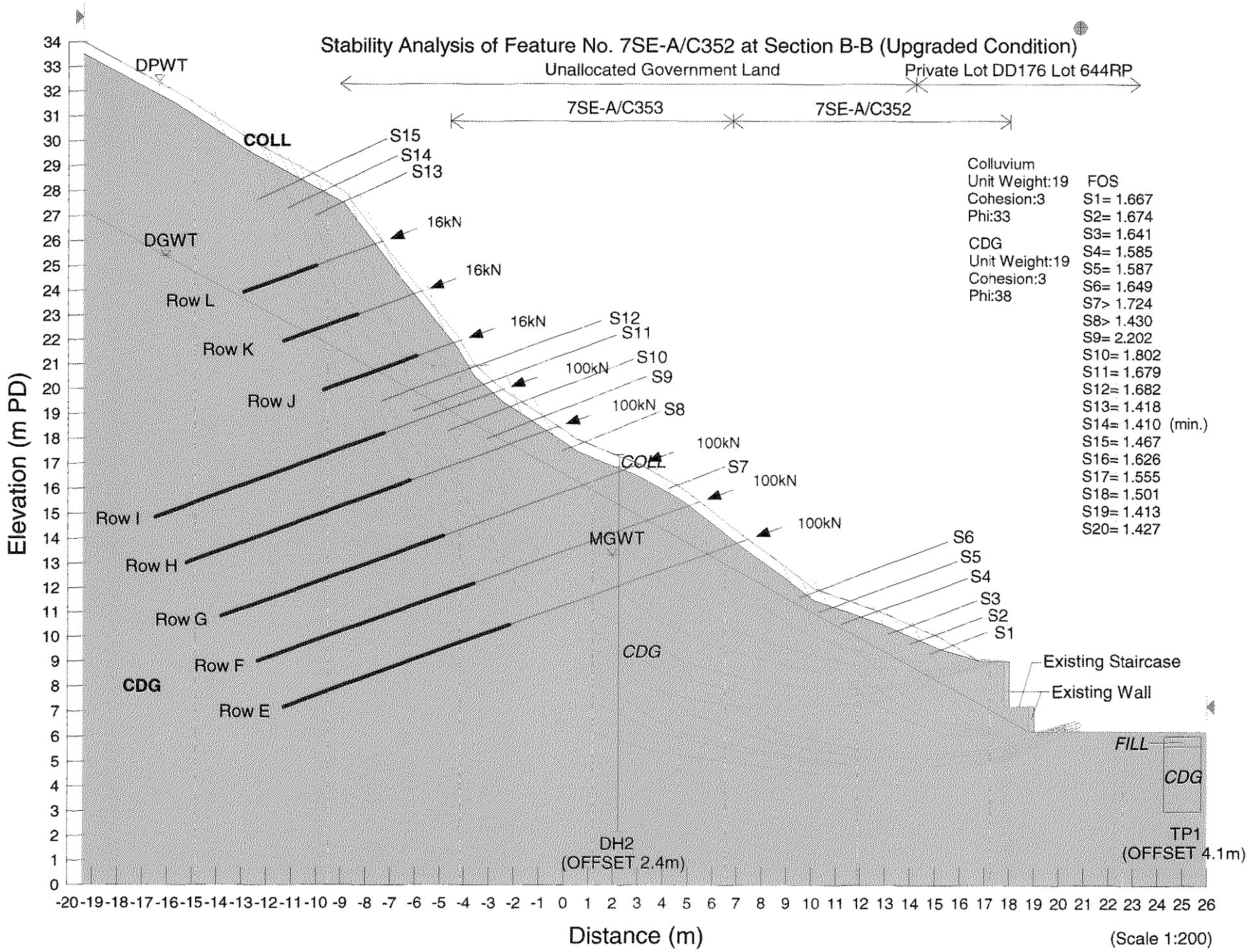
MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD

27.6500=X-COOR. 35.0500=Y-COOR. 32.4843=RADIUS 0.966=F.S.
18=SLIP#
MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
27.6500=X-COOR. 35.0500=Y-COOR. 32.4843=RADIUS 1.189=F.S.
18=SLIP#
FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
27.6500=X-COOR. 35.0500=Y-COOR. 32.4843=RADIUS 1.043=F.S.
18=SLIP#
MOMENT AND FORCE EQUILIBRIUM: MORGENSTERN-PRICE METHOD
27.6500=X-COOR. 35.0500=Y-COOR. 28.8864=RADIUS 1.417=F.S.
20=SLIP#

NORMAL TERMINATION OF SLOPE


Stability Analysis of Feature No. 7SE-A/C352 at Section B-B (Upgraded Condition)
Unallocated Government Land
Private Lot DD176 Lot 644RP
7SE-A/C353
7SE-A/C352
DPWT
DGWT
MGWT
COLL
CDG
FILL
Row L
Row K
Row J
Row I
Row H
Row G
Row F
Row E
S15
S14
S13
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
16kN
100kN
Existing Staircase
Existing Wall
DH2
(OFFSET 2.4m)
TP1
(OFFSET 4.1m)
Colluvium
Unit Weight:19
Cohesion:3
Phi:33
CDG
Unit Weight:19
Cohesion:3
Phi:38
FOS
S1= 1.667
S2= 1.674
S3= 1.641
S4= 1.585
S5= 1.587
S6= 1.649
S7> 1.724
S8> 1.430
S9= 2.202
S10= 1.802
S11= 1.679
S12= 1.682
S13= 1.418
S14= 1.410 (min.)
S15= 1.467
S16= 1.626
S17= 1.555
S18= 1.501
S19= 1.413
S20= 1.427
Elevation (m PD)
Distance (m)
(Scale 1:200)

Section B-B (Upgrading Condition)

```
FILEINFO
SLOPEW 4.24
PAGE
MM
+2.8790e+002 +2.0070e+002
+1.2000e+002 +1.7500e+001 +0.0000e-000 +0.0000e+000
ENGINEERING
M
+2.0000e+002 +2.0000e+002
WINDOW
  122 -1938
VIEW
0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1
FONTVIEW
Arial
  400   0   0   0
+6.0000e+000 +1.0000e+001
AXIS
  1   0   0   1   1
Distance (m)
Elevation (m PD)
  46    34 -2.0000e+001 +2.6000e+001 +3.4000e+001 +0.0000e+000
ZOOM
+9.8000e-001
GRID
  1   1 +1.0000e-001 +1.0000e-001
TEXT          54
    1 +1.0090e+001 +3.0910e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
7SE-A/C352
    2 -9.9000e+000 +3.3400e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
Stability Analysis of Feature No. 7SE-A/C352 at Section B-B (Upgraded Condition)
  0   0  34
S2
   13 +6.0000e-002 +3.0950e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
7SE-A/C353
   14 +1.9700e+001 +7.4000e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Existing Wall
   15 +1.6230e+001 +2.6670e+001 -9.0000e+000     0   400     1     1
Arial
  0   0  34
    2    58     0
   16 -1.7800e+001 +7.6000e+000 -1.0000e+001     0   700     1     0
Arial
  0   0  34
CDG
   17 -1.3010e+001 +2.9640e+001 -1.0000e+001     0   700     1     0
Arial
  0   0  34
COLL
   18 +1.7400e+001 +9.8000e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S1
   19 -9.0000e-002 +5.2000e-001 -1.0000e+001     0   400     2     0
Arial
  0   0  34
       DH2
(OFFSET 2.4m)
   20 +2.3373e+000 +8.9736e+000 -1.0000e+001     0   400     1     0
Arial
255   0  34
CDG
   21 +2.2400e+000 +1.6670e+001 -1.0000e+001     0   400     1     0
Arial
255   0  34
    3 +5.2400e+000 +6.3000e+000 -1.0000e+001     0   400     1     1
Arial
  0   0  34
    4    58     0
    4 +2.9000e+000 +2.0900e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S10
    5 +6.6000e+000 +1.6500e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S7
    6 +4.0000e+000 +1.8800e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S8
    7 +3.5000e+000 +2.0100e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S9
    8 +1.5700e+001 +1.3700e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S6
    9 +1.6000e+001 +1.2900e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S5
   10 +1.6400e+001 +1.2100e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S4
   11 +1.6800e+001 +1.1200e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S3
   12 +1.7100e+001 +1.0500e+001 -1.0000e+001     0   400     1     0
Arial
COLL
   22 -1.7360e+001 +3.2660e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
DPWT
   23 +1.0000e+000 +1.3620e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
MGWT
   24 -1.7010e+001 +2.5610e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
DGWT
   25 +2.2100e+001 -2.5000e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
(Scale 1:200)
   26 -8.5000e-001 +3.2500e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Unallocated Government Land
   27 +2.2580e+001 +9.6000e-001 -1.0000e+001     0   400     2     0
Arial
  0   0  34
         TP1
(OFFSET 4.1m)
   28 +2.2220e+001 +5.3300e+000 -1.0000e+001     0   400     1     0
Arial
255   0  34
FILL
   29 +2.4230e+001 +3.9900e+000 -1.0000e+001     0   400     1     0
Arial
255   0  34
CDG
   30 +1.6300e+001 +2.3480e+001 -9.0000e+000     0   400     1     1
Arial
  0   0  34
    3    58     0
```

31 -6.2100e+000 +2.8380e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
S13
32 +1.8000e+000 +2.2500e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
S12
33 +2.3000e+000 +2.1900e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
S11
34 +1.9350e+001 +8.6300e+000 -1.0000e+001 0 400 1 0
Arial
0 0 34
Existing Staircase
35 +1.3700e+001 +3.2500e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
Private Lot DD176 Lot 644RP
36 -6.6400e+000 +2.9040e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
S14
37 -7.0800e+000 +2.9830e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
S15
38 +2.0890e+001 +1.4080e+001 -9.0000e+000 0 400 21 0
Arial
0 0 34
FOS
S1= 1.667
S2= 1.674
S3= 1.641
S4= 1.585
S5= 1.587
S6= 1.649
S7> 1.724
S8> 1.430
S9= 2.202
S10= 1.802
S11= 1.679
S12= 1.682
S13= 1.418
S14= 1.410 (min.)
S15= 1.467
S16= 1.626
S17= 1.555
S18= 1.501
S19= 1.413
S20= 1.427
39 -5.6000e+000 +2.6400e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
16kN
40 -4.0000e+000 +2.4500e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
16kN
41 -2.2000e+000 +2.2400e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
16kN
42 +0.0000e+000 +2.0500e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
100kN
43 +1.9000e+000 +1.9000e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
100kN
44 +5.3000e+000 +1.7500e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
100kN
45 +7.6000e+000 +1.6000e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
100kN
46 +9.4000e+000 +1.4300e+001 -9.0000e+000 0 400 1 0
Arial
0 0 34
100kN
47 -1.3900e+001 +6.6000e+000 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row E
48 -1.4900e+001 +8.4000e+000 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row F
49 -1.6500e+001 +1.0300e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row G
50 -1.7700e+001 +1.2500e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row H
51 -1.8900e+001 +1.4400e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row I
52 -1.2800e+001 +1.9100e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row J
53 -1.4600e+001 +2.1200e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row K
54 -1.6100e+001 +2.3200e+001 -1.0000e+001 0 400 1 0
Arial
0 0 34
Row L
LINE 67
1 -1.2397e+001 +2.7630e+001 -7.2000e+000 +3.0090e+001
2 +6.7900e+000 +3.0500e+001 +6.7900e+000 +3.1100e+001
3 +1.8900e+001 +6.7000e+000 +1.9300e+001 +7.8000e+000
4 +1.9300e+001 +7.8000e+000 +1.9600e+001 +7.8000e+000
5 +1.9300e+001 +7.8000e+000 +1.7900e+001 +7.8000e+000
6 +1.3100e+001 +1.0100e+001 +1.6700e+001 +1.1500e+001
7 +1.4000e+001 +9.7000e+000 +1.6900e+001 +1.0800e+001
8 +1.4800e+001 +9.3000e+000 +1.7100e+001 +1.0200e+001
9 -1.1200e+001 +2.7290e+001 -6.7700e+000 +2.9410e+001
10 -1.0100e+001 +2.7000e+001 -6.4000e+000 +2.8720e+001
11 +1.8000e+001 +3.0500e+001 +1.8000e+001 +3.1100e+001
12 -7.4000e+000 +1.9500e+001 +1.5000e+000 +2.2800e+001
13 +2.2840e+001 +3.2600e+001 +2.3240e+001 +3.2300e+001
14 -4.5999e+000 +3.0800e+001 +1.8000e+001 +3.0800e+001
15 -6.1000e+000 +1.9100e+001 +2.1000e+000 +2.2200e+001
16 -1.6360e+001 +3.2410e+001 -1.6560e+001 +3.2660e+001
17 -1.6560e+001 +3.2660e+001 -1.6160e+001 +3.2660e+001
18 -1.6160e+001 +3.2660e+001 -1.6360e+001 +3.2410e+001
19 -8.6600e+000 +3.2600e+001 -9.0600e+000 +3.2300e+001
20 -9.0600e+000 +3.2300e+001 +2.3236e+001 +3.2300e+001
21 -9.0600e+000 +3.2300e+001 -8.6600e+000 +3.2000e+001
22 +7.1900e+000 +3.1100e+001 +6.7900e+000 +3.0800e+001
23 +2.2100e+000 +1.7380e+001 +2.2100e+000 +2.1500e+000
24 +6.7900e+000 +3.0800e+001 +7.1900e+000 +3.0500e+001
25 +6.3900e+000 +3.1100e+001 +6.7900e+000 +3.0800e+001
26 +6.7900e+000 +3.0800e+001 +6.3900e+000 +3.0500e+001
27 +1.7600e+001 +3.1100e+001 +1.8000e+001 +3.0800e+001
28 +1.8000e+001 +3.0800e+001 +1.7600e+001 +3.0500e+001
29 +2.3240e+001 +3.2300e+001 +2.2840e+001 +3.2000e+001
30 -4.7000e+000 +1.8300e+001 +2.8000e+000 +2.1200e+001
31 +2.5750e+001 +6.0000e+000 +2.5750e+001 +3.0008e+000
32 +2.4250e+001 +6.0000e+000 +2.4250e+001 +3.0000e+000
33 +2.4250e+001 +3.0000e+000 +2.5750e+001 +3.0000e+000
34 +2.4250e+001 +6.0000e+000 +2.5750e+001 +6.0000e+000
35 -1.6460e+001 +3.2360e+001 -1.6260e+001 +3.2360e+001

```
   36 +2.0083e+000 +1.7380e+001 +2.4100e+000 +1.7380e+001
   37 +1.9938e+000 +1.6880e+001 +2.4100e+000 +1.6880e+001
   38 -3.1000e+000 +1.8000e+001 +3.3000e+000 +2.0500e+001
   39 -1.0000e-001 +1.7500e+001 +3.9000e+000 +1.9100e+001
   40 +1.9095e+000 +2.1500e+000 +2.5100e+000 +2.1500e+000
   41 +2.4250e+001 +5.6000e+000 +2.5750e+001 +5.6000e+000
   42 -1.6410e+001 +3.2260e+001 -1.6310e+001 +3.2260e+001
   43 +1.7100e+000 +1.3370e+001 +2.2100e+000 +1.3370e+001
   44 +1.9600e+000 +1.3370e+001 +1.7600e+000 +1.3570e+001
   45 +1.7600e+000 +1.3570e+001 +2.1600e+000 +1.3570e+001
   46 +2.1600e+000 +1.3570e+001 +1.9600e+000 +1.3370e+001
   47 +1.8100e+000 +1.3320e+001 +2.1100e+000 +1.3320e+001
   48 +1.9100e+000 +1.3270e+001 +2.0100e+000 +1.3270e+001
   49 -1.6100e+001 +2.5400e+001 -1.6290e+001 +2.5590e+001
   50 -1.6290e+001 +2.5590e+001 -1.5920e+001 +2.5590e+001
   51 -1.5920e+001 +2.5590e+001 -1.6100e+001 +2.5400e+001
   52 -1.6290e+001 +2.5400e+001 -1.5920e+001 +2.5400e+001
   53 -1.6200e+001 +2.5350e+001 -1.5990e+001 +2.5350e+001
   54 -1.6140e+001 +2.5300e+001 -1.6040e+001 +2.5300e+001
   55 +4.2000e+000 +1.6000e+001 +6.5000e+000 +1.6900e+001
   56 +9.5000e+000 +1.1600e+001 +1.5500e+001 +1.3900e+001
   57 +1.8400e+001 +7.1975e+000 +1.8921e+001 +8.9800e+000
   58 +1.0300e+001 +1.1000e+001 +1.5900e+001 +1.3100e+001
   59 +1.8920e+001 +8.9800e+000 +1.9280e+001 +8.9800e+000
   60 -4.1000e+000 +3.1100e+001 -4.6000e+000 +3.0800e+001
   61 -4.6000e+000 +3.0800e+001 -4.1000e+000 +3.0500e+001
   62 +1.4200e+001 +3.2600e+001 +1.4200e+001 +3.2000e+001
   63 +1.3780e+001 +3.2599e+001 +1.4631e+001 +3.1999e+001
   64 +1.4621e+001 +3.2600e+001 +1.3770e+001 +3.2000e+001
   65 +2.3650e+001 +5.7600e+000 +2.5040e+001 +5.7600e+000
   66 -4.6000e+000 +3.1100e+001 -4.6000e+000 +3.0500e+001
   67 +1.1200e+001 +1.0500e+001 +1.6300e+001 +1.2400e+001
CIRCLE          0
ARC             0
CUSTSTRINGS     2
    2,
   51,:
```

```
IMAGE           1
ORIFCT
CUSTCOLORS
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
```

Section B-B (Upgrading Condition)

11/12/2006
14:04:13

| Center_X | Center_Y | Radius | Slip_Surface | Method |
|---|---|---|---|---|
| 2.080000e+001 | 3.460000e+001 | 3.343407e+001 | 14 | 3 |

| SL# | X_Left | Y_L_Top | Y_L_Bottom | X_Right | Y_R_Top | Y_R_Bottom | Mid_Height |
|---|---|---|---|---|---|---|---|
| 1 | -1.229261e+001 | 2.983385e+001 | 2.983384e+001 | -1.193215e+001 | 2.963900e+001 | 2.913900e+001 | 2.499981e-001 |
| 2 | -1.193215e+001 | 2.963900e+001 | 2.913900e+001 | -1.164346e+001 | 2.948295e+001 | 2.858250e+001 | 7.002239e-001 |
| 3 | -1.164346e+001 | 2.948295e+001 | 2.858250e+001 | -1.135477e+001 | 2.932690e+001 | 2.802600e+001 | 1.100676e+000 |
| 4 | -1.135477e+001 | 2.932690e+001 | 2.802600e+001 | -1.106608e+001 | 2.917085e+001 | 2.746950e+001 | 1.501127e+000 |
| 5 | -1.106608e+001 | 2.917085e+001 | 2.746950e+001 | -1.077738e+001 | 2.901480e+001 | 2.691300e+001 | 1.901577e+000 |
| 6 | -1.077738e+001 | 2.901480e+001 | 2.691300e+001 | -1.048869e+001 | 2.885875e+001 | 2.635650e+001 | 2.302029e+000 |
| 7 | -1.048869e+001 | 2.885875e+001 | 2.635650e+001 | -1.020000e+001 | 2.870270e+001 | 2.580000e+001 | 2.702480e+000 |
| 8 | -1.020000e+001 | 2.870270e+001 | 2.580000e+001 | -9.900000e+000 | 2.854054e+001 | 2.530000e+001 | 3.071625e+000 |
| 9 | -9.900000e+000 | 2.854054e+001 | 2.530000e+001 | -9.599999e+000 | 2.837838e+001 | 2.480000e+001 | 3.409460e+000 |
| 10 | -9.599999e+000 | 2.837838e+001 | 2.480000e+001 | -9.299999e+000 | 2.821622e+001 | 2.430000e+001 | 3.747299e+000 |
| 11 | -9.299999e+000 | 2.821622e+001 | 2.430000e+001 | -9.000000e+000 | 2.805405e+001 | 2.380000e+001 | 4.085136e+000 |
| 12 | -9.000000e+000 | 2.805405e+001 | 2.380000e+001 | -8.900000e+000 | 2.800000e+001 | 2.370667e+001 | 4.273695e+000 |
| 13 | -8.900000e+000 | 2.800000e+001 | 2.370667e+001 | -8.620000e+000 | 2.763478e+001 | 2.344533e+001 | 4.241392e+000 |
| 14 | -8.620000e+000 | 2.763478e+001 | 2.344533e+001 | -8.340000e+000 | 2.726957e+001 | 2.318400e+001 | 4.137508e+000 |
| 15 | -8.340000e+000 | 2.726957e+001 | 2.318400e+001 | -8.060000e+000 | 2.690435e+001 | 2.292267e+001 | 4.033625e+000 |
| 16 | -8.060000e+000 | 2.690435e+001 | 2.292267e+001 | -7.780001e+000 | 2.653913e+001 | 2.266133e+001 | 3.929741e+000 |
| 17 | -7.780001e+000 | 2.653913e+001 | 2.266133e+001 | -7.500000e+000 | 2.617391e+001 | 2.240000e+001 | 3.825855e+000 |
| 18 | -7.500000e+000 | 2.617391e+001 | 2.240000e+001 | -7.200000e+000 | 2.578261e+001 | 2.219231e+001 | 3.682106e+000 |
| 19 | -7.200000e+000 | 2.578261e+001 | 2.219231e+001 | -6.900000e+000 | 2.539130e+001 | 2.198462e+001 | 3.498495e+000 |
| 20 | -6.900000e+000 | 2.539130e+001 | 2.198462e+001 | -6.600000e+000 | 2.500000e+001 | 2.177692e+001 | 3.314882e+000 |
| 21 | -6.600000e+000 | 2.500000e+001 | 2.177692e+001 | -6.200000e+000 | 2.450000e+001 | 2.150000e+001 | 3.111538e+000 |
| 22 | -6.200000e+000 | 2.450000e+001 | 2.150000e+001 | -5.800000e+000 | 2.400000e+001 | 2.131918e+001 | 2.840410e+000 |
| 23 | -5.800000e+000 | 2.400000e+001 | 2.131918e+001 | -5.533333e+000 | 2.366667e+001 | 2.119863e+001 | 2.574430e+000 |
| 24 | -5.533333e+000 | 2.366667e+001 | 2.119863e+001 | -5.266666e+000 | 2.333333e+001 | 2.107808e+001 | 2.361645e+000 |
| 25 | -5.266666e+000 | 2.333333e+001 | 2.107808e+001 | -5.000000e+000 | 2.300000e+001 | 2.095753e+001 | 2.148857e+000 |
| 26 | -5.000000e+000 | 2.300000e+001 | 2.095753e+001 | -4.740000e+000 | 2.267500e+001 | 2.084000e+001 | 1.938732e+000 |
| 27 | -4.740000e+000 | 2.267500e+001 | 2.084000e+001 | -4.470000e+000 | 2.233750e+001 | 2.083645e+001 | 1.668026e+000 |
| 28 | -4.470000e+000 | 2.233750e+001 | 2.083645e+001 | -4.200000e+000 | 2.200000e+001 | 2.083290e+001 | 1.334080e+000 |
| 29 | -4.200000e+000 | 2.200000e+001 | 2.083290e+001 | -3.980000e+000 | 2.163333e+001 | 2.083000e+001 | 9.852200e-001 |
| 30 | -3.980000e+000 | 2.163333e+001 | 2.083000e+001 | -3.813903e+000 | 2.135650e+001 | 2.085650e+001 | 6.516666e-001 |
| 31 | -3.813903e+000 | 2.135650e+001 | 2.085650e+001 | -3.600000e+000 | 2.100000e+001 | 2.089064e+001 | 3.046799e-001 |
| 32 | -3.600000e+000 | 2.100000e+001 | 2.089064e+001 | -3.497664e+000 | 2.090697e+001 | 2.090696e+001 | 5.467987e-002 |

| SL# | L_Load_X | L_Load_Y | A_Load_X | A_Load_Y | P_Load_X | P_Load_Y | A_Modifier |
|---|---|---|---|---|---|---|---|
| 1 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 2 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 3 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 4 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 5 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 6 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 7 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 8 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 9 | 0.0000e+000 | 0.0000e+000 | -1.5035e+001 | -5.4722e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 10 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 11 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 12 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 13 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 14 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 15 | 0.0000e+000 | 0.0000e+000 | -1.5035e+001 | -5.4722e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 16 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 17 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 18 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 19 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 20 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 21 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 22 | 0.0000e+000 | 0.0000e+000 | -1.5035e+001 | -5.4720e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 23 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 24 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 25 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 26 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 27 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 28 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 29 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 30 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 31 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 32 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |

| SL# | Weight | Pore_Water | Alpha | Force Fn. | Seismic_F | Seismic_Y | Pore_Air | Phi_B |
|---|---|---|---|---|---|---|---|---|

1 1.7122e+000 1.9191e+000 6.2581e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
2 3.8408e+000 0.0000e+000 6.2581e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
3 6.0374e+000 0.0000e+000 6.2581e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
4 8.2339e+000 0.0000e+000 6.2581e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
5 1.0430e+001 0.0000e+000 6.2581e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
6 1.2627e+001 0.0000e+000 6.2581e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
7 1.4824e+001 0.0000e+000 6.2581e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
8 1.7508e+001 0.0000e+000 5.9036e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
9 1.9434e+001 0.0000e+000 5.9036e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
10 2.1360e+001 0.0000e+000 5.9036e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
11 2.3285e+001 0.0000e+000 5.9036e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
12 8.1201e+000 0.0000e+000 4.3025e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
13 2.2564e+001 0.0000e+000 4.3025e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
14 2.2012e+001 0.0000e+000 4.3025e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
15 2.1459e+001 0.0000e+000 4.3025e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
16 2.0906e+001 0.0000e+000 4.3025e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
17 2.0354e+001 0.0000e+000 4.3025e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
18 2.0988e+001 0.0000e+000 3.4695e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
19 1.9941e+001 0.0000e+000 3.4695e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
20 1.8895e+001 0.0000e+000 3.4695e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
21 2.3648e+001 0.0000e+000 3.4695e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
22 2.1587e+001 0.0000e+000 2.4326e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
23 1.3044e+001 0.0000e+000 2.4326e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
24 1.1966e+001 0.0000e+000 2.4325e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
25 1.0888e+001 0.0000e+000 2.4326e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
26 9.5773e+000 0.0000e+000 2.4326e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
27 8.5570e+000 0.0000e+000 7.5401e-001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
28 6.8438e+000 0.0000e+000 7.5360e-001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
29 4.1182e+000 0.0000e+000 7.5401e-001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
30 2.0566e+000 0.0000e+000 -9.0664e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
31 1.2383e+000 6.4723e-001 -9.0666e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
32 1.0632e-001 5.5571e-002 -9.0605e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000

Ordinary_Method_Fm= 1.123 Applied_Lambda= 0.0000
SL# Normal_M ShearMob Phi_Angle Cohesion

=

1 7.8845e-001 -1.4374e+000 3.3000e+001 3.0000e+000
2 1.7687e+000 -2.9055e+000 3.8000e+001 3.0000e+000
3 2.7801e+000 -3.6093e+000 3.8000e+001 3.0000e+000
4 3.7916e+000 -4.3130e+000 3.8000e+001 3.0000e+000
5 4.8031e+000 -5.0168e+000 3.8000e+001 3.0000e+000
6 5.8146e+000 -5.7206e+000 3.8000e+001 3.0000e+000
7 6.8261e+000 -6.4243e+000 3.8000e+001 3.0000e+000
8 9.0079e+000 -7.8253e+000 3.8000e+001 3.0000e+000
9 2.5707e+001 -1.9444e+001 3.8000e+001 3.0000e+000
10 1.0989e+001 -9.2040e+000 3.8000e+001 3.0000e+000
11 1.1980e+001 -9.8933e+000 3.8000e+001 3.0000e+000
12 5.9362e+000 -4.4957e+000 3.8000e+001 3.0000e+000
13 1.6496e+001 -1.2501e+001 3.8000e+001 3.0000e+000
14 1.6092e+001 -1.2219e+001 3.8000e+001 3.0000e+000
15 2.9947e+001 -2.1860e+001 3.8000e+001 3.0000e+000
16 1.5284e+001 -1.1657e+001 3.8000e+001 3.0000e+000
17 1.4880e+001 -1.1376e+001 3.8000e+001 3.0000e+000
18 1.7256e+001 -1.2981e+001 3.8000e+001 3.0000e+000
19 1.6396e+001 -1.2383e+001 3.8000e+001 3.0000e+000
20 1.5535e+001 -1.1784e+001 3.8000e+001 3.0000e+000
21 1.9443e+001 -1.4828e+001 3.8000e+001 3.0000e+000
22 3.0850e+001 -2.2638e+001 3.8000e+001 3.0000e+000
23 1.1886e+001 -9.0517e+000 3.8000e+001 3.0000e+000
24 1.0903e+001 -8.3681e+000 3.8000e+001 3.0000e+000
25 9.9209e+000 -7.6846e+000 3.8000e+001 3.0000e+000
26 8.7271e+000 -6.8344e+000 3.8000e+001 3.0000e+000
27 8.5562e+000 -6.6746e+000 3.8000e+001 3.0000e+000
28 6.8432e+000 -5.4828e+000 3.8000e+001 3.0000e+000
29 4.1179e+000 -3.4529e+000 3.8000e+001 3.0000e+000
30 2.0309e+000 -1.8624e+000 3.8000e+001 3.0000e+000
31 1.2228e+000 -9.1157e-001 3.3000e+001 3.0000e+000
32 1.0499e-001 -3.0544e-001 3.3000e+001 3.0000e+000

Bishop_Method_Fm= 1.308 Applied_Lambda= 0.0000
SL# Normal_M ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight

=

1 1.0682e+000 -1.3728e+000 3.3000e+001 3.0000e+000 0.0000e+000
0.0000e+000 -2.1042e-001 0.0000e+000
2 2.5849e+000 -2.9818e+000 3.8000e+001 3.0000e+000 2.1042e-001
0.0000e+000 -9.2075e-001 0.0000e+000
3 4.8004e+000 -4.3051e+000 3.8000e+001 3.0000e+000 9.2075e-001
0.0000e+000 -2.8947e+000 0.0000e+000
4 7.0159e+000 -5.6285e+000 3.8000e+001 3.0000e+000 2.8947e+000
0.0000e+000 -6.1322e+000 0.0000e+000
5 9.2314e+000 -6.9518e+000 3.8000e+001 3.0000e+000 6.1322e+000
0.0000e+000 -1.0633e+001 0.0000e+000
6 1.1447e+001 -8.2751e+000 3.8000e+001 3.0000e+000 1.0633e+001
0.0000e+000 -1.6398e+001 0.0000e+000
7 1.3663e+001 -9.5984e+000 3.8000e+001 3.0000e+000 1.6398e+001
0.0000e+000 -2.3426e+001 0.0000e+000
8 1.5924e+001 -1.0849e+001 3.8000e+001 3.0000e+000 2.3426e+001
0.0000e+000 -3.0738e+001 0.0000e+000
9 2.3124e+001 -1.5149e+001 3.8000e+001 3.0000e+000 3.0738e+001
0.0000e+000 -2.6674e+001 0.0000e+000
10 1.9672e+001 -1.3088e+001 3.8000e+001 3.0000e+000 2.6674e+001
0.0000e+000 -3.5891e+001 0.0000e+000
11 2.1547e+001 -1.4207e+001 3.8000e+001 3.0000e+000 3.5891e+001
0.0000e+000 -4.6061e+001 0.0000e+000
12 6.9399e+000 -4.4589e+000 3.8000e+001 3.0000e+000 4.6061e+001
0.0000e+000 -4.7223e+001 0.0000e+000
13 1.9281e+001 -1.2395e+001 3.8000e+001 3.0000e+000 4.7223e+001
0.0000e+000 -5.0444e+001 0.0000e+000
14 1.8796e+001 -1.2105e+001 3.8000e+001 3.0000e+000 5.0444e+001
0.0000e+000 -5.3567e+001 0.0000e+000
15 2.3114e+001 -1.4684e+001 3.8000e+001 3.0000e+000 5.3567e+001
0.0000e+000 -4.2534e+001 0.0000e+000
16 1.7825e+001 -1.1525e+001 3.8000e+001 3.0000e+000 4.2534e+001
0.0000e+000 -4.5459e+001 0.0000e+000
17 1.7340e+001 -1.1236e+001 3.8000e+001 3.0000e+000 4.5459e+001
0.0000e+000 -4.8285e+001 0.0000e+000
18 1.7642e+001 -1.1374e+001 3.8000e+001 3.0000e+000 4.8285e+001
0.0000e+000 -4.8157e+001 0.0000e+000
19 1.6741e+001 -1.0836e+001 3.8000e+001 3.0000e+000 4.8157e+001
0.0000e+000 -4.7998e+001 0.0000e+000
20 1.5841e+001 -1.0299e+001 3.8000e+001 3.0000e+000 4.7998e+001
0.0000e+000 -4.7807e+001 0.0000e+000
21 1.9792e+001 -1.2938e+001 3.8000e+001 3.0000e+000 4.7807e+001
0.0000e+000 -4.7506e+001 0.0000e+000
22 2.3016e+001 -1.4754e+001 3.8000e+001 3.0000e+000 4.7506e+001
0.0000e+000 -2.7405e+001 0.0000e+000
23 1.1029e+001 -7.2586e+000 3.8000e+001 3.0000e+000 2.7405e+001

0.0000e+000 -2.4792e+001 0.0000e+000
24 1.0097e+001 -6.7024e+000 3.8000e+001 3.0000e+000 2.4792e+001
0.0000e+000 -2.2343e+001 0.0000e+000
25 9.1661e+000 -6.1461e+000 3.8000e+001 3.0000e+000 2.2343e+001
0.0000e+000 -2.0060e+001 0.0000e+000
26 8.0402e+000 -5.4568e+000 3.8000e+001 3.0000e+000 2.0060e+001
0.0000e+000 -1.7992e+001 0.0000e+000
27 8.4828e+000 -5.6860e+000 3.8000e+001 3.0000e+000 1.7992e+001
0.0000e+000 -1.1931e+001 0.0000e+000
28 6.7829e+000 -4.6707e+000 3.8000e+001 3.0000e+000 1.1931e+001
0.0000e+000 -6.9497e+000 0.0000e+000
29 4.0798e+000 -2.9415e+000 3.8000e+001 3.0000e+000 6.9497e+000
0.0000e+000 -3.8103e+000 0.0000e+000
30 2.3705e+000 -1.8016e+000 3.8000e+001 3.0000e+000 3.8103e+000
0.0000e+000 -1.4887e+000 0.0000e+000
31 1.3924e+000 -8.6678e-001 3.3000e+001 3.0000e+000 1.4887e+000
0.0000e+000 -3.3327e-001 0.0000e+000
32 1.5337e-001 -2.8623e-001 3.3000e+001 3.0000e+000 3.3327e-001
0.0000e+000 -1.2159e-005 0.0000e+000

Janbu_Method_Ff= 1.211 Applied_Lambda= 0.0000
SL# Normal_F ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight

1 9.5818e-001 -1.4235e+000 3.3000e+001 3.0000e+000 0.0000e+000
0.0000e+000 -2.1042e-001 0.0000e+000
2 2.3684e+000 -3.0803e+000 3.8000e+001 3.0000e+000 2.1042e-001
0.0000e+000 -9.2075e-001 0.0000e+000
3 4.4878e+000 -4.4474e+000 3.8000e+001 3.0000e+000 9.2075e-001
0.0000e+000 -2.8947e+000 0.0000e+000
4 6.6073e+000 -5.8144e+000 3.8000e+001 3.0000e+000 2.8947e+000
0.0000e+000 -6.1322e+000 0.0000e+000
5 8.7267e+000 -7.1815e+000 3.8000e+001 3.0000e+000 6.1322e+000
0.0000e+000 -1.0633e+001 0.0000e+000
6 1.0846e+001 -8.5485e+000 3.8000e+001 3.0000e+000 1.0633e+001
0.0000e+000 -1.6398e+001 0.0000e+000
7 1.2966e+001 -9.9156e+000 3.8000e+001 3.0000e+000 1.6398e+001
0.0000e+000 -2.3426e+001 0.0000e+000
8 1.5187e+001 -1.1240e+001 3.8000e+001 3.0000e+000 2.3426e+001
0.0000e+000 -3.0738e+001 0.0000e+000
9 2.2096e+001 -1.5696e+001 3.8000e+001 3.0000e+000 3.0738e+001
0.0000e+000 -2.6674e+001 0.0000e+000
10 1.8784e+001 -1.3560e+001 3.8000e+001 3.0000e+000 2.6674e+001
0.0000e+000 -3.5891e+001 0.0000e+000
11 2.0582e+001 -1.4720e+001 3.8000e+001 3.0000e+000 3.5891e+001
0.0000e+000 -4.6061e+001 0.0000e+000
12 6.7201e+000 -4.6733e+000 3.8000e+001 3.0000e+000 4.6061e+001
0.0000e+000 -4.7223e+001 0.0000e+000
13 1.8670e+001 -1.2991e+001 3.8000e+001 3.0000e+000 4.7223e+001
0.0000e+000 -5.0444e+001 0.0000e+000
14 1.8199e+001 -1.2687e+001 3.8000e+001 3.0000e+000 5.0444e+001
0.0000e+000 -5.3567e+001 0.0000e+000
15 2.2390e+001 -1.5391e+001 3.8000e+001 3.0000e+000 5.3567e+001
0.0000e+000 -4.2534e+001 0.0000e+000
16 1.7257e+001 -1.2080e+001 3.8000e+001 3.0000e+000 4.2534e+001
0.0000e+000 -4.5459e+001 0.0000e+000
17 1.6786e+001 -1.1776e+001 3.8000e+001 3.0000e+000 4.5459e+001
0.0000e+000 -4.8285e+001 0.0000e+000
18 1.7181e+001 -1.1985e+001 3.8000e+001 3.0000e+000 4.8285e+001
0.0000e+000 -4.8157e+001 0.0000e+000
19 1.6303e+001 -1.1419e+001 3.8000e+001 3.0000e+000 4.8157e+001
0.0000e+000 -4.7998e+001 0.0000e+000
20 1.5424e+001 -1.0852e+001 3.8000e+001 3.0000e+000 4.7998e+001
0.0000e+000 -4.7807e+001 0.0000e+000
21 1.9268e+001 -1.3633e+001 3.8000e+001 3.0000e+000 4.7807e+001
0.0000e+000 -4.7506e+001 0.0000e+000
22 2.2579e+001 -1.5651e+001 3.8000e+001 3.0000e+000 4.7506e+001
0.0000e+000 -2.7405e+001 0.0000e+000
23 1.0814e+001 -7.6997e+000 3.8000e+001 3.0000e+000 2.7405e+001
0.0000e+000 -2.4792e+001 0.0000e+000
24 9.8988e+000 -7.1096e+000 3.8000e+001 3.0000e+000 2.4792e+001
0.0000e+000 -2.2343e+001 0.0000e+000
25 8.9840e+000 -6.5195e+000 3.8000e+001 3.0000e+000 2.2343e+001
0.0000e+000 -2.0060e+001 0.0000e+000
26 7.8786e+000 -5.7884e+000 3.8000e+001 3.0000e+000 2.0060e+001

0.0000e+000 -1.7992e+001 0.0000e+000
27 8.4765e+000 -6.1361e+000 3.8000e+001 3.0000e+000 1.7992e+001
0.0000e+000 -1.1931e+001 0.0000e+000
28 6.7777e+000 -5.0404e+000 3.8000e+001 3.0000e+000 1.1931e+001
0.0000e+000 -6.9497e+000 0.0000e+000
29 4.0766e+000 -3.1743e+000 3.8000e+001 3.0000e+000 6.9497e+000
0.0000e+000 -3.8103e+000 0.0000e+000
30 2.3977e+000 -1.9631e+000 3.8000e+001 3.0000e+000 3.8103e+000
0.0000e+000 -1.4887e+000 0.0000e+000
31 1.4053e+000 -9.4289e-001 3.3000e+001 3.0000e+000 1.4887e+000
0.0000e+000 -3.3327e-001 0.0000e+000
32 1.5760e-001 -3.1136e-001 3.3000e+001 3.0000e+000 3.3327e-001
0.0000e+000 -1.2159e-005 0.0000e+000

M-P_Method_Fm= 1.410 Applied_Lambda= 0.7710
SL# Normal_M ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight

1 9.4794e-001 -1.2178e+000 3.3000e+001 3.0000e+000 0.0000e+000
0.0000e+000 -2.4869e-001 1.9174e-001
2 2.1921e+000 -2.5477e+000 3.8000e+001 3.0000e+000 2.4869e-001 -1.9174e-001
-9.7987e-001 7.5547e-001
3 3.7285e+000 -3.3988e+000 3.8000e+001 3.0000e+000 9.7987e-001 -7.5547e-001
-2.6598e+000 2.0507e+000
4 5.2649e+000 -4.2499e+000 3.8000e+001 3.0000e+000 2.6598e+000 -2.0507e+000
-5.2885e+000 4.0774e+000
5 6.8014e+000 -5.1010e+000 3.8000e+001 3.0000e+000 5.2885e+000 -4.0774e+000
-8.8660e+000 6.8357e+000
6 8.3378e+000 -5.9521e+000 3.8000e+001 3.0000e+000 8.8660e+000 -6.8357e+000
-1.3392e+001 1.0325e+001
7 9.8743e+000 -6.8031e+000 3.8000e+001 3.0000e+000 1.3392e+001 -1.0325e+001
-1.8867e+001 1.4547e+001
8 1.1874e+001 -7.8176e+000 3.8000e+001 3.0000e+000 1.8867e+001 -1.4547e+001
-2.4934e+001 1.9224e+001
9 2.5141e+001 -1.5167e+001 3.8000e+001 3.0000e+000 2.4934e+001 -1.9224e+001
-2.3547e+001 1.8155e+001
10 1.4574e+001 -9.3131e+000 3.8000e+001 3.0000e+000 2.3547e+001 -1.8155e+001
-3.1140e+001 2.4008e+001
11 1.5924e+001 -1.0061e+001 3.8000e+001 3.0000e+000 3.1140e+001 -2.4008e+001
-3.9495e+001 3.0451e+001
12 6.1081e+000 -3.6744e+000 3.8000e+001 3.0000e+000 3.9495e+001 -3.0451e+001
-4.0975e+001 3.1591e+001
13 1.6973e+001 -1.0216e+001 3.8000e+001 3.0000e+000 4.0975e+001 -3.1591e+001
-4.5082e+001 3.4758e+001
14 1.6555e+001 -9.9851e+000 3.8000e+001 3.0000e+000 4.5082e+001 -3.4758e+001
-4.9073e+001 3.7835e+001
15 2.9029e+001 -1.6895e+001 3.8000e+001 3.0000e+000 4.9073e+001 -3.7835e+001
-4.1486e+001 3.1985e+001
16 1.5720e+001 -9.5225e+000 3.8000e+001 3.0000e+000 4.1486e+001 -3.1985e+001
-4.5246e+001 3.4884e+001
17 1.5303e+001 -9.2913e+000 3.8000e+001 3.0000e+000 4.5246e+001 -3.4884e+001
-4.8890e+001 3.7694e+001
18 1.7159e+001 -1.0281e+001 3.8000e+001 3.0000e+000 4.8890e+001 -3.7694e+001
-5.0202e+001 3.8706e+001
19 1.6306e+001 -9.8084e+000 3.8000e+001 3.0000e+000 5.0202e+001 -3.8706e+001
-5.1417e+001 3.9642e+001
20 1.5452e+001 -9.3355e+000 3.8000e+001 3.0000e+000 5.1417e+001 -3.9642e+001
-5.2535e+001 4.0504e+001
21 1.9342e+001 -1.1749e+001 3.8000e+001 3.0000e+000 5.2535e+001 -4.0504e+001
-5.3882e+001 4.1543e+001
22 3.6440e+001 -2.1119e+001 3.8000e+001 3.0000e+000 5.3882e+001 -4.1543e+001
-3.4597e+001 2.6674e+001
23 1.2381e+001 -7.4808e+000 3.8000e+001 3.0000e+000 3.4597e+001 -2.6674e+001
-3.2874e+001 2.5346e+001
24 1.1372e+001 -6.9217e+000 3.8000e+001 3.0000e+000 3.2874e+001 -2.5346e+001
-3.1246e+001 2.4090e+001
25 1.0362e+001 -6.3625e+000 3.8000e+001 3.0000e+000 3.1246e+001 -2.4090e+001
-2.9712e+001 2.2908e+001
26 9.1315e+000 -5.6652e+000 3.8000e+001 3.0000e+000 2.9712e+001 -2.2908e+001
-2.8306e+001 2.1824e+001
27 1.5261e+001 -9.0279e+000 3.8000e+001 3.0000e+000 2.8306e+001 -2.1824e+001
-1.9458e+001 1.5002e+001
28 1.2354e+001 -7.4177e+000 3.8000e+001 3.0000e+000 1.9458e+001 -1.5002e+001
-1.2186e+001 9.3952e+000
29 7.5916e+000 -4.6732e+000 3.8000e+001 3.0000e+000 1.2186e+001 -9.3952e+000

-7.6015e+000  5.8607e+000
 30  6.5837e+000 -4.0047e+000  3.8000e+001  3.0000e+000  7.6015e+000 -5.8607e+000
-2.6571e+000  2.0486e+000
 31  3.1280e+000 -1.6029e+000  3.3000e+001  3.0000e+000  2.6571e+000 -2.0486e+000
-5.8531e-001  4.5127e-001
 32  6.4313e-001 -4.9095e-001  3.3000e+001  3.0000e+000  5.8531e-001 -4.5127e-001
-1.1414e-005  8.8004e-006

Section B-B (Upgrading Condition)

11/12/2006
14:04:13

3=METHOD 20=NO. OF SLIP SURFACES 1=NO. OF RADII 1=SIDE FUNCTION TYPE

| SLIP NO. | X-COORD. | Y-COORD. | RADIUS | ITERATION NO. | LAMBDA | FACTOR OF SAFETY (MOMENT) | (FORCE) |
|---|---|---|---|---|---|---|---|
| 1 | 20.800 | 34.600 | 25.046 | 1 | 0.0000 | 1.382 | 1.444 |
| 1 | 20.800 | 34.600 | 25.046 | 5 | 0.0000 | 1.326 | 1.306 |
| 1 | 20.800 | 34.600 | 25.046 | 9 | 0.7929 | 1.667 | 1.672 |
| 2 | 20.800 | 34.600 | 24.928 | 1 | 0.0000 | 1.430 | 1.504 |
| 2 | 20.800 | 34.600 | 24.928 | 5 | 0.0000 | 1.370 | 1.345 |
| 2 | 20.800 | 34.600 | 24.928 | 8 | 0.7064 | 1.674 | 1.682 |
| 3 | 20.800 | 34.600 | 24.883 | 1 | 0.0000 | 1.464 | 1.555 |
| 3 | 20.800 | 34.600 | 24.883 | 4 | 0.0000 | 1.397 | 1.365 |
| 3 | 20.800 | 34.600 | 24.883 | 7 | 0.5940 | 1.641 | 1.642 |
| 4 | 20.800 | 34.600 | 24.980 | 1 | 0.0000 | 1.419 | 1.507 |
| 4 | 20.800 | 34.600 | 24.980 | 4 | 0.0000 | 1.408 | 1.369 |
| 4 | 20.800 | 34.600 | 24.980 | 7 | 0.5475 | 1.585 | 1.590 |
| 5 | 20.800 | 34.600 | 24.861 | 1 | 0.0000 | 1.434 | 1.549 |
| 5 | 20.800 | 34.600 | 24.861 | 4 | 0.0000 | 1.413 | 1.367 |
| 5 | 20.800 | 34.600 | 24.861 | 7 | 0.5075 | 1.587 | 1.591 |
| 6 | 20.800 | 34.600 | 24.707 | 1 | 0.0000 | 1.485 | 1.666 |
| 6 | 20.800 | 34.600 | 24.707 | 4 | 0.0000 | 1.433 | 1.377 |
| 6 | 20.800 | 34.600 | 24.707 | 7 | 0.4901 | 1.649 | 1.654 |
| 7 | 20.800 | 34.600 | 24.769 | 1 | 0.0000 | 3.339 | 3.101 |
| 7 | 20.800 | 34.600 | 24.769 | 7 | 0.0000 | 3.523 | 3.754 |
| 7 | 20.800 | 34.600 | 24.769 | 51 | 1.1219 | 999.000 | 999.000 |
| 8 | 20.800 | 34.600 | 26.751 | 1 | 0.0000 | 2.600 | 2.452 |
| 8 | 20.800 | 34.600 | 26.751 | 5 | 0.0000 | 2.722 | 2.891 |
| 8 | 20.800 | 34.600 | 26.751 | 50 | 0.7961 | 999.000 | 999.000 |
| 9 | 20.800 | 34.600 | 29.435 | 1 | 0.0000 | 2.096 | 2.188 |
| 9 | 20.800 | 34.600 | 29.435 | 6 | 0.0000 | 2.161 | 2.136 |
| 9 | 20.800 | 34.600 | 29.435 | 4 | 0.2500 | 2.202 | 2.201 |
| 10 | 20.800 | 34.600 | 31.490 | 1 | 0.0000 | 1.473 | 1.687 |
| 10 | 20.800 | 34.600 | 31.490 | 6 | 0.0000 | 1.708 | 1.564 |
| 10 | 20.800 | 34.600 | 31.490 | 16 | 0.4796 | 1.802 | 1.802 |
| 11 | 20.800 | 34.600 | 32.699 | 1 | 0.0000 | 1.241 | 1.549 |
| 11 | 20.800 | 34.600 | 32.699 | 6 | 0.0000 | 1.541 | 1.362 |
| 11 | 20.800 | 34.600 | 32.699 | 22 | 0.5079 | 1.679 | 1.684 |
| 12 | 20.800 | 34.600 | 33.160 | 1 | 0.0000 | 1.123 | 1.451 |
| 12 | 20.800 | 34.600 | 33.160 | 6 | 0.0000 | 1.481 | 1.287 |
| 12 | 20.800 | 34.600 | 33.160 | 29 | 0.5060 | 1.682 | 1.677 |
| 13 | 20.800 | 34.600 | 32.381 | 1 | 0.0000 | 1.177 | 1.417 |
| 13 | 20.800 | 34.600 | 32.381 | 6 | 0.0000 | 1.322 | 1.232 |
| 13 | 20.800 | 34.600 | 32.381 | 22 | 0.9096 | 1.418 | 1.416 |
| 14 | 20.800 | 34.600 | 33.434 | 1 | 0.0000 | 1.123 | 1.389 |
| 14 | 20.800 | 34.600 | 33.434 | 5 | 0.0000 | 1.308 | 1.211 |
| 14 | 20.800 | 34.600 | 33.434 | 9 | 0.7710 | 1.410 | 1.401 |
| 15 | 20.800 | 34.600 | 35.012 | 1 | 0.0000 | 1.101 | 1.430 |
| 15 | 20.800 | 34.600 | 35.012 | 5 | 0.0000 | 1.353 | 1.237 |
| 15 | 20.800 | 34.600 | 35.012 | 14 | 0.7257 | 1.467 | 1.457 |
| 16 | 20.800 | 34.600 | 27.248 | 1 | 0.0000 | 1.394 | 1.551 |
| 16 | 20.800 | 34.600 | 27.248 | 5 | 0.0000 | 1.534 | 1.505 |
| 16 | 20.800 | 34.600 | 27.248 | 4 | 0.2500 | 1.626 | 1.628 |
| 17 | 20.800 | 34.600 | 28.371 | 1 | 0.0000 | 1.311 | 1.506 |
| 17 | 20.800 | 34.600 | 28.371 | 5 | 0.0000 | 1.478 | 1.429 |
| 17 | 20.800 | 34.600 | 28.371 | 4 | 0.2500 | 1.555 | 1.549 |
| 18 | 20.800 | 34.600 | 30.232 | 1 | 0.0000 | 1.150 | 1.455 |
| 18 | 20.800 | 34.600 | 30.232 | 5 | 0.0000 | 1.371 | 1.260 |
| 18 | 20.800 | 34.600 | 30.232 | 15 | 0.3778 | 1.501 | 1.499 |
| 19 | 20.800 | 34.600 | 31.985 | 1 | 0.0000 | 1.016 | 1.352 |
| 19 | 20.800 | 34.600 | 31.985 | 5 | 0.0000 | 1.280 | 1.126 |
| 19 | 20.800 | 34.600 | 31.985 | 21 | 0.4566 | 1.413 | 1.416 |
| 20 | 20.800 | 34.600 | 33.969 | 1 | 0.0000 | 0.928 | 1.370 |
| 20 | 20.800 | 34.600 | 33.969 | 5 | 0.0000 | 1.252 | 1.072 |
| 20 | 20.800 | 34.600 | 33.969 | 24 | 0.4783 | 1.427 | 1.423 |

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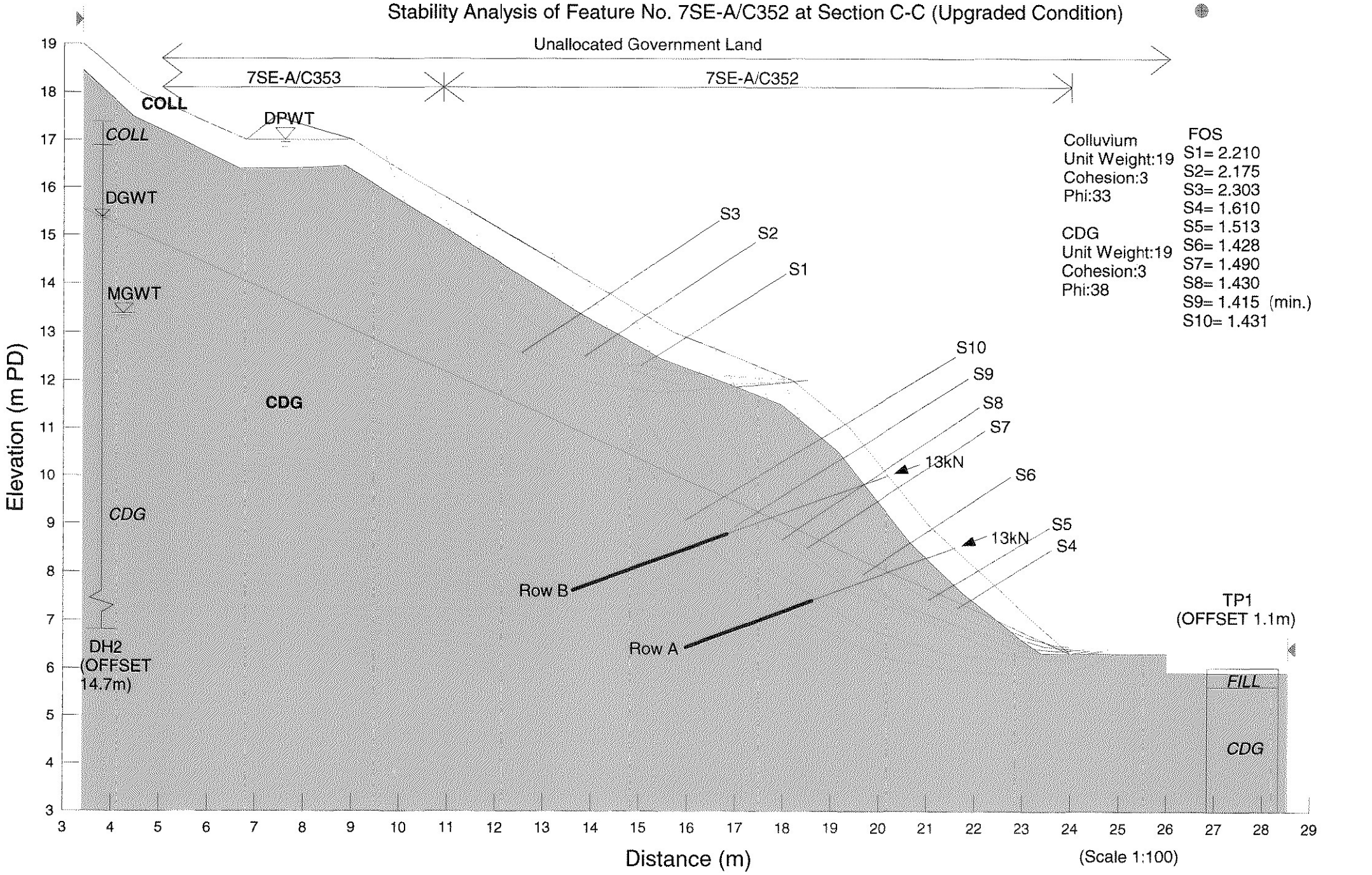
| SUMMARY OF MINIMUM FACTORS OF SAFETY |
|---|

MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
20.8000=X-COOR. 34.6000=Y-COOR. 33.9693=RADIUS 0.928=F.S.
20=SLIP#
MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
20.8000=X-COOR. 34.6000=Y-COOR. 33.9693=RADIUS 1.252=F.S.
20=SLIP#
FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
20.8000=X-COOR. 34.6000=Y-COOR. 33.9693=RADIUS 1.072=F.S.
20=SLIP#
MOMENT AND FORCE EQUILIBRIUM: MORGENSTERN-PRICE METHOD
20.8000=X-COOR. 34.6000=Y-COOR. 33.4341=RADIUS 1.410=F.S.
14=SLIP#

NORMAL TERMINATION OF SLOPE


Stability Analysis of Feature No. 7SE-A/C352 at Section C-C (Upgraded Condition)
Unallocated Government Land
7SE-A/C353
7SE-A/C352
COLL
DPWT
COLL
DGWT
MGWT
CDG
CDG
DH2
(OFFSET
14.7m)
Row B
Row A
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
13kN
13kN
Colluvium
Unit Weight:19
Cohesion:3
Phi:33
CDG
Unit Weight:19
Cohesion:3
Phi:38
FOS
S1= 2.210
S2= 2.175
S3= 2.303
S4= 1.610
S5= 1.513
S6= 1.428
S7= 1.490
S8= 1.430
S9= 1.415 (min.)
S10= 1.431
TP1
(OFFSET 1.1m)
FILL
CDG
Elevation (m PD)
Distance (m)
(Scale 1:100)

```
Section C-C (Upgraded Condition)

FILEINFO
SLOPEW 4.24
PAGE
MM
+2.8790e+002 +2.0070e+002
-1.5000e+001 -1.0000e+001 +0.0000e+000 +0.0000e+000
ENGINEERING
M
+1.0000e+002 +1.0000e+002
WINDOW
  338 -1487
VIEW
0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1
FONTVIEW
Arial
  400   0   0   0
+6.0000e+000 +1.0000e+001
AXIS
  1   0   0   1   1
Distance (m)
Elevation (m PD)
   26    16 +3.0000e+000 +2.9000e+001 +1.9000e+001 +3.0000e+000
ZOOM
+8.3000e-001
GRID
  1   1 +1.0000e-001 +1.0000e-001
TEXT          34
    1 +1.6350e+001 +1.8100e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
7SE-A/C352
    2 +9.7200e+000 +1.9420e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
Stability Analysis of Feature No. 7SE-A/C352 at Section C-C (Upgraded Condition)
    3 +2.3700e+001 +8.3500e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S4
    4 +2.3600e+001 +8.8000e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S5
    5 +2.2840e+001 +9.8400e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S6
    6 +1.8100e+001 +1.4100e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S1
    7 +1.7450e+001 +1.4850e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S2
    8 +2.1600e+001 +1.2500e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S10
    9 +1.6650e+001 +1.5250e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S3
   10 +2.2300e+001 +1.0850e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S7
   11 +2.2150e+001 +1.1350e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S8
   12 +2.3820e+001 +1.5650e+001 -1.0000e+001     0   400     1     1
Arial
  0   0  34
    1    58     0
   13 +6.8000e+000 +1.8100e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
7SE-A/C353
   14 +2.6320e+001 +1.3060e+001 -1.0000e+001     0   400    11     0
Arial
  0   0  34
 FOS
S1= 2.210
S2= 2.175
S3= 2.303
S4= 1.610
S5= 1.513
S6= 1.428
S7= 1.490
S8= 1.430
S9= 1.415  (min.)
S10= 1.431
   15 +2.3790e+001 +1.3690e+001 -1.0000e+001     0   400     1     1
Arial
  0   0  34
    2    58     0
   16 +7.2000e+000 +1.1320e+001 -1.0000e+001     0   700     1     0
Arial
  0   0  34
CDG
   17 +4.6000e+000 +1.7550e+001 -1.0000e+001     0   700     1     0
Arial
  0   0  34
COLL
   18 +2.1950e+001 +1.1950e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S9
   19 +3.3500e+000 +5.4500e+000 -1.0000e+001     0   400     3     0
Arial
  0   0  34
  DH2
(OFFSET
14.7m)
   20 +3.9273e+000 +8.9736e+000 -1.0000e+001     0   400     1     0
Arial
255   0  34
CDG
   21 +3.8303e+000 +1.6895e+001 -1.0000e+001     0   400     1     0
Arial
255   0  34
COLL
   22 +7.1500e+000 +1.7250e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
DPWT
   23 +3.9000e+000 +1.3580e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
MGWT
   24 +3.8500e+000 +1.5570e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
DGWT
   25 +2.4200e+001 +1.9000e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
(Scale 1:100)
   26 +1.2770e+001 +1.8800e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Unallocated Government Land
   27 +2.6200e+001 +6.8500e+000 -1.0000e+001     0   400     2     0
Arial
  0   0  34
        TP1
(OFFSET 1.1m)
   28 +2.7250e+001 +5.5500e+000 -1.0000e+001     0   400     1     0
Arial
```

```
Arial
255   0  34
FILL
   29 +2.7250e+001 +4.1500e+000 -1.0000e+001     0   400     1     0
Arial
255   0  34
CDG
   30 +1.4800e+001 +6.2000e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Row A
   31 +1.2500e+001 +7.4000e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Row B
   33 +2.0950e+001 +1.0110e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
13kN
   34 +2.2320e+001 +8.5100e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
13kN
LINE          58
    1 +3.8000e+000 +7.5997e+000 +3.5500e+000 +7.4497e+000
    2 +1.0900e+001 +1.7800e+001 +1.0900e+001 +1.8400e+001
    3 +2.3601e+001 +8.4504e+000 +2.1640e+001 +7.2373e+000
    4 +2.3550e+001 +8.8996e+000 +2.1036e+001 +7.4088e+000
    5 +2.2738e+001 +9.9689e+000 +1.9681e+001 +7.9374e+000
    6 +1.8050e+001 +1.4200e+001 +1.5030e+001 +1.2299e+001
    7 +1.7400e+001 +1.4850e+001 +1.3850e+001 +1.2490e+001
    8 +1.6650e+001 +1.5300e+001 +1.2553e+001 +1.2557e+001
    9 +2.2198e+001 +1.0949e+001 +1.8500e+001 +8.4686e+000
   10 +2.2094e+001 +1.1445e+001 +1.7978e+001 +8.6488e+000
   11 +2.4000e+001 +1.7800e+001 +2.4000e+001 +1.8400e+001
   12 +2.1852e+001 +1.2037e+001 +1.6969e+001 +8.9098e+000
   13 +2.5650e+001 +1.8990e+001 +2.6050e+001 +1.8690e+001
   15 +2.1592e+001 +1.2493e+001 +1.5946e+001 +9.0532e+000
   16 +7.6000e+000 +1.7000e+001 +7.4000e+000 +1.7250e+001
   17 +7.4000e+000 +1.7250e+001 +7.8000e+000 +1.7250e+001
   18 +7.8000e+000 +1.7250e+001 +7.6000e+000 +1.7000e+001
   19 +5.4500e+000 +1.8400e+001 +5.0500e+000 +1.8100e+001
   20 +5.0524e+000 +1.8100e+001 +2.3979e+001 +1.8100e+001
   21 +5.0400e+000 +1.8690e+001 +5.4400e+000 +1.8390e+001
   22 +1.1300e+001 +1.8400e+001 +1.0900e+001 +1.8100e+001
   23 +3.8000e+000 +1.7351e+001 +3.8000e+000 +7.5998e+000
   24 +1.0900e+001 +1.8100e+001 +1.1300e+001 +1.7800e+001
   25 +1.0500e+001 +1.8400e+001 +1.0900e+001 +1.8100e+001
   26 +1.0900e+001 +1.8100e+001 +1.0500e+001 +1.7800e+001
   27 +2.3600e+001 +1.8400e+001 +2.4000e+001 +1.8100e+001
   28 +2.4000e+001 +1.8100e+001 +2.3600e+001 +1.7800e+001
   29 +2.6050e+001 +1.8690e+001 +2.5650e+001 +1.8390e+001
   30 +3.8000e+000 +7.1500e+000 +3.8000e+000 +6.8000e+000
   31 +2.8350e+001 +6.0000e+000 +2.8350e+001 +3.0008e+000
   32 +2.6850e+001 +6.0000e+000 +2.6850e+001 +3.0000e+000
   33 +2.6850e+001 +3.0000e+000 +2.8350e+001 +3.0000e+000
   34 +2.6850e+001 +6.0000e+000 +2.8350e+001 +6.0000e+000
   35 +7.5000e+000 +1.6950e+001 +7.7000e+000 +1.6950e+001
   36 +3.5983e+000 +1.7380e+001 +4.0000e+000 +1.7380e+001
   37 +3.5838e+000 +1.6880e+001 +4.0000e+000 +1.6880e+001
   38 +3.5508e+000 +7.4496e+000 +4.0509e+000 +7.2996e+000
   39 +4.0501e+000 +7.2998e+000 +3.7995e+000 +7.1497e+000
   40 +3.4995e+000 +6.8000e+000 +4.1000e+000 +6.8000e+000
   41 +2.6850e+001 +5.6000e+000 +2.8350e+001 +5.6000e+000
   42 +7.5500e+000 +1.6850e+001 +7.6500e+000 +1.6850e+001
   43 +4.0000e+000 +1.3380e+001 +4.5000e+000 +1.3380e+001
   44 +4.2500e+000 +1.3380e+001 +4.0500e+000 +1.3580e+001
   45 +4.0500e+000 +1.3580e+001 +4.4500e+000 +1.3580e+001
   46 +4.4500e+000 +1.3580e+001 +4.2500e+000 +1.3380e+001
   47 +4.1000e+000 +1.3330e+001 +4.4000e+000 +1.3330e+001
   48 +4.2000e+000 +1.3280e+001 +4.3000e+000 +1.3280e+001
   49 +3.8000e+000 +1.5380e+001 +3.6400e+000 +1.5520e+001
   50 +3.6400e+000 +1.5520e+001 +3.9500e+000 +1.5520e+001
   51 +3.9500e+000 +1.5520e+001 +3.8000e+000 +1.5380e+001
   52 +3.6400e+000 +1.5380e+001 +3.9500e+000 +1.5380e+001
   53 +3.7100e+000 +1.5340e+001 +3.8900e+000 +1.5340e+001
   54 +3.7700e+000 +1.5300e+001 +3.8400e+000 +1.5300e+001
   56 +2.6040e+001 +1.8690e+001 +5.0403e+000 +1.8690e+001
   57 +5.0500e+000 +1.8100e+001 +5.4500e+000 +1.7830e+001
   58 +5.0400e+000 +1.8690e+001 +5.4500e+000 +1.9000e+001
CIRCLE        0
ARC           0
CUSTSTRINGS     2
    2,
   51,:

IMAGE         1
OBJECT
CUSTCOLORS
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
```

Section C-C (Upgraded Condition)

08/12/2006
14:58:07

| Center_X | Center_Y | Radius | Slip_Surface | Method |
|---|---|---|---|---|
| 2.670000e+001 | 1.970000e+001 | 1.397762e+001 | 9 | 3 |

| SL# | X_Left | Y_L_Top | Y_L_Bottom | X_Right | Y_R_Top | Y_R_Bottom | Mid_Height |
|---|---|---|---|---|---|---|---|
| 1 | 1.391526e+001 | 1.404985e+001 | 1.404985e+001 | 1.400000e+001 | 1.400000e+001 | 1.385014e+001 | 7.492828e-002 |
| 2 | 1.400000e+001 | 1.400000e+001 | 1.385014e+001 | 1.433637e+001 | 1.380213e+001 | 1.305743e+001 | 4.472818e-001 |
| 3 | 1.433637e+001 | 1.380213e+001 | 1.305743e+001 | 1.474319e+001 | 1.356283e+001 | 1.209872e+001 | 1.104407e+000 |
| 4 | 1.474319e+001 | 1.356283e+001 | 1.209872e+001 | 1.515000e+001 | 1.332353e+001 | 1.114000e+001 | 1.823822e+000 |
| 5 | 1.515000e+001 | 1.332353e+001 | 1.114000e+001 | 1.542500e+001 | 1.316177e+001 | 1.073025e+001 | 2.307522e+000 |
| 6 | 1.542500e+001 | 1.316177e+001 | 1.073025e+001 | 1.570000e+001 | 1.300000e+001 | 1.032050e+001 | 2.555508e+000 |
| 7 | 1.570000e+001 | 1.300000e+001 | 1.032050e+001 | 1.615000e+001 | 1.282000e+001 | 9.650000e+000 | 2.924749e+000 |
| 8 | 1.615000e+001 | 1.282000e+001 | 9.650000e+000 | 1.651250e+001 | 1.267500e+001 | 9.269999e+000 | 3.287500e+000 |
| 9 | 1.651250e+001 | 1.267500e+001 | 9.269999e+000 | 1.687500e+001 | 1.253000e+001 | 8.889999e+000 | 3.522501e+000 |
| 10 | 1.687500e+001 | 1.253000e+001 | 8.889999e+000 | 1.723750e+001 | 1.238500e+001 | 8.510001e+000 | 3.757500e+000 |
| 11 | 1.723750e+001 | 1.238500e+001 | 8.510001e+000 | 1.760000e+001 | 1.224000e+001 | 8.130000e+000 | 3.992500e+000 |
| 12 | 1.760000e+001 | 1.224000e+001 | 8.130000e+000 | 1.790000e+001 | 1.212000e+001 | 7.942135e+000 | 4.143932e+000 |
| 13 | 1.790000e+001 | 1.212000e+001 | 7.942135e+000 | 1.820000e+001 | 1.200000e+001 | 7.754272e+000 | 4.211796e+000 |
| 14 | 1.820000e+001 | 1.200000e+001 | 7.754272e+000 | 1.860000e+001 | 1.166667e+001 | 7.503787e+000 | 4.204304e+000 |
| 15 | 1.860000e+001 | 1.166667e+001 | 7.503787e+000 | 1.900000e+001 | 1.133333e+001 | 7.253301e+000 | 4.121457e+000 |
| 16 | 1.900000e+001 | 1.133333e+001 | 7.253301e+000 | 1.940000e+001 | 1.100000e+001 | 7.002816e+000 | 4.038608e+000 |
| 17 | 1.940000e+001 | 1.100000e+001 | 7.002816e+000 | 1.966000e+001 | 1.067500e+001 | 6.840000e+000 | 3.916093e+000 |
| 18 | 1.966000e+001 | 1.067500e+001 | 6.840000e+000 | 1.993000e+001 | 1.033750e+001 | 6.756102e+000 | 3.708200e+000 |
| 19 | 1.993000e+001 | 1.033750e+001 | 6.756102e+000 | 2.020000e+001 | 1.000000e+001 | 6.672203e+000 | 3.454597e+000 |
| 20 | 2.020000e+001 | 1.000000e+001 | 6.672203e+000 | 2.060000e+001 | 9.500000e+000 | 6.547910e+000 | 3.139943e+000 |
| 21 | 2.060000e+001 | 9.500000e+000 | 6.547910e+000 | 2.100000e+001 | 9.000000e+000 | 6.423616e+000 | 2.764238e+000 |
| 22 | 2.100000e+001 | 9.000000e+000 | 6.423616e+000 | 2.143000e+001 | 8.609091e+000 | 6.290000e+000 | 2.447738e+000 |
| 23 | 2.143000e+001 | 8.609091e+000 | 6.290000e+000 | 2.176500e+001 | 8.304546e+000 | 6.255160e+000 | 2.184238e+000 |
| 24 | 2.176500e+001 | 8.304546e+000 | 6.255160e+000 | 2.210000e+001 | 8.000000e+000 | 6.220320e+000 | 1.914534e+000 |
| 25 | 2.210000e+001 | 8.000000e+000 | 6.220320e+000 | 2.239000e+001 | 7.736365e+000 | 6.190160e+000 | 1.662943e+000 |
| 26 | 2.239000e+001 | 7.736365e+000 | 6.190160e+000 | 2.268000e+001 | 7.472727e+000 | 6.160000e+000 | 1.429466e+000 |
| 27 | 2.268000e+001 | 7.472727e+000 | 6.160000e+000 | 2.320000e+001 | 7.000000e+000 | 6.136364e+000 | 1.088182e+000 |
| 28 | 2.320000e+001 | 7.000000e+000 | 6.136364e+000 | 2.349000e+001 | 6.746249e+000 | 6.123182e+000 | 7.433519e-001 |
| 29 | 2.349000e+001 | 6.746249e+000 | 6.123182e+000 | 2.378000e+001 | 6.492500e+000 | 6.110000e+000 | 5.027823e-001 |
| 30 | 2.378000e+001 | 6.492500e+000 | 6.110000e+000 | 2.400000e+001 | 6.300000e+000 | 6.172549e+000 | 2.549763e-001 |
| 31 | 2.400000e+001 | 6.300000e+000 | 6.172549e+000 | 2.444828e+001 | 6.300000e+000 | 6.300000e+000 | 6.372547e-002 |

| SL# | L_Load_X | L_Load_Y | A_Load_X | A_Load_Y | P_Load_X | P_Load_Y | A_Modifier |
|---|---|---|---|---|---|---|---|
| 1 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 2 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 3 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 4 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 5 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 6 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 7 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 8 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 9 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 10 | 0.0000e+000 | 0.0000e+000 | -1.2216e+001 | -4.4463e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 11 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 12 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 13 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 14 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 15 | 0.0000e+000 | 0.0000e+000 | -1.2199e+001 | -4.4932e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 16 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 17 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 18 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 19 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 20 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 21 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 22 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 23 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 24 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 25 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 26 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 27 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 28 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 29 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 30 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 31 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |

| SL# | Weight | Pore_Water | Alpha | Force Fn. | Seismic_F | Seismic_Y | Pore_Air | Phi_B |
|---|---|---|---|---|---|---|---|---|
| 1 | 1.2064e-001 | 1.5876e-001 | 6.7007e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 2 | 2.8586e+000 | 3.7773e+000 | 6.7007e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |

3 8.5365e+000 0.0000e+000 6.7007e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
4 1.4097e+001 0.0000e+000 6.7007e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
5 1.2057e+001 0.0000e+000 5.6133e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
6 1.3353e+001 0.0000e+000 5.6133e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
7 2.5007e+001 0.0000e+000 5.6133e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
8 2.2643e+001 1.4222e+000 4.6350e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
9 2.4261e+001 2.5528e+000 4.6350e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
10 2.5880e+001 3.6834e+000 4.6350e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
11 2.7498e+001 4.8141e+000 4.6350e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
12 2.3620e+001 3.7213e+000 3.2055e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
13 2.4007e+001 3.9124e+000 3.2055e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
14 3.1953e+001 5.4912e+000 3.2055e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
15 3.1323e+001 5.7808e+000 3.2055e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
16 3.0693e+001 6.0704e+000 3.2055e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
17 1.9346e+001 4.1011e+000 3.2055e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
18 1.9023e+001 3.7871e+000 1.7262e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
19 1.7722e+001 3.7016e+000 1.7262e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
20 2.3864e+001 5.3266e+000 1.7262e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
21 2.1008e+001 5.1388e+000 1.7262e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
22 1.9998e+001 5.3148e+000 1.7262e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
23 1.3903e+001 3.6860e+000 5.9375e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
24 1.2186e+001 3.2950e+000 5.9374e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
25 9.1628e+000 2.5366e+000 5.9374e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
26 7.8764e+000 2.2436e+000 5.9374e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
27 1.0751e+001 3.2101e+000 2.6026e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
28 4.0959e+000 1.3238e+000 2.6025e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
29 2.7703e+000 9.8977e-001 2.6025e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
30 1.0658e+000 4.6706e-001 -1.5871e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
31 5.4277e-001 2.9126e-001 -1.5871e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000

Ordinary_Method_Fm= 1.247 Applied_Lambda= 0.0000
SL# Normal_M ShearMob Phi_Angle Cohesion
=

1 4.7125e-002 -4.6367e-001 3.3000e+001 3.0000e+000
2 1.1166e+000 -6.8588e-001 3.3000e+001 3.0000e+000
3 3.3345e+000 -4.5936e+000 3.8000e+001 3.0000e+000
4 5.5066e+000 -5.9542e+000 3.8000e+001 3.0000e+000
5 6.7189e+000 -5.3955e+000 3.8000e+001 3.0000e+000
6 7.4410e+000 -5.8478e+000 3.8000e+001 3.0000e+000
7 1.3935e+001 -1.0671e+001 3.8000e+001 3.0000e+000
8 1.5629e+001 -1.0162e+001 3.8000e+001 3.0000e+000
9 1.6746e+001 -1.0154e+001 3.8000e+001 3.0000e+000
10 2.9772e+001 -1.7604e+001 3.8000e+001 3.0000e+000
11 1.8981e+001 -1.0137e+001 3.8000e+001 3.0000e+000
12 2.0019e+001 -1.1060e+001 3.8000e+001 3.0000e+000
13 2.0347e+001 -1.1146e+001 3.8000e+001 3.0000e+000
14 2.7081e+001 -1.4659e+001 3.8000e+001 3.0000e+000
15 3.6830e+001 -2.0584e+001 3.8000e+001 3.0000e+000
16 2.6014e+001 -1.3627e+001 3.8000e+001 3.0000e+000
17 1.6396e+001 -8.4392e+000 3.8000e+001 3.0000e+000
18 1.8166e+001 -9.6869e+000 3.8000e+001 3.0000e+000
19 1.6924e+001 -8.9622e+000 3.8000e+001 3.0000e+000
20 2.2789e+001 -1.1945e+001 3.8000e+001 3.0000e+000
21 2.0062e+001 -1.0355e+001 3.8000e+001 3.0000e+000
22 1.9097e+001 -9.7161e+000 3.8000e+001 3.0000e+000
23 1.3828e+001 -7.1629e+000 3.8000e+001 3.0000e+000
24 1.2121e+001 -6.3383e+000 3.8000e+001 3.0000e+000
25 9.1137e+000 -4.8210e+000 3.8000e+001 3.0000e+000
26 7.8341e+000 -4.2031e+000 3.8000e+001 3.0000e+000
27 1.0740e+001 -5.9687e+000 3.8000e+001 3.0000e+000
28 4.0916e+000 -2.4320e+000 3.8000e+001 3.0000e+000
29 2.7675e+000 -1.8117e+000 3.8000e+001 3.0000e+000
30 1.0252e+000 -8.9970e-001 3.8000e+001 3.0000e+000
31 5.2208e-001 -1.2655e+000 3.8000e+001 3.0000e+000

Bishop_Method_Fm= 1.346 Applied_Lambda= 0.0000
SL# Normal_M ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight
=

1 -3.0328e-001 -2.6066e-001 3.3000e+001 3.0000e+000 0.0000e+000 0.0000e+000
4.0998e-001 0.0000e+000
2 3.3238e+000 -1.7005e+000 3.3000e+001 3.0000e+000 -4.0998e-001 0.0000e+000
-1.7963e+000 0.0000e+000
3 6.9398e+000 -6.3492e+000 3.8000e+001 3.0000e+000 1.7963e+000
0.0000e+000 -5.0804e+000 0.0000e+000
4 1.2963e+001 -9.8454e+000 3.8000e+001 3.0000e+000 5.0804e+000
0.0000e+000 -1.2200e+001 0.0000e+000
5 1.0742e+001 -7.3350e+000 3.8000e+001 3.0000e+000 1.2200e+001
0.0000e+000 -1.6449e+001 0.0000e+000
6 1.1991e+001 -8.0598e+000 3.8000e+001 3.0000e+000 1.6449e+001
0.0000e+000 -2.1274e+001 0.0000e+000
7 2.2664e+001 -1.4955e+001 3.8000e+001 3.0000e+000 2.1274e+001
0.0000e+000 -3.0571e+001 0.0000e+000
8 2.0195e+001 -1.2067e+001 3.8000e+001 3.0000e+000 3.0571e+001
0.0000e+000 -3.6038e+001 0.0000e+000
9 2.2082e+001 -1.2506e+001 3.8000e+001 3.0000e+000 3.6038e+001
0.0000e+000 -4.2538e+001 0.0000e+000
10 2.7978e+001 -1.5272e+001 3.8000e+001 3.0000e+000 4.2538e+001
0.0000e+000 -3.8991e+001 0.0000e+000
11 2.5855e+001 -1.3383e+001 3.8000e+001 3.0000e+000 3.8991e+001
0.0000e+000 -4.7556e+001 0.0000e+000
12 2.1086e+001 -1.0868e+001 3.8000e+001 3.0000e+000 4.7556e+001
0.0000e+000 -4.8910e+001 0.0000e+000
13 2.1472e+001 -1.0981e+001 3.8000e+001 3.0000e+000 4.8910e+001
0.0000e+000 -5.0366e+001 0.0000e+000
14 2.8653e+001 -1.4496e+001 3.8000e+001 3.0000e+000 5.0366e+001
0.0000e+000 -5.2453e+001 0.0000e+000
15 3.2076e+001 -1.6315e+001 3.8000e+001 3.0000e+000 5.2453e+001
0.0000e+000 -4.2511e+001 0.0000e+000
16 2.7716e+001 -1.3616e+001 3.8000e+001 3.0000e+000 4.2511e+001
0.0000e+000 -4.4897e+001 0.0000e+000
17 1.7533e+001 -8.4799e+000 3.8000e+001 3.0000e+000 4.4897e+001
0.0000e+000 -4.6527e+001 0.0000e+000
18 1.7297e+001 -8.4715e+000 3.8000e+001 3.0000e+000 4.6527e+001
0.0000e+000 -4.3095e+001 0.0000e+000
19 1.6129e+001 -7.8433e+000 3.8000e+001 3.0000e+000 4.3095e+001
0.0000e+000 -3.9952e+001 0.0000e+000
20 2.1748e+001 -1.0465e+001 3.8000e+001 3.0000e+000 3.9952e+001
0.0000e+000 -3.5827e+001 0.0000e+000
21 1.9185e+001 -9.0864e+000 3.8000e+001 3.0000e+000 3.5827e+001
0.0000e+000 -3.2334e+001 0.0000e+000
22 1.8297e+001 -8.5387e+000 3.8000e+001 3.0000e+000 3.2334e+001
0.0000e+000 -2.9132e+001 0.0000e+000
23 1.3320e+001 -6.3427e+000 3.8000e+001 3.0000e+000 2.9132e+001
0.0000e+000 -2.3810e+001 0.0000e+000
24 1.1670e+001 -5.6118e+000 3.8000e+001 3.0000e+000 2.3810e+001
0.0000e+000 -1.9090e+001 0.0000e+000
25 8.7698e+000 -4.2678e+000 3.8000e+001 3.0000e+000 1.9090e+001
0.0000e+000 -1.5489e+001 0.0000e+000
26 7.5332e+000 -3.7201e+000 3.8000e+001 3.0000e+000 1.5489e+001
0.0000e+000 -1.2339e+001 0.0000e+000

27 1.0518e+001 -5.4017e+000 3.8000e+001 3.0000e+000 1.2339e+001
0.0000e+000 -7.0707e+000 0.0000e+000
28 4.0004e+000 -2.2006e+000 3.8000e+001 3.0000e+000 7.0707e+000
0.0000e+000 -4.9116e+000 0.0000e+000
29 2.6989e+000 -1.6391e+000 3.8000e+001 3.0000e+000 4.9116e+000
0.0000e+000 -3.2907e+000 0.0000e+000
30 1.4071e+000 -1.0554e+000 3.8000e+001 3.0000e+000 3.2907e+000
0.0000e+000 -1.7859e+000 0.0000e+000
31 9.7032e-001 -1.4329e+000 3.8000e+001 3.0000e+000 1.7859e+000
0.0000e+000 3.0160e-005 0.0000e+000

Janbu_Method_Ff= 1.254 Applied_Lambda= 0.0000
SL# Normal_F ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight
==========

1 -3.2295e-001 -2.6963e-001 3.3000e+001 3.0000e+000 0.0000e+000 0.0000e+000
4.0998e-001 0.0000e+000
2 3.1955e+000 -1.7594e+000 3.3000e+001 3.0000e+000 -4.0998e-001 0.0000e+000
-1.7963e+000 0.0000e+000
3 6.5085e+000 -6.5487e+000 3.8000e+001 3.0000e+000 1.7963e+000
0.0000e+000 -5.0804e+000 0.0000e+000
4 1.2294e+001 -1.0155e+001 3.8000e+001 3.0000e+000 5.0804e+000
0.0000e+000 -1.2200e+001 0.0000e+000
5 1.0339e+001 -7.6248e+000 3.8000e+001 3.0000e+000 1.2200e+001
0.0000e+000 -1.6449e+001 0.0000e+000
6 1.1548e+001 -8.3782e+000 3.8000e+001 3.0000e+000 1.6449e+001
0.0000e+000 -2.1274e+001 0.0000e+000
7 2.1842e+001 -1.5546e+001 3.8000e+001 3.0000e+000 2.1274e+001
0.0000e+000 -3.0571e+001 0.0000e+000
8 1.9652e+001 -1.2618e+001 3.8000e+001 3.0000e+000 3.0571e+001
0.0000e+000 -3.6038e+001 0.0000e+000
9 2.1518e+001 -1.3077e+001 3.8000e+001 3.0000e+000 3.6038e+001
0.0000e+000 -4.2538e+001 0.0000e+000
10 2.7290e+001 -1.5969e+001 3.8000e+001 3.0000e+000 4.2538e+001
0.0000e+000 -3.8991e+001 0.0000e+000
11 2.5252e+001 -1.3994e+001 3.8000e+001 3.0000e+000 3.8991e+001
0.0000e+000 -4.7556e+001 0.0000e+000
12 2.0738e+001 -1.1453e+001 3.8000e+001 3.0000e+000 4.7556e+001
0.0000e+000 -4.8910e+001 0.0000e+000
13 2.1121e+001 -1.1572e+001 3.8000e+001 3.0000e+000 4.8910e+001
0.0000e+000 -5.0366e+001 0.0000e+000
14 2.8189e+001 -1.5276e+001 3.8000e+001 3.0000e+000 5.0366e+001
0.0000e+000 -5.2453e+001 0.0000e+000
15 3.1554e+001 -1.7193e+001 3.8000e+001 3.0000e+000 5.2453e+001
0.0000e+000 -4.2511e+001 0.0000e+000
16 2.7281e+001 -1.4349e+001 3.8000e+001 3.0000e+000 4.2511e+001
0.0000e+000 -4.4897e+001 0.0000e+000
17 1.7261e+001 -8.9362e+000 3.8000e+001 3.0000e+000 4.4897e+001
0.0000e+000 -4.6527e+001 0.0000e+000
18 1.7140e+001 -8.9987e+000 3.8000e+001 3.0000e+000 4.6527e+001
0.0000e+000 -4.3095e+001 0.0000e+000
19 1.5984e+001 -8.3314e+000 3.8000e+001 3.0000e+000 4.3095e+001
0.0000e+000 -3.9952e+001 0.0000e+000
20 2.1555e+001 -1.1116e+001 3.8000e+001 3.0000e+000 3.9952e+001
0.0000e+000 -3.5827e+001 0.0000e+000
21 1.9017e+001 -9.6518e+000 3.8000e+001 3.0000e+000 3.5827e+001
0.0000e+000 -3.2334e+001 0.0000e+000
22 1.8139e+001 -9.0701e+000 3.8000e+001 3.0000e+000 3.2334e+001
0.0000e+000 -2.9132e+001 0.0000e+000
23 1.3276e+001 -6.7831e+000 3.8000e+001 3.0000e+000 2.9132e+001
0.0000e+000 -2.3810e+001 0.0000e+000
24 1.1631e+001 -6.0015e+000 3.8000e+001 3.0000e+000 2.3810e+001
0.0000e+000 -1.9090e+001 0.0000e+000
25 8.7403e+000 -4.5641e+000 3.8000e+001 3.0000e+000 1.9090e+001
0.0000e+000 -1.5489e+001 0.0000e+000
26 7.5074e+000 -3.9784e+000 3.8000e+001 3.0000e+000 1.5489e+001
0.0000e+000 -1.2339e+001 0.0000e+000
27 1.0501e+001 -5.7895e+000 3.8000e+001 3.0000e+000 1.2339e+001
0.0000e+000 -7.0707e+000 0.0000e+000
28 3.9935e+000 -2.3586e+000 3.8000e+001 3.0000e+000 7.0707e+000
0.0000e+000 -4.9116e+000 0.0000e+000
29 2.6938e+000 -1.7567e+000 3.8000e+001 3.0000e+000 4.9116e+000
0.0000e+000 -3.2907e+000 0.0000e+000
30 1.4330e+000 -1.1493e+000 3.8000e+001 3.0000e+000 3.2907e+000
0.0000e+000 -1.7859e+000 0.0000e+000

31 1.0054e+000 -1.5604e+000 3.8000e+001 3.0000e+000 1.7859e+000
0.0000e+000 3.0160e-005 0.0000e+000

M-P_Method_Fm= 1.415 Applied_Lambda= 0.6059
SL# Normal_M ShearMob Phi_Angle Cohesion SideLeft ShearLeft
SideRight ShearRight
==========

1 -1.1867e-001 -3.3269e-001 3.3000e+001 3.0000e+000 0.0000e+000 0.0000e+000
2.3038e-001 -1.3958e-001
2 2.2714e+000 -1.1348e+000 3.3000e+001 3.0000e+000 -2.3038e-001 1.3958e-001
-1.2973e+000 7.8601e-001
3 5.3682e+000 -5.1730e+000 3.8000e+001 3.0000e+000 1.2973e+000 -7.8601e-001
-4.0578e+000 2.4585e+000
4 9.6182e+000 -7.5201e+000 3.8000e+001 3.0000e+000 4.0578e+000 -2.4585e+000
-9.6863e+000 5.8687e+000
5 8.6727e+000 -5.8359e+000 3.8000e+001 3.0000e+000 9.6863e+000 -5.8687e+000
-1.3603e+001 8.2416e+000
6 9.6465e+000 -6.3737e+000 3.8000e+001 3.0000e+000 1.3603e+001 -8.2416e+000
-1.8025e+001 1.0921e+001
7 1.8158e+001 -1.1740e+001 3.8000e+001 3.0000e+000 1.8025e+001 -1.0921e+001
-2.6491e+001 1.6050e+001
8 1.7363e+001 -9.9168e+000 3.8000e+001 3.0000e+000 2.6491e+001 -1.6050e+001
-3.2226e+001 1.9525e+001
9 1.8757e+001 -1.0063e+001 3.8000e+001 3.0000e+000 3.2226e+001 -1.9525e+001
-3.8870e+001 2.3550e+001
10 2.9274e+001 -1.5246e+001 3.8000e+001 3.0000e+000 3.8870e+001 -2.3550e+001
-3.7346e+001 2.2627e+001
11 2.1547e+001 -1.0354e+001 3.8000e+001 3.0000e+000 3.7346e+001 -2.2627e+001
-4.5806e+001 2.7753e+001
12 2.0037e+001 -9.7611e+000 3.8000e+001 3.0000e+000 4.5806e+001 -2.7753e+001
-4.8202e+001 2.9204e+001
13 2.0367e+001 -9.8376e+000 3.8000e+001 3.0000e+000 4.8202e+001 -2.9204e+001
-5.0709e+001 3.0723e+001
14 2.7110e+001 -1.2940e+001 3.8000e+001 3.0000e+000 5.0709e+001 -3.0723e+001
-5.4177e+001 3.2824e+001
15 3.6650e+001 -1.8048e+001 3.8000e+001 3.0000e+000 5.4177e+001 -3.2824e+001
-4.6197e+001 2.7989e+001
16 2.6049e+001 -1.2034e+001 3.8000e+001 3.0000e+000 4.6197e+001 -2.7989e+001
-4.9866e+001 3.0212e+001
17 1.6420e+001 -7.4537e+000 3.8000e+001 3.0000e+000 4.9866e+001 -3.0212e+001
-5.2290e+001 3.1681e+001
18 1.8981e+001 -8.9903e+000 3.8000e+001 3.0000e+000 5.2290e+001 -3.1681e+001
-4.9363e+001 2.9907e+001
19 1.7667e+001 -8.3120e+000 3.8000e+001 3.0000e+000 4.9363e+001 -2.9907e+001
-4.6692e+001 2.8289e+001
20 2.3759e+001 -1.1067e+001 3.8000e+001 3.0000e+000 4.6692e+001 -2.8289e+001
-4.3205e+001 2.6176e+001
21 2.0875e+001 -9.5787e+000 3.8000e+001 3.0000e+000 4.3205e+001 -2.6176e+001
-4.0279e+001 2.4404e+001
22 1.9836e+001 -8.9742e+000 3.8000e+001 3.0000e+000 4.0279e+001 -2.4404e+001
-3.7621e+001 2.2794e+001
23 1.6925e+001 -8.0255e+000 3.8000e+001 3.0000e+000 3.7621e+001 -2.2794e+001
-3.1411e+001 1.9031e+001
24 1.4869e+001 -7.1058e+000 3.8000e+001 3.0000e+000 3.1411e+001 -1.9031e+001
-2.5900e+001 1.5692e+001
25 1.1211e+001 -5.4086e+000 3.8000e+001 3.0000e+000 2.5900e+001 -1.5692e+001
-2.1695e+001 1.3144e+001
26 9.6699e+000 -4.7194e+000 3.8000e+001 3.0000e+000 2.1695e+001 -1.3144e+001
-1.8013e+001 1.0914e+001
27 1.4444e+001 -7.3075e+000 3.8000e+001 3.0000e+000 1.8013e+001 -1.0914e+001
-1.1396e+001 6.9042e+000
28 5.6107e+000 -2.9830e+000 3.8000e+001 3.0000e+000 1.1396e+001 -6.9042e+000
-8.6811e+000 5.2596e+000
29 3.9090e+000 -2.2277e+000 3.8000e+001 3.0000e+000 8.6811e+000 -5.2596e+000
-6.6412e+000 4.0237e+000
30 3.6809e+000 -2.2599e+000 3.8000e+001 3.0000e+000 6.6412e+000 -4.0237e+000
-3.5777e+000 2.1676e+000
31 3.6227e+000 -2.8280e+000 3.8000e+001 3.0000e+000 3.5777e+000 -2.1676e+000
1.5378e-005 -9.3171e-006

Section C-C (Upgraded Condition)

08/12/2006
14:58:07

3=METHOD 10=NO. OF SLIP SURFACES 1=NO. OF RADII 1=SIDE FUNCTION TYPE

| SLIP NO. | X-COORD. | Y-COORD. | RADIUS | ITERATION NO. | LAMBDA | FACTOR OF SAFETY (MOMENT) | (FORCE) |
|---|---|---|---|---|---|---|---|
| 1 | 26.700 | 19.700 | 15.802 | 1 | 0.0000 | 1.834 | 2.268 |
| 1 | 26.700 | 19.700 | 15.802 | 5 | 0.0000 | 2.154 | 2.022 |
| 1 | 26.700 | 19.700 | 15.802 | 13 | 0.4731 | 2.210 | 2.219 |
| 2 | 26.700 | 19.700 | 16.454 | 1 | 0.0000 | 1.743 | 2.252 |
| 2 | 26.700 | 19.700 | 16.454 | 5 | 0.0000 | 2.128 | 1.961 |
| 2 | 26.700 | 19.700 | 16.454 | 12 | 0.4433 | 2.175 | 2.170 |
| 3 | 26.700 | 19.700 | 17.237 | 1 | 0.0000 | 1.664 | 2.473 |
| 3 | 26.700 | 19.700 | 17.237 | 6 | 0.0000 | 2.211 | 1.987 |
| 3 | 26.700 | 19.700 | 17.237 | 15 | 0.4284 | 2.303 | 2.297 |
| 4 | 26.700 | 19.700 | 11.580 | 1 | 0.0000 | 1.585 | 1.697 |
| 4 | 26.700 | 19.700 | 11.580 | 6 | 0.0000 | 1.546 | 1.492 |
| 4 | 26.700 | 19.700 | 11.580 | 21 | 0.8302 | 1.610 | 1.607 |
| 5 | 26.700 | 19.700 | 11.886 | 1 | 0.0000 | 1.459 | 1.568 |
| 5 | 26.700 | 19.700 | 11.886 | 6 | 0.0000 | 1.447 | 1.392 |
| 5 | 26.700 | 19.700 | 11.886 | 29 | 1.0018 | 1.513 | 1.514 |
| 6 | 26.700 | 19.700 | 12.342 | 1 | 0.0000 | 1.336 | 1.451 |
| 6 | 26.700 | 19.700 | 12.342 | 5 | 0.0000 | 1.358 | 1.298 |
| 6 | 26.700 | 19.700 | 12.342 | 9 | 0.7913 | 1.428 | 1.424 |
| 7 | 26.700 | 19.700 | 12.711 | 1 | 0.0000 | 1.392 | 1.535 |
| 7 | 26.700 | 19.700 | 12.711 | 5 | 0.0000 | 1.419 | 1.349 |
| 7 | 26.700 | 19.700 | 12.711 | 9 | 0.7076 | 1.490 | 1.483 |
| 8 | 26.700 | 19.700 | 13.414 | 1 | 0.0000 | 1.340 | 1.448 |
| 8 | 26.700 | 19.700 | 13.414 | 4 | 0.0000 | 1.399 | 1.322 |
| 8 | 26.700 | 19.700 | 13.414 | 7 | 0.6241 | 1.437 | 1.430 |
| 9 | 26.700 | 19.700 | 13.978 | 1 | 0.0000 | 1.247 | 1.402 |
| 9 | 26.700 | 19.700 | 13.978 | 4 | 0.0000 | 1.346 | 1.254 |
| 9 | 26.700 | 19.700 | 13.978 | 7 | 0.6059 | 1.415 | 1.415 |
| 10 | 26.700 | 19.700 | 14.443 | 1 | 0.0000 | 1.180 | 1.372 |
| 10 | 26.700 | 19.700 | 14.443 | 4 | 0.0000 | 1.313 | 1.209 |
| 10 | 26.700 | 19.700 | 14.443 | 10 | 0.5360 | 1.431 | 1.431 |

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| SUMMARY OF MINIMUM FACTORS OF SAFETY |

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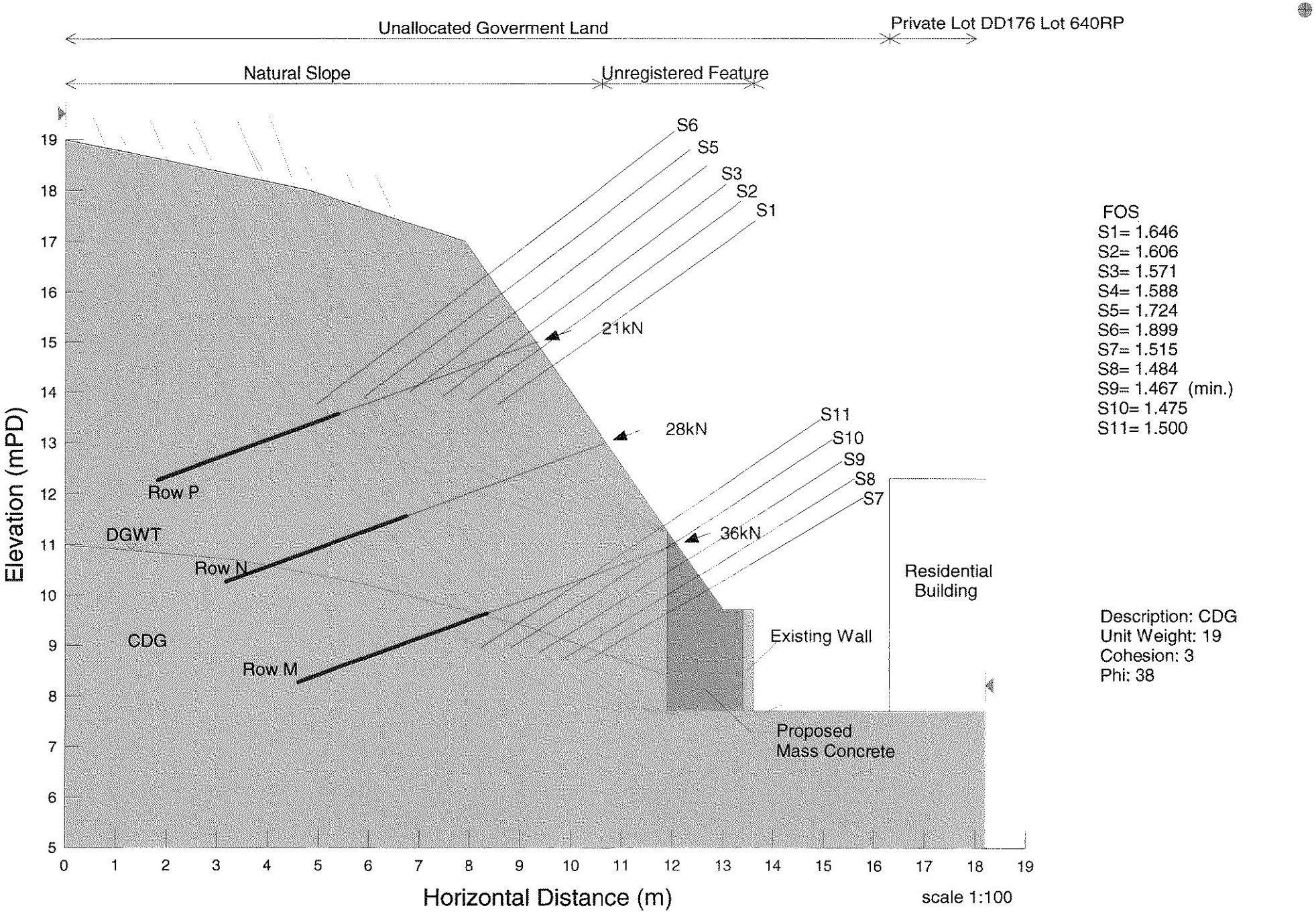
MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
26.7000=X-COOR. 19.7000=Y-COOR. 14.4431=RADIUS 1.180=F.S.
10=SLIP#
MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
26.7000=X-COOR. 19.7000=Y-COOR. 14.4431=RADIUS 1.313=F.S.
10=SLIP#
FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
26.7000=X-COOR. 19.7000=Y-COOR. 14.4431=RADIUS 1.209=F.S.
10=SLIP#
MOMENT AND FORCE EQUILIBRIUM: MORGENSTERN-PRICE METHOD
26.7000=X-COOR. 19.7000=Y-COOR. 13.9776=RADIUS 1.415=F.S.
9=SLIP#

NORMAL TERMINATION OF SLOPE

# Stability Analysis of Feature No. 7SE-A/C352 at Section D-D (Upgraded Condition)




FOS
S1= 1.646
S2= 1.606
S3= 1.571
S4= 1.588
S5= 1.724
S6= 1.899
S7= 1.515
S8= 1.484
S9= 1.467 (min.)
S10= 1.475
S11= 1.500

Description: CDG
Unit Weight: 19
Cohesion: 3
Phi: 38

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Section D-D (Upgraded Condition)

FILEINFO
SLOPEW 4.24
PAGE
MM
+2.9700e+002 +2.0900e+002
+3.0000e+001 -3.0000e+001 +0.0000e+000 +0.0000e+000
ENGINEERING
M
+1.0000e+002 +1.0000e+002
WINDOW
   64 -2071
VIEW
0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1
FONTVIEW
Arial
  400   0   0   0
+6.0000e+000 +1.0000e+001
AXIS
  1   0   0   1   1
Horizontal Distance (m)
Elevation (mPD)
   19    14 +0.0000e+000 +1.9000e+001 +1.9000e+001 +5.0000e+000
ZOOM
+9.9000e-001
GRID
  1   1 +5.0000e-002 +5.0000e-002
TEXT          33
    1 +4.0827e+000 +2.2300e+001 -1.2000e+001     0   400     1     0
Arial
  0   0   0
Stability Analysis of Feature No. 7SE-A/C352 at Section D-D (Upgraded Condition)
    2 +6.1613e+000 +2.1016e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Unallocated Goverment Land
    3 +1.0581e+001 +2.0116e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Unregistered Feature
    4 +1.6305e+001 +2.1124e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Private Lot DD176 Lot 640RP
    5 +3.4962e+000 +2.0124e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Natural Slope
    6 +8.0000e-001 +1.1000e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
DGWT
    7 +2.0455e+001 +8.2054e+000 -1.0000e+001     0   400     1     1
Arial
  0   0  34
    3    58     0
    9 +1.6600e+001 +9.9000e+000 -1.0000e+001     0   400     2     0
Arial
  0   0  34
Residential
  Building
   10 +2.0400e+001 +1.3100e+001 -1.0000e+001     0   400    12     0
Arial
  0   0  34
 FOS
S1= 1.646
S2= 1.606
S3= 1.571
S4= 1.588
S5= 1.724
S6= 1.899
S7= 1.515
S8= 1.484
S9= 1.467  (min.)
S10= 1.475

S11= 1.500
   11 +1.6957e+001 +3.8368e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
scale 1:100
   13 +1.3639e+001 +1.7420e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S1
   14 +1.3251e+001 +1.7791e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S2
   15 +1.2939e+001 +1.8131e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S3
   16 +1.2471e+001 +1.8648e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S5
   17 +1.2058e+001 +1.9075e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S6
   19 +1.5767e+001 +1.1721e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S7
   20 +1.5596e+001 +1.2104e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S8
   21 +1.5383e+001 +1.2482e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S9
   22 +1.5161e+001 +1.2902e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S10
   23 +1.4916e+001 +1.3356e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
S11
   25 +1.3929e+001 +8.9810e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Existing Wall
   26 +1.2327e+000 +8.8928e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
CDG
   27 +1.4065e+001 +6.7224e+000 -1.0000e+001     0   400     2     0
Arial
  0   0  34
Proposed
Mass Concrete
   28 +3.4954e+000 +8.3151e+000 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Row M
   29 +2.5457e+000 +1.0340e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Row N
   30 +1.6233e+000 +1.1829e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
Row P
   31 +1.2932e+001 +1.1034e+001 -1.0000e+001     0   400     1     0
Arial
  0   0  34
36kN
   32 +1.1856e+001 +1.3068e+001 -1.0000e+001     0   400     1     0
Arial
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```
  0   0  34
28kN
   33 +1.0596e+001 +1.5075e+001 -1.0000e+001      0   400      1      0
Arial
  0   0  34
21kN
LINE          51
    1 +3.7253e-010 +2.1000e+001 +1.8000e+001 +2.1000e+001
    2 -3.1023e-008 +2.0100e+001 +1.3600e+001 +2.0100e+001
    3 +0.0000e+000 +2.0100e+001 +2.0000e-001 +2.0200e+001
    4 +0.0000e+000 +2.0100e+001 +2.0000e-001 +2.0000e+001
    5 +0.0000e+000 +2.1000e+001 +2.0000e-001 +2.1100e+001
    6 +0.0000e+000 +2.1000e+001 +2.0000e-001 +2.0900e+001
    7 +1.8000e+001 +2.1000e+001 +1.7800e+001 +2.1100e+001
    8 +1.8000e+001 +2.1000e+001 +1.7800e+001 +2.0900e+001
   11 +1.6300e+001 +2.1000e+001 +1.6500e+001 +2.1100e+001
   12 +1.6300e+001 +7.7000e+000 +1.6300e+001 +1.2300e+001
   17 +1.6300e+001 +1.2300e+001 +1.8200e+001 +1.2300e+001
   18 +1.6300e+001 +2.1100e+001 +1.6300e+001 +2.0900e+001
   19 +1.3600e+001 +2.0200e+001 +1.3600e+001 +2.0000e+001
   20 +1.6300e+001 +2.1000e+001 +1.6500e+001 +2.0900e+001
   21 +1.3600e+001 +2.0100e+001 +1.3800e+001 +2.0200e+001
   22 +1.3600e+001 +2.0100e+001 +1.3800e+001 +2.0000e+001
   23 +1.6300e+001 +2.1000e+001 +1.6100e+001 +2.1100e+001
   24 +1.6300e+001 +2.1000e+001 +1.6100e+001 +2.0900e+001
   25 +1.3600e+001 +2.0100e+001 +1.3400e+001 +2.0200e+001
   26 +1.3600e+001 +2.0100e+001 +1.3400e+001 +2.0000e+001
   27 +1.3000e+000 +1.0900e+001 +1.2000e+000 +1.1000e+001
   28 +1.0600e+001 +2.0200e+001 +1.0600e+001 +2.0000e+001
   29 +1.0600e+001 +2.0100e+001 +1.0400e+001 +2.0200e+001
   30 +1.0600e+001 +2.0100e+001 +1.0400e+001 +2.0000e+001
   31 +1.0600e+001 +2.0100e+001 +1.0800e+001 +2.0200e+001
   32 +1.0600e+001 +2.0100e+001 +1.0800e+001 +2.0000e+001
   33 +1.2000e+000 +1.1000e+001 +1.4000e+000 +1.1000e+001
   34 +1.4000e+000 +1.1000e+001 +1.3000e+000 +1.0900e+001
   35 +1.4052e+001 +9.0385e+000 +1.3467e+001 +8.4671e+000
   36 +1.0236e+001 +8.6387e+000 +1.5780e+001 +1.1932e+001
   37 +9.8472e+000 +8.7222e+000 +1.5597e+001 +1.2285e+001
   38 +9.3681e+000 +8.8542e+000 +1.5354e+001 +1.2632e+001
   39 +8.8056e+000 +8.9375e+000 +1.5160e+001 +1.3063e+001
   40 +8.2153e+000 +8.9375e+000 +1.4924e+001 +1.3451e+001
   43 +8.5487e+000 +1.3751e+001 +1.3634e+001 +1.7398e+001
   44 +8.0000e+000 +1.3848e+001 +1.3340e+001 +1.7775e+001
   45 +7.4513e+000 +1.3899e+001 +1.3047e+001 +1.8120e+001
   46 +6.8011e+000 +1.3999e+001 +1.2670e+001 +1.8476e+001
   47 +5.8985e+000 +1.3899e+001 +1.2325e+001 +1.8791e+001
   48 +4.9498e+000 +1.3750e+001 +1.2016e+001 +1.9152e+001
   49 +1.3400e+001 +9.7000e+000 +1.3400e+001 +7.7000e+000
   50 +1.2652e+001 +8.1051e+000 +1.3561e+001 +7.2695e+000
   51 +1.3561e+001 +7.2695e+000 +1.4008e+001 +7.2695e+000
CIRCLE          0
ARC             0
CUSTSTRINGS     0

IMAGE           1
OBJECT
CUSTCOLORS
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
    63    63    63
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Section D-D (Upgraded Condition)

04/01/2007
16:33:14

| Center_X | Center_Y | Radius | Slip_Surface | Method |
|---|---|---|---|---|
| 2.451900e+001 | 2.156800e+001 | 2.178546e+001 | 9 | 3 |

| SL# | X_Left | Y_L_Top | Y_L_Bottom | X_Right | Y_R_Top | Y_R_Bottom | Mid_Height |
|---|---|---|---|---|---|---|---|
| 1 | 2.967812e+000 | 1.838171e+001 | 1.838170e+001 | 3.167634e+000 | 1.834008e+001 | 1.794729e+001 | 1.963940e-001 |
| 2 | 3.167634e+000 | 1.834008e+001 | 1.794729e+001 | 3.367456e+000 | 1.829845e+001 | 1.751286e+001 | 5.891914e-001 |
| 3 | 3.367456e+000 | 1.829845e+001 | 1.751286e+001 | 3.567278e+000 | 1.825682e+001 | 1.707843e+001 | 9.819927e-001 |
| 4 | 3.567278e+000 | 1.825682e+001 | 1.707843e+001 | 3.767100e+000 | 1.821519e+001 | 1.664400e+001 | 1.374794e+000 |
| 5 | 3.767100e+000 | 1.821519e+001 | 1.664400e+001 | 3.973680e+000 | 1.817215e+001 | 1.624812e+001 | 1.747616e+000 |
| 6 | 3.973680e+000 | 1.817215e+001 | 1.624812e+001 | 4.180260e+000 | 1.812912e+001 | 1.585223e+001 | 2.100462e+000 |
| 7 | 4.180260e+000 | 1.812912e+001 | 1.585223e+001 | 4.386840e+000 | 1.808608e+001 | 1.545635e+001 | 2.453307e+000 |
| 8 | 4.386840e+000 | 1.808608e+001 | 1.545635e+001 | 4.593421e+000 | 1.804304e+001 | 1.506046e+001 | 2.806154e+000 |
| 9 | 4.593421e+000 | 1.804304e+001 | 1.506046e+001 | 4.800000e+000 | 1.800000e+001 | 1.466458e+001 | 3.158999e+000 |
| 10 | 4.800000e+000 | 1.800000e+001 | 1.466458e+001 | 5.075300e+000 | 1.791119e+001 | 1.413700e+001 | 3.554808e+000 |
| 11 | 5.075300e+000 | 1.791119e+001 | 1.413700e+001 | 5.282743e+000 | 1.784428e+001 | 1.381014e+001 | 3.904164e+000 |
| 12 | 5.282743e+000 | 1.784428e+001 | 1.381014e+001 | 5.490186e+000 | 1.777736e+001 | 1.348329e+001 | 4.164103e+000 |
| 13 | 5.490186e+000 | 1.777736e+001 | 1.348329e+001 | 5.697628e+000 | 1.771044e+001 | 1.315643e+001 | 4.424044e+000 |
| 14 | 5.697628e+000 | 1.771044e+001 | 1.315643e+001 | 5.905071e+000 | 1.764353e+001 | 1.282957e+001 | 4.683984e+000 |
| 15 | 5.905071e+000 | 1.764353e+001 | 1.282957e+001 | 6.112514e+000 | 1.757661e+001 | 1.250272e+001 | 4.943924e+000 |
| 16 | 6.112514e+000 | 1.757661e+001 | 1.250272e+001 | 6.319957e+000 | 1.750969e+001 | 1.217586e+001 | 5.203863e+000 |
| 17 | 6.319957e+000 | 1.750969e+001 | 1.217586e+001 | 6.527400e+000 | 1.744277e+001 | 1.184900e+001 | 5.463803e+000 |
| 18 | 6.527400e+000 | 1.744277e+001 | 1.184900e+001 | 6.756166e+000 | 1.736898e+001 | 1.156256e+001 | 5.700094e+000 |
| 19 | 6.756166e+000 | 1.736898e+001 | 1.156256e+001 | 6.984933e+000 | 1.729518e+001 | 1.127613e+001 | 5.912734e+000 |
| 20 | 6.984933e+000 | 1.729518e+001 | 1.127613e+001 | 7.213699e+000 | 1.722139e+001 | 1.098969e+001 | 6.125375e+000 |
| 21 | 7.213699e+000 | 1.722139e+001 | 1.098969e+001 | 7.442466e+000 | 1.714759e+001 | 1.070326e+001 | 6.338016e+000 |
| 22 | 7.442466e+000 | 1.714759e+001 | 1.070326e+001 | 7.671232e+000 | 1.707380e+001 | 1.041682e+001 | 6.550653e+000 |
| 23 | 7.671232e+000 | 1.707380e+001 | 1.041682e+001 | 7.900000e+000 | 1.700000e+001 | 1.013038e+001 | 6.763295e+000 |
| 24 | 7.900000e+000 | 1.700000e+001 | 1.013038e+001 | 8.047900e+000 | 1.678739e+001 | 9.945200e+000 | 6.855905e+000 |
| 25 | 8.047900e+000 | 1.678739e+001 | 9.945200e+000 | 8.262663e+000 | 1.647867e+001 | 9.770312e+000 | 6.775277e+000 |
| 26 | 8.262663e+000 | 1.647867e+001 | 9.770312e+000 | 8.477426e+000 | 1.616995e+001 | 9.595425e+000 | 6.641442e+000 |
| 27 | 8.477426e+000 | 1.616995e+001 | 9.595425e+000 | 8.692188e+000 | 1.586123e+001 | 9.420537e+000 | 6.507609e+000 |
| 28 | 8.692188e+000 | 1.586123e+001 | 9.420537e+000 | 8.906951e+000 | 1.555251e+001 | 9.245649e+000 | 6.373775e+000 |
| 29 | 8.906951e+000 | 1.555251e+001 | 9.245649e+000 | 9.121714e+000 | 1.524379e+001 | 9.070762e+000 | 6.239942e+000 |
| 30 | 9.121714e+000 | 1.524379e+001 | 9.070762e+000 | 9.336476e+000 | 1.493507e+001 | 8.895874e+000 | 6.106108e+000 |
| 31 | 9.336476e+000 | 1.493507e+001 | 8.895874e+000 | 9.551239e+000 | 1.462634e+001 | 8.720985e+000 | 5.972276e+000 |
| 32 | 9.551239e+000 | 1.462634e+001 | 8.720985e+000 | 9.766000e+000 | 1.431763e+001 | 8.546100e+000 | 5.838442e+000 |
| 33 | 9.766000e+000 | 1.431763e+001 | 8.546100e+000 | 1.000575e+001 | 1.397298e+001 | 8.390450e+000 | 5.677030e+000 |
| 34 | 1.000575e+001 | 1.397298e+001 | 8.390450e+000 | 1.024550e+001 | 1.362834e+001 | 8.234800e+000 | 5.488039e+000 |
| 35 | 1.024550e+001 | 1.362834e+001 | 8.234800e+000 | 1.048525e+001 | 1.328370e+001 | 8.079150e+000 | 5.299048e+000 |
| 36 | 1.048525e+001 | 1.328370e+001 | 8.079150e+000 | 1.072500e+001 | 1.293906e+001 | 7.923500e+000 | 5.110057e+000 |
| 37 | 1.072500e+001 | 1.293906e+001 | 7.923500e+000 | 1.092680e+001 | 1.264897e+001 | 7.867840e+000 | 4.898347e+000 |
| 38 | 1.092680e+001 | 1.264897e+001 | 7.867840e+000 | 1.112860e+001 | 1.235889e+001 | 7.812180e+000 | 4.663920e+000 |
| 39 | 1.112860e+001 | 1.235889e+001 | 7.812180e+000 | 1.133040e+001 | 1.206880e+001 | 7.756520e+000 | 4.429491e+000 |
| 40 | 1.133040e+001 | 1.206880e+001 | 7.756520e+000 | 1.153220e+001 | 1.177871e+001 | 7.700860e+000 | 4.195064e+000 |
| 41 | 1.153220e+001 | 1.177871e+001 | 7.700860e+000 | 1.173400e+001 | 1.148862e+001 | 7.645200e+000 | 3.960638e+000 |
| 42 | 1.173400e+001 | 1.148862e+001 | 7.645200e+000 | 1.190000e+001 | 1.125000e+001 | 7.629739e+000 | 3.731844e+000 |
| 43 | 1.190000e+001 | 1.125000e+001 | 7.629739e+000 | 1.211300e+001 | 1.094986e+001 | 7.609900e+000 | 3.480112e+000 |
| 44 | 1.211300e+001 | 1.094986e+001 | 7.609900e+000 | 1.233475e+001 | 1.063740e+001 | 7.599842e+000 | 3.188760e+000 |
| 45 | 1.233475e+001 | 1.063740e+001 | 7.599842e+000 | 1.255650e+001 | 1.032493e+001 | 7.589784e+000 | 2.886351e+000 |
| 46 | 1.255650e+001 | 1.032493e+001 | 7.589784e+000 | 1.277825e+001 | 1.001246e+001 | 7.579726e+000 | 2.583942e+000 |
| 47 | 1.277825e+001 | 1.001246e+001 | 7.579726e+000 | 1.300000e+001 | 9.700000e+000 | 7.569668e+000 | 2.281535e+000 |
| 48 | 1.300000e+001 | 9.700000e+000 | 7.569668e+000 | 1.305000e+001 | 9.700000e+000 | 7.567400e+000 | 2.131466e+000 |
| 49 | 1.305000e+001 | 9.700000e+000 | 7.567400e+000 | 1.323333e+001 | 9.700000e+000 | 7.571498e+000 | 2.130551e+000 |
| 50 | 1.323333e+001 | 9.700000e+000 | 7.571498e+000 | 1.341667e+001 | 9.700000e+000 | 7.575595e+000 | 2.126453e+000 |
| 51 | 1.341667e+001 | 9.700000e+000 | 7.575595e+000 | 1.360000e+001 | 9.700000e+000 | 7.579693e+000 | 2.122355e+000 |
| 52 | 1.360000e+001 | 9.700000e+000 | 7.579693e+000 | 1.365400e+001 | 7.700000e+000 | 7.580900e+000 | 1.197033e-001 |
| 53 | 1.365400e+001 | 7.700000e+000 | 7.580900e+000 | 1.390755e+001 | 7.700000e+000 | 7.700000e+000 | 5.954981e-002 |

| SL# | L_Load_X | L_Load_Y | A_Load_X | A_Load_Y | P_Load_X | P_Load_Y | A_Modifier |
|---|---|---|---|---|---|---|---|
| 1 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 2 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 3 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 4 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 5 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 6 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 7 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 8 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 9 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 10 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 11 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 12 | 0.0000e+000 | 0.0000e+000 | -1.9734e+001 | -7.1822e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 13 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 1.0000e+000 |
| 14 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | |

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18 0.0000e+000 0.0000e+000 -2.6312e+001 -9.5761e+000 0.0000e+000 0.0000e+000
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0.0000e+000 1.0000e+000

| SL# | Weight | Pore_Water | Alpha | Force Fn. | Seismic_F | Seismic_Y | Pore_Air | Phi_B |
|---|---|---|---|---|---|---|---|---|
| 1 | 7.4563e-001 | 0.0000e+000 | 6.5298e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 2 | 2.2369e+000 | 0.0000e+000 | 6.5299e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 3 | 3.7283e+000 | 0.0000e+000 | 6.5299e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 4 | 5.2196e+000 | 0.0000e+000 | 6.5299e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 5 | 6.8594e+000 | 0.0000e+000 | 6.2444e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 6 | 8.2444e+000 | 0.0000e+000 | 6.2444e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 7 | 9.6293e+000 | 0.0000e+000 | 6.2444e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 8 | 1.1014e+001 | 0.0000e+000 | 6.2444e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 9 | 1.2399e+001 | 0.0000e+000 | 6.2444e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 10 | 1.8594e+001 | 0.0000e+000 | 6.2444e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 11 | 1.5388e+001 | 0.0000e+000 | 5.7598e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 12 | 1.6412e+001 | 0.0000e+000 | 5.7598e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 13 | 1.7437e+001 | 0.0000e+000 | 5.7598e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 14 | 1.8462e+001 | 0.0000e+000 | 5.7598e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 15 | 1.9486e+001 | 0.0000e+000 | 5.7598e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 16 | 2.0511e+001 | 0.0000e+000 | 5.7598e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 17 | 2.1535e+001 | 0.0000e+000 | 5.7598e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 18 | 2.4776e+001 | 0.0000e+000 | 5.1387e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 19 | 2.5700e+001 | 0.0000e+000 | 5.1387e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 20 | 2.6624e+001 | 0.0000e+000 | 5.1387e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 21 | 2.7549e+001 | 0.0000e+000 | 5.1387e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 22 | 2.8473e+001 | 0.0000e+000 | 5.1387e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 23 | 2.9397e+001 | 0.0000e+000 | 5.1387e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 24 | 1.9266e+001 | 0.0000e+000 | 5.1387e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 25 | 2.7646e+001 | 0.0000e+000 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 26 | 2.7100e+001 | 0.0000e+000 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 27 | 2.6554e+001 | 4.8979e-003 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 28 | 2.6008e+001 | 3.2826e-001 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 29 | 2.5462e+001 | 6.5163e-001 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 30 | 2.4916e+001 | 9.6338e-001 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 31 | 2.4370e+001 | 1.2279e+000 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 32 | 2.3824e+001 | 1.4924e+000 | 3.9157e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 33 | 2.5860e+001 | 1.7736e+000 | 3.2992e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |
| 34 | 2.4999e+001 | 1.9674e+000 | 3.2992e+001 | 1.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 | 0.0000e+000 |

35 2.4139e+001 2.1611e+000 3.2992e+001 1.0000e+000 0.0000e+000
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36 2.3278e+001 2.3549e+000 3.2992e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
37 1.8781e+001 1.7779e+000 1.5420e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
38 1.7882e+001 1.7438e+000 1.5420e+001 1.0000e+000 0.0000e+000
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39 1.6984e+001 1.7120e+000 1.5420e+001 1.0000e+000 0.0000e+000
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40 1.6085e+001 1.6801e+000 1.5420e+001 1.0000e+000 0.0000e+000
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41 1.5186e+001 1.6482e+000 1.5420e+001 1.0000e+000 0.0000e+000
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42 1.1770e+001 1.2648e+000 5.3211e+000 1.0000e+000 0.0000e+000
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43 1.7705e+001 1.6821e-001 5.3212e+000 1.0000e+000 0.0000e+000
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44 1.6865e+001 2.0709e-001 2.5970e+000 1.0000e+000 0.0000e+000
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45 1.5245e+001 2.2899e-001 2.5970e+000 1.0000e+000 0.0000e+000
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46 1.3624e+001 2.5088e-001 2.5971e+000 1.0000e+000 0.0000e+000
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47 1.2003e+001 2.7278e-001 2.5970e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
48 2.5249e+000 6.4531e-002 2.5970e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
49 9.2548e+000 2.3478e-001 -1.2805e+000 1.0000e+000 0.0000e+000
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50 9.2405e+000 2.2741e-001 -1.2803e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
51 9.2262e+000 2.2004e-001 -1.2805e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
52 1.2282e-001 6.3408e-002 -1.2803e+000 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000
53 2.8688e-001 1.6360e-001 -2.5161e+001 1.0000e+000 0.0000e+000
0.0000e+000 0.0000e+000 0.0000e+000

Ordinary_Method_Fm= 1.146 Applied_Lambda= 0.0000

| SL# | Normal_M | ShearMob | Phi_Angle | Cohesion |
|---|---|---|---|---|
| 1 | 3.1159e-001 | -1.4643e+000 | 3.8000e+001 | 3.0000e+000 |
| 2 | 9.3476e-001 | -1.8892e+000 | 3.8000e+001 | 3.0000e+000 |
| 3 | 1.5580e+000 | -2.3141e+000 | 3.8000e+001 | 3.0000e+000 |
| 4 | 2.1811e+000 | -2.7390e+000 | 3.8000e+001 | 3.0000e+000 |
| 5 | 3.1733e+000 | -3.3326e+000 | 3.8000e+001 | 3.0000e+000 |
| 6 | 3.8140e+000 | -3.7694e+000 | 3.8000e+001 | 3.0000e+000 |
| 7 | 4.4547e+000 | -4.2062e+000 | 3.8000e+001 | 3.0000e+000 |
| 8 | 5.0954e+000 | -4.6430e+000 | 3.8000e+001 | 3.0000e+000 |
| 9 | 5.7361e+000 | -5.0799e+000 | 3.8000e+001 | 3.0000e+000 |
| 10 | 8.6021e+000 | -7.4227e+000 | 3.8000e+001 | 3.0000e+000 |
| 11 | 8.2456e+000 | -6.6353e+000 | 3.8000e+001 | 3.0000e+000 |
| 12 | 2.9305e+001 | -2.0993e+001 | 3.8000e+001 | 3.0000e+000 |
| 13 | 9.3436e+000 | -7.3839e+000 | 3.8000e+001 | 3.0000e+000 |
| 14 | 9.8926e+000 | -7.7582e+000 | 3.8000e+001 | 3.0000e+000 |
| 15 | 1.0442e+001 | -8.1325e+000 | 3.8000e+001 | 3.0000e+000 |
| 16 | 1.0991e+001 | -8.5068e+000 | 3.8000e+001 | 3.0000e+000 |
| 17 | 1.1540e+001 | -8.8811e+000 | 3.8000e+001 | 3.0000e+000 |
| 18 | 4.1997e+001 | -2.9593e+001 | 3.8000e+001 | 3.0000e+000 |
| 19 | 1.6038e+001 | -1.1895e+001 | 3.8000e+001 | 3.0000e+000 |
| 20 | 1.6615e+001 | -1.2288e+001 | 3.8000e+001 | 3.0000e+000 |
| 21 | 1.7192e+001 | -1.2681e+001 | 3.8000e+001 | 3.0000e+000 |
| 22 | 1.7769e+001 | -1.3074e+001 | 3.8000e+001 | 3.0000e+000 |
| 23 | 1.8346e+001 | -1.3468e+001 | 3.8000e+001 | 3.0000e+000 |
| 24 | 1.2023e+001 | -8.8176e+000 | 3.8000e+001 | 3.0000e+000 |
| 25 | 2.1438e+001 | -1.5341e+001 | 3.8000e+001 | 3.0000e+000 |
| 26 | 5.1923e+001 | -3.6126e+001 | 3.8000e+001 | 3.0000e+000 |
| 27 | 2.0591e+001 | -1.4760e+001 | 3.8000e+001 | 3.0000e+000 |
| 28 | 2.0167e+001 | -1.4251e+001 | 3.8000e+001 | 3.0000e+000 |
| 29 | 1.9744e+001 | -1.3742e+001 | 3.8000e+001 | 3.0000e+000 |
| 30 | 1.9320e+001 | -1.3241e+001 | 3.8000e+001 | 3.0000e+000 |
| 31 | 1.8897e+001 | -1.2772e+001 | 3.8000e+001 | 3.0000e+000 |
| 32 | 1.8473e+001 | -1.2303e+001 | 3.8000e+001 | 3.0000e+000 |
| 33 | 2.1690e+001 | -1.4327e+001 | 3.8000e+001 | 3.0000e+000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 34 | 2.0968e+001 | -1.3703e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 35 | 2.0246e+001 | -1.3078e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 36 | 1.9524e+001 | -1.2454e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 37 | 1.8105e+001 | -1.1680e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 38 | 1.7239e+001 | -1.1112e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 39 | 1.6372e+001 | -1.0543e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 40 | 1.5506e+001 | -9.9742e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 41 | 1.4639e+001 | -9.4052e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 42 | 1.1719e+001 | -7.5644e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 43 | 1.7629e+001 | -1.2464e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 44 | 1.6848e+001 | -1.1927e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 45 | 1.5229e+001 | -1.0808e+001 | 3.8000e+001 | 3.0000e+000 | | | |
| 46 | 1.3610e+001 | -9.6893e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 47 | 1.1991e+001 | -8.5706e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 48 | 2.5223e+000 | -1.8067e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 49 | 9.2524e+000 | -6.6282e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 50 | 9.2382e+000 | -6.6235e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 51 | 9.2239e+000 | -6.6188e+000 | 3.8000e+001 | 3.0000e+000 | | | |
| 52 | 1.2278e-001 | -1.8189e-001 | 3.8000e+001 | 3.0000e+000 | | | |
| 53 | 2.5966e-001 | -7.9887e-001 | 3.8000e+001 | 3.0000e+000 | | | |

Bishop_Method_Fm= 1.338 Applied_Lambda= 0.0000

| SL# | Normal_M | ShearMob | Phi_Angle | Cohesion | SideLeft | ShearLeft | SideRight | ShearRight |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.4226e-001 | -9.3037e-001 | 3.8000e+001 | 3.0000e+000 | 0.0000e+000 | 0.0000e+000 | 7.2624e-001 | 0.0000e+000 |
| 2 | 1.3288e+000 | -1.8475e+000 | 3.8000e+001 | 3.0000e+000 | -7.2624e-001 | 0.0000e+000 | 5.2411e-001 | 0.0000e+000 |
| 3 | 2.8998e+000 | -2.7646e+000 | 3.8000e+001 | 3.0000e+000 | -5.2411e-001 | 0.0000e+000 | -6.0644e-001 | 0.0000e+000 |
| 4 | 4.4709e+000 | -3.6817e+000 | 3.8000e+001 | 3.0000e+000 | 6.0644e-001 | 0.0000e+000 | -2.6654e+000 | 0.0000e+000 |
| 5 | 6.0851e+000 | -4.5530e+000 | 3.8000e+001 | 3.0000e+000 | 2.6654e+000 | 0.0000e+000 | -5.4151e+000 | 0.0000e+000 |
| 6 | 7.4967e+000 | -5.3770e+000 | 3.8000e+001 | 3.0000e+000 | 5.4151e+000 | 0.0000e+000 | -8.9375e+000 | 0.0000e+000 |
| 7 | 8.9082e+000 | -6.2010e+000 | 3.8000e+001 | 3.0000e+000 | 8.9375e+000 | 0.0000e+000 | -1.3233e+001 | 0.0000e+000 |
| 8 | 1.0320e+001 | -7.0250e+000 | 3.8000e+001 | 3.0000e+000 | 1.3233e+001 | 0.0000e+000 | -1.8300e+001 | 0.0000e+000 |
| 9 | 1.1731e+001 | -7.8489e+000 | 3.8000e+001 | 3.0000e+000 | 1.8300e+001 | 0.0000e+000 | -2.4141e+001 | 0.0000e+000 |
| 10 | 1.7744e+001 | -1.1692e+001 | 3.8000e+001 | 3.0000e+000 | 2.4141e+001 | 0.0000e+000 | -3.3080e+001 | 0.0000e+000 |
| 11 | 1.4232e+001 | -9.1754e+000 | 3.8000e+001 | 3.0000e+000 | 3.3080e+001 | 0.0000e+000 | -3.9201e+001 | 0.0000e+000 |
| 12 | 2.2202e+001 | -1.3828e+001 | 3.8000e+001 | 3.0000e+000 | 3.9201e+001 | 0.0000e+000 | -2.9329e+001 | 0.0000e+000 |
| 13 | 1.6222e+001 | -1.0337e+001 | 3.8000e+001 | 3.0000e+000 | 2.9329e+001 | 0.0000e+000 | -3.6385e+001 | 0.0000e+000 |
| 14 | 1.7217e+001 | -1.0918e+001 | 3.8000e+001 | 3.0000e+000 | 3.6385e+001 | 0.0000e+000 | -4.3907e+001 | 0.0000e+000 |
| 15 | 1.8212e+001 | -1.1499e+001 | 3.8000e+001 | 3.0000e+000 | 4.3907e+001 | 0.0000e+000 | -5.1896e+001 | 0.0000e+000 |
| 16 | 1.9207e+001 | -1.2080e+001 | 3.8000e+001 | 3.0000e+000 | 5.1896e+001 | 0.0000e+000 | -6.0352e+001 | 0.0000e+000 |
| 17 | 2.0202e+001 | -1.2660e+001 | 3.8000e+001 | 3.0000e+000 | 6.0352e+001 | 0.0000e+000 | -6.9276e+001 | 0.0000e+000 |
| 18 | 3.1181e+001 | -1.9023e+001 | 3.8000e+001 | 3.0000e+000 | 6.9276e+001 | 0.0000e+000 | -5.3669e+001 | 0.0000e+000 |
| 19 | 2.3178e+001 | -1.4352e+001 | 3.8000e+001 | 3.0000e+000 | 5.3669e+001 | 0.0000e+000 | -6.1476e+001 | 0.0000e+000 |
| 20 | 2.4033e+001 | -1.4851e+001 | 3.8000e+001 | 3.0000e+000 | 6.1476e+001 | 0.0000e+000 | -6.9592e+001 | 0.0000e+000 |
| 21 | 2.4888e+001 | -1.5350e+001 | 3.8000e+001 | 3.0000e+000 | 6.9592e+001 | 0.0000e+000 | -7.8017e+001 | 0.0000e+000 |
| 22 | 2.5743e+001 | -1.5849e+001 | 3.8000e+001 | 3.0000e+000 | 7.8017e+001 | 0.0000e+000 | -8.6753e+001 | 0.0000e+000 |
| 23 | 2.6598e+001 | -1.6348e+001 | 3.8000e+001 | 3.0000e+000 | 8.6753e+001 | 0.0000e+000 | -9.5798e+001 | 0.0000e+000 |
| 24 | 1.7437e+001 | -1.0710e+001 | 3.8000e+001 | 3.0000e+000 | 9.5798e+001 | 0.0000e+000 | -1.0173e+002 | 0.0000e+000 |
| 25 | 2.3808e+001 | -1.4518e+001 | 3.8000e+001 | 3.0000e+000 | 1.0173e+002 | 0.0000e+000 | -1.0440e+002 | 0.0000e+000 |

26 3.4087e+001 -2.0519e+001 3.8000e+001 3.0000e+000 1.0440e+002
0.0000e+000 -7.4629e+001 0.0000e+000
27 2.2855e+001 -1.3960e+001 3.8000e+001 3.0000e+000 7.4629e+001
0.0000e+000 -7.7175e+001 0.0000e+000
28 2.2483e+001 -1.3553e+001 3.8000e+001 3.0000e+000 7.7175e+001
0.0000e+000 -7.9831e+001 0.0000e+000
29 2.2110e+001 -1.3147e+001 3.8000e+001 3.0000e+000 7.9831e+001
0.0000e+000 -8.2599e+001 0.0000e+000
30 2.1733e+001 -1.2745e+001 3.8000e+001 3.0000e+000 8.2599e+001
0.0000e+000 -8.5470e+001 0.0000e+000
31 2.1342e+001 -1.2362e+001 3.8000e+001 3.0000e+000 8.5470e+001
0.0000e+000 -8.8421e+001 0.0000e+000
32 2.0950e+001 -1.1979e+001 3.8000e+001 3.0000e+000 8.8421e+001
0.0000e+000 -9.1450e+001 0.0000e+000
33 2.2533e+001 -1.2759e+001 3.8000e+001 3.0000e+000 9.1450e+001
0.0000e+000 -9.2121e+001 0.0000e+000
34 2.1842e+001 -1.2243e+001 3.8000e+001 3.0000e+000 9.2121e+001
0.0000e+000 -9.2886e+001 0.0000e+000
35 2.1152e+001 -1.1726e+001 3.8000e+001 3.0000e+000 9.2886e+001
0.0000e+000 -9.3744e+001 0.0000e+000
36 2.0461e+001 -1.1210e+001 3.8000e+001 3.0000e+000 9.3744e+001
0.0000e+000 -9.4695e+001 0.0000e+000
37 1.6912e+001 -9.3033e+000 3.8000e+001 3.0000e+000 9.4695e+001
0.0000e+000 -8.9603e+001 0.0000e+000
38 1.6104e+001 -8.8518e+000 3.8000e+001 3.0000e+000 8.9603e+001
0.0000e+000 -8.4761e+001 0.0000e+000
39 1.5297e+001 -8.3991e+000 3.8000e+001 3.0000e+000 8.4761e+001
0.0000e+000 -8.0172e+001 0.0000e+000
40 1.4489e+001 -7.9465e+000 3.8000e+001 3.0000e+000 8.0172e+001
0.0000e+000 -7.5834e+001 0.0000e+000
41 1.3682e+001 -7.4938e+000 3.8000e+001 3.0000e+000 7.5834e+001
0.0000e+000 -7.1748e+001 0.0000e+000
42 1.1243e+001 -6.1982e+000 3.8000e+001 3.0000e+000 7.1748e+001
0.0000e+000 -6.6157e+001 0.0000e+000
43 1.6829e+001 -1.0205e+001 3.8000e+001 3.0000e+000 6.6157e+001
0.0000e+000 -5.6795e+001 0.0000e+000
44 1.6429e+001 -9.9672e+000 3.8000e+001 3.0000e+000 5.6795e+001
0.0000e+000 -4.6802e+001 0.0000e+000
45 1.4850e+001 -9.0323e+000 3.8000e+001 3.0000e+000 4.6802e+001
0.0000e+000 -3.7745e+001 0.0000e+000
46 1.3270e+001 -8.0973e+000 3.8000e+001 3.0000e+000 3.7745e+001
0.0000e+000 -2.9623e+001 0.0000e+000
47 1.1690e+001 -7.1624e+000 3.8000e+001 3.0000e+000 2.9623e+001
0.0000e+000 -2.2437e+001 0.0000e+000
48 2.4589e+000 -1.5099e+000 3.8000e+001 3.0000e+000 2.2437e+001
0.0000e+000 -2.0922e+001 0.0000e+000
49 9.3859e+000 -5.7529e+000 3.8000e+001 3.0000e+000 2.0922e+001
0.0000e+000 -1.4472e+001 0.0000e+000
50 9.3715e+000 -5.7488e+000 3.8000e+001 3.0000e+000 1.4472e+001
0.0000e+000 -8.0267e+000 0.0000e+000
51 9.3572e+000 -5.7447e+000 3.8000e+001 3.0000e+000 8.0267e+000
0.0000e+000 -1.5862e+000 0.0000e+000
52 1.2638e-001 -1.5783e-001 3.8000e+001 3.0000e+000 1.5862e+000
0.0000e+000 -1.4122e+000 0.0000e+000
53 7.8249e-001 -9.8917e-001 3.8000e+001 3.0000e+000 1.4122e+000
0.0000e+000 -5.6624e-005 0.0000e+000

Janbu_Method_Ff= 1.215 Applied_Lambda= 0.0000

| SL# | Normal_F | ShearMob | Phi_Angle | Cohesion | SideLeft | ShearLeft | SideRight | ShearRight |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.1097e-001 | -9.8101e-001 | 3.8000e+001 | 3.0000e+000 | 0.0000e+000 | 0.0000e+000 | 7.2624e-001 | 0.0000e+000 |
| 2 | 1.1923e+000 | -1.9480e+000 | 3.8000e+001 | 3.0000e+000 | -7.2624e-001 | 0.0000e+000 | 5.2411e-001 | 0.0000e+000 |
| 3 | 2.6957e+000 | -2.9150e+000 | 3.8000e+001 | 3.0000e+000 | -5.2411e-001 | 0.0000e+000 | -6.0644e-001 | 0.0000e+000 |
| 4 | 4.1990e+000 | -3.8821e+000 | 3.8000e+001 | 3.0000e+000 | 6.0644e-001 | 0.0000e+000 | -2.6654e+000 | 0.0000e+000 |
| 5 | 5.7669e+000 | -4.8124e+000 | 3.8000e+001 | 3.0000e+000 | 2.6654e+000 | 0.0000e+000 | -5.4151e+000 | 0.0000e+000 |
| 6 | 7.1209e+000 | -5.6834e+000 | 3.8000e+001 | 3.0000e+000 | 5.4151e+000 | 0.0000e+000 | -8.9375e+000 | 0.0000e+000 |
| 7 | 8.4748e+000 | -6.5543e+000 | 3.8000e+001 | 3.0000e+000 | 8.9375e+000 | 0.0000e+000 | -1.3233e+001 | 0.0000e+000 |
| 8 | 9.8288e+000 | -7.4252e+000 | 3.8000e+001 | 3.0000e+000 | 1.3233e+001 | 0.0000e+000 | -1.8300e+001 | 0.0000e+000 |
| 9 | 1.1183e+001 | -8.2961e+000 | 3.8000e+001 | 3.0000e+000 | 1.8300e+001 | 0.0000e+000 | -2.4141e+001 | 0.0000e+000 |
| 10 | 1.6927e+001 | -1.2358e+001 | 3.8000e+001 | 3.0000e+000 | 2.4141e+001 | 0.0000e+000 | -3.3080e+001 | 0.0000e+000 |
| 11 | 1.3648e+001 | -9.7349e+000 | 3.8000e+001 | 3.0000e+000 | 3.3080e+001 | 0.0000e+000 | -3.9201e+001 | 0.0000e+000 |
| 12 | 2.1322e+001 | -1.4671e+001 | 3.8000e+001 | 3.0000e+000 | 3.9201e+001 | 0.0000e+000 | -2.9329e+001 | 0.0000e+000 |
| 13 | 1.5564e+001 | -1.0967e+001 | 3.8000e+001 | 3.0000e+000 | 2.9329e+001 | 0.0000e+000 | -3.6385e+001 | 0.0000e+000 |
| 14 | 1.6522e+001 | -1.1584e+001 | 3.8000e+001 | 3.0000e+000 | 3.6385e+001 | 0.0000e+000 | -4.3907e+001 | 0.0000e+000 |
| 15 | 1.7480e+001 | -1.2200e+001 | 3.8000e+001 | 3.0000e+000 | 4.3907e+001 | 0.0000e+000 | -5.1896e+001 | 0.0000e+000 |
| 16 | 1.8438e+001 | -1.2816e+001 | 3.8000e+001 | 3.0000e+000 | 5.1896e+001 | 0.0000e+000 | -6.0352e+001 | 0.0000e+000 |
| 17 | 1.9396e+001 | -1.3432e+001 | 3.8000e+001 | 3.0000e+000 | 6.0352e+001 | 0.0000e+000 | -6.9276e+001 | 0.0000e+000 |
| 18 | 3.0109e+001 | -2.0273e+001 | 3.8000e+001 | 3.0000e+000 | 6.9276e+001 | 0.0000e+000 | -5.3669e+001 | 0.0000e+000 |
| 19 | 2.2369e+001 | -1.5294e+001 | 3.8000e+001 | 3.0000e+000 | 5.3669e+001 | 0.0000e+000 | -6.1476e+001 | 0.0000e+000 |
| 20 | 2.3196e+001 | -1.5826e+001 | 3.8000e+001 | 3.0000e+000 | 6.1476e+001 | 0.0000e+000 | -6.9592e+001 | 0.0000e+000 |
| 21 | 2.4023e+001 | -1.6358e+001 | 3.8000e+001 | 3.0000e+000 | 6.9592e+001 | 0.0000e+000 | -7.8017e+001 | 0.0000e+000 |
| 22 | 2.4850e+001 | -1.6890e+001 | 3.8000e+001 | 3.0000e+000 | 7.8017e+001 | 0.0000e+000 | -8.6753e+001 | 0.0000e+000 |
| 23 | 2.5676e+001 | -1.7422e+001 | 3.8000e+001 | 3.0000e+000 | 8.6753e+001 | 0.0000e+000 | -9.5798e+001 | 0.0000e+000 |
| 24 | 1.6833e+001 | -1.1413e+001 | 3.8000e+001 | 3.0000e+000 | 9.5798e+001 | 0.0000e+000 | -1.0173e+002 | 0.0000e+000 |
| 25 | 2.3178e+001 | -1.5593e+001 | 3.8000e+001 | 3.0000e+000 | 1.0173e+002 | 0.0000e+000 | -1.0440e+002 | 0.0000e+000 |
| 26 | 3.3197e+001 | -2.2038e+001 | 3.8000e+001 | 3.0000e+000 | 1.0440e+002 | 0.0000e+000 | -7.4629e+001 | 0.0000e+000 |
| 27 | 2.2250e+001 | -1.4993e+001 | 3.8000e+001 | 3.0000e+000 | 7.4629e+001 | 0.0000e+000 | -7.7175e+001 | 0.0000e+000 |
| 28 | 2.1895e+001 | -1.4557e+001 | 3.8000e+001 | 3.0000e+000 | 7.7175e+001 | 0.0000e+000 | -7.9831e+001 | 0.0000e+000 |
| 29 | 2.1540e+001 | -1.4120e+001 | 3.8000e+001 | 3.0000e+000 | 7.9831e+001 | 0.0000e+000 | -8.2599e+001 | 0.0000e+000 |
| 30 | 2.1181e+001 | -1.3689e+001 | 3.8000e+001 | 3.0000e+000 | 8.2599e+001 | 0.0000e+000 | -8.5470e+001 | 0.0000e+000 |
| 31 | 2.0806e+001 | -1.3277e+001 | 3.8000e+001 | 3.0000e+000 | 8.5470e+001 | 0.0000e+000 | -8.8421e+001 | 0.0000e+000 |
| 32 | 2.0431e+001 | -1.2866e+001 | 3.8000e+001 | 3.0000e+000 | 8.8421e+001 | 0.0000e+000 | -9.1450e+001 | 0.0000e+000 |
| 33 | 2.2059e+001 | -1.3755e+001 | 3.8000e+001 | 3.0000e+000 | 9.1450e+001 | 0.0000e+000 | -9.2121e+001 | 0.0000e+000 |
| 34 | 2.1388e+001 | -1.3198e+001 | 3.8000e+001 | 3.0000e+000 | 9.2121e+001 | 0.0000e+000 | -9.2886e+001 | 0.0000e+000 |
| 35 | 2.0716e+001 | -1.2642e+001 | 3.8000e+001 | 3.0000e+000 | 9.2886e+001 | 0.0000e+000 | -9.3744e+001 | 0.0000e+000 |
| 36 | 2.0045e+001 | -1.2085e+001 | 3.8000e+001 | 3.0000e+000 | 9.3744e+001 | 0.0000e+000 | -9.4695e+001 | 0.0000e+000 |
| 37 | 1.6735e+001 | -1.0138e+001 | 3.8000e+001 | 3.0000e+000 | 9.4695e+001 | 0.0000e+000 | -8.9603e+001 | 0.0000e+000 |
| 38 | 1.5936e+001 | -9.6462e+000 | 3.8000e+001 | 3.0000e+000 | 8.9603e+001 | 0.0000e+000 | -8.4761e+001 | 0.0000e+000 |
| 39 | 1.5138e+001 | -9.1530e+000 | 3.8000e+001 | 3.0000e+000 | 8.4761e+001 | 0.0000e+000 | -8.0172e+001 | 0.0000e+000 |
| 40 | 1.4339e+001 | -8.6597e+000 | 3.8000e+001 | 3.0000e+000 | 8.0172e+001 | 0.0000e+000 | -7.5834e+001 | 0.0000e+000 |
| 41 | 1.3540e+001 | -8.1664e+000 | 3.8000e+001 | 3.0000e+000 | 7.5834e+001 | 0.0000e+000 | -7.1748e+001 | 0.0000e+000 |
| 42 | 1.1199e+001 | -6.8017e+000 | 3.8000e+001 | 3.0000e+000 | 7.1748e+001 | 0.0000e+000 | -6.6157e+001 | 0.0000e+000 |
| 43 | 1.6757e+001 | -1.1199e+001 | 3.8000e+001 | 3.0000e+000 | 6.6157e+001 | 0.0000e+000 | -5.6795e+001 | 0.0000e+000 |
| 44 | 1.6394e+001 | -1.0960e+001 | 3.8000e+001 | 3.0000e+000 | 5.6795e+001 | 0.0000e+000 | -4.6802e+001 | 0.0000e+000 |
| 45 | 1.4818e+001 | -9.9323e+000 | 3.8000e+001 | 3.0000e+000 | 4.6802e+001 | 0.0000e+000 | -3.7745e+001 | 0.0000e+000 |

46 1.3241e+001 -8.9042e+000 3.8000e+001 3.0000e+000 3.7745e+001
0.0000e+000 -2.9623e+001 0.0000e+000
47 1.1665e+001 -7.8761e+000 3.8000e+001 3.0000e+000 2.9623e+001
0.0000e+000 -2.2437e+001 0.0000e+000
48 2.4535e+000 -1.6603e+000 3.8000e+001 3.0000e+000 2.2437e+001
0.0000e+000 -2.0922e+001 0.0000e+000
49 9.3964e+000 -6.3461e+000 3.8000e+001 3.0000e+000 2.0922e+001
0.0000e+000 -1.4472e+001 0.0000e+000
50 9.3820e+000 -6.3416e+000 3.8000e+001 3.0000e+000 1.4472e+001
0.0000e+000 -8.0267e+000 0.0000e+000
51 9.3677e+000 -6.3371e+000 3.8000e+001 3.0000e+000 8.0267e+000
0.0000e+000 -1.5862e+000 0.0000e+000
52 1.2667e-001 -1.7410e-001 3.8000e+001 3.0000e+000 1.5862e+000
0.0000e+000 -1.4122e+000 0.0000e+000
53 8.3577e-001 -1.1243e+000 3.8000e+001 3.0000e+000 1.4122e+000
0.0000e+000 -5.6624e-005 0.0000e+000

M-P_Method_Fm= 1.467 Applied_Lambda= 0.7616

| Sl.# | Normal_M | ShearMob | Phi_Angle | Cohesion | SideLeft | ShearLeft |
|---|---|---|---|---|---|---|

SideRight ShearRight

1 1.1211e-001 -1.0373e+000 3.8000e+001 3.0000e+000 0.0000e+000
0.0000e+000 3.2774e-001 -2.4961e-001
2 1.1954e+000 -1.6141e+000 3.8000e+001 3.0000e+000 -3.2774e-001 2.4961e-001
-1.5746e-002 1.1992e-002
3 2.2788e+000 -2.1910e+000 3.8000e+001 3.0000e+000 1.5746e-002 -1.1992e-002
-1.0305e+000 7.8481e-001
4 3.3621e+000 -2.7678e+000 3.8000e+001 3.0000e+000 1.0305e+000 -7.8481e-001
-2.7165e+000 2.0689e+000
5 4.5611e+000 -3.3415e+000 3.8000e+001 3.0000e+000 2.7165e+000 -2.0689e+000
-5.0380e+000 3.8369e+000
6 5.5544e+000 -3.8704e+000 3.8000e+001 3.0000e+000 5.0380e+000 -3.8369e+000
-7.9550e+000 6.0586e+000
7 6.5477e+000 -4.3992e+000 3.8000e+001 3.0000e+000 7.9550e+000 -6.0586e+000
-1.1468e+001 8.7337e+000
8 7.5410e+000 -4.9281e+000 3.8000e+001 3.0000e+000 1.1468e+001 -8.7337e+000
-1.5576e+001 1.1862e+001
9 8.5343e+000 -5.4570e+000 3.8000e+001 3.0000e+000 1.5576e+001 -1.1862e+001
-2.0279e+001 1.5445e+001
10 1.2858e+001 -8.0629e+000 3.8000e+001 3.0000e+000 2.0279e+001 -1.5445e+001
-2.7438e+001 2.0897e+001
11 1.0720e+001 -6.4995e+000 3.8000e+001 3.0000e+000 2.7438e+001 -2.0897e+001
-3.2848e+001 2.5017e+001
12 2.7035e+001 -1.5186e+001 3.8000e+001 3.0000e+000 3.2848e+001 -2.5017e+001
-2.7865e+001 2.1222e+001
13 1.2182e+001 -7.2775e+000 3.8000e+001 3.0000e+000 2.7865e+001 -2.1222e+001
-3.4070e+001 2.5948e+001
14 1.2912e+001 -7.6665e+000 3.8000e+001 3.0000e+000 3.4070e+001 -2.5948e+001
-4.0672e+001 3.0976e+001
15 1.3643e+001 -8.0555e+000 3.8000e+001 3.0000e+000 4.0672e+001 -3.0976e+001
-4.7672e+001 3.6307e+001
16 1.4373e+001 -8.4446e+000 3.8000e+001 3.0000e+000 4.7672e+001 -3.6307e+001
-5.5068e+001 4.1940e+001
17 1.5104e+001 -8.8336e+000 3.8000e+001 3.0000e+000 5.5068e+001 -4.1940e+001
-6.2862e+001 4.7876e+001
18 3.9026e+001 -2.1528e+001 3.8000e+001 3.0000e+000 6.2862e+001 -4.7876e+001
-5.3761e+001 4.0945e+001
19 1.8401e+001 -1.0547e+001 3.8000e+001 3.0000e+000 5.3761e+001 -4.0945e+001
-6.1538e+001 4.6868e+001
20 1.9069e+001 -1.0903e+001 3.8000e+001 3.0000e+000 6.1538e+001 -4.6868e+001
-6.9615e+001 5.3019e+001
21 1.9737e+001 -1.1258e+001 3.8000e+001 3.0000e+000 6.9615e+001 -5.3019e+001
-7.7990e+001 5.9397e+001
22 2.0405e+001 -1.1614e+001 3.8000e+001 3.0000e+000 7.7990e+001 -5.9397e+001
-8.6665e+001 6.6004e+001
23 2.1073e+001 -1.1969e+001 3.8000e+001 3.0000e+000 8.6665e+001 -6.6004e+001
-9.5638e+001 7.2838e+001
24 1.3812e+001 -7.8385e+000 3.8000e+001 3.0000e+000 9.5638e+001 -7.2838e+001
-1.0152e+002 7.7321e+001
25 2.1511e+001 -1.2020e+001 3.8000e+001 3.0000e+000 1.0152e+002 -7.7321e+001
-1.0589e+002 8.0649e+001
26 5.0739e+001 -2.7582e+001 3.8000e+001 3.0000e+000 1.0589e+002 -8.0649e+001
-8.2971e+001 6.3191e+001
27 2.0660e+001 -1.1564e+001 3.8000e+001 3.0000e+000 8.2971e+001 -6.3191e+001
-8.7153e+001 6.6376e+001
28 2.0242e+001 -1.1169e+001 3.8000e+001 3.0000e+000 8.7153e+001 -6.6376e+001
-9.1373e+001 6.9590e+001
29 1.9824e+001 -1.0774e+001 3.8000e+001 3.0000e+000 9.1373e+001 -6.9590e+001
-9.5632e+001 7.2834e+001
30 1.9405e+001 -1.0385e+001 3.8000e+001 3.0000e+000 9.5632e+001 -7.2834e+001
-9.9925e+001 7.6103e+001
31 1.8985e+001 -1.0021e+001 3.8000e+001 3.0000e+000 9.9925e+001 -7.6103e+001
-1.0423e+002 7.9383e+001
32 1.8566e+001 -9.6568e+000 3.8000e+001 3.0000e+000 1.0423e+002 -7.9383e+001
-1.0855e+002 8.2674e+001
33 2.1369e+001 -1.1018e+001 3.8000e+001 3.0000e+000 1.0855e+002 -8.2674e+001
-1.1105e+002 8.4574e+001
34 2.0649e+001 -1.0532e+001 3.8000e+001 3.0000e+000 1.1105e+002 -8.4574e+001
-1.1355e+002 8.6483e+001
35 1.9930e+001 -1.0045e+001 3.8000e+001 3.0000e+000 1.1355e+002 -8.6483e+001
-1.1607e+002 8.8400e+001
36 1.9211e+001 -9.5591e+000 3.8000e+001 3.0000e+000 1.1607e+002 -8.8400e+001
-1.1860e+002 9.0327e+001
37 2.0151e+001 -1.0211e+001 3.8000e+001 3.0000e+000 1.1860e+002 -9.0327e+001
-1.1417e+002 8.6950e+001
38 1.9183e+001 -9.7136e+000 3.8000e+001 3.0000e+000 1.1417e+002 -8.6950e+001
-1.0995e+002 8.3740e+001
39 1.8215e+001 -9.2149e+000 3.8000e+001 3.0000e+000 1.0995e+002 -8.3740e+001
-1.0596e+002 8.0699e+001
40 1.7247e+001 -8.7163e+000 3.8000e+001 3.0000e+000 1.0596e+002 -8.0699e+001
-1.0219e+002 7.7825e+001
41 1.6278e+001 -8.2177e+000 3.8000e+001 3.0000e+000 1.0219e+002 -7.7825e+001
-9.8634e+001 7.5120e+001
42 1.6180e+001 -8.2825e+000 3.8000e+001 3.0000e+000 9.8634e+001 -7.5120e+001
-9.1921e+001 7.0007e+001
43 2.5124e+001 -1.3725e+001 3.8000e+001 3.0000e+000 9.1921e+001 -7.0007e+001
-8.0640e+001 6.1415e+001
44 2.6126e+001 -1.4254e+001 3.8000e+001 3.0000e+000 8.0640e+001 -6.1415e+001
-6.7661e+001 5.1531e+001
45 2.3639e+001 -1.2918e+001 3.8000e+001 3.0000e+000 6.7661e+001 -5.1531e+001
-5.5898e+001 4.2572e+001
46 2.1152e+001 -1.1582e+001 3.8000e+001 3.0000e+000 5.5898e+001 -4.2572e+001
-4.5349e+001 3.4538e+001
47 1.8664e+001 -1.0246e+001 3.8000e+001 3.0000e+000 4.5349e+001 -3.4538e+001
-3.6014e+001 2.7428e+001
48 3.9294e+000 -2.1601e+000 3.8000e+001 3.0000e+000 3.6014e+001 -2.7428e+001
-3.4046e+001 2.5930e+001
49 1.6589e+001 -9.0828e+000 3.8000e+001 3.0000e+000 3.4046e+001 -2.5930e+001
-2.4689e+001 1.8803e+001
50 1.6570e+001 -9.0762e+000 3.8000e+001 3.0000e+000 2.4689e+001 -1.8803e+001
-1.5339e+001 1.1682e+001
51 1.6550e+001 -9.0697e+000 3.8000e+001 3.0000e+000 1.5339e+001 -1.1682e+001
-5.9963e+000 4.5668e+000
52 3.2015e-001 -2.4713e-001 3.8000e+001 3.0000e+000 5.9963e+000 -4.5668e+000
-5.7446e+000 4.3751e+000
53 7.1900e+000 -4.3139e+000 3.8000e+001 3.0000e+000 5.7446e+000 -4.3751e+000
4.8965e-005 -3.7292e-005

Section D-D (Upgraded Condition)

04/01/2007
16:33:14

3=METHOD 11=NO. OF SLIP SURFACES 1=NO. OF RADII 1=SIDE FUNCTION TYPE

| SLIP NO. | X-COORD. | Y-COORD. | RADIUS | ITERATION NO. | LAMBDA | FACTOR OF SAFETY (MOMENT) | (FORCE) |
|---|---|---|---|---|---|---|---|
| 1 | 24.519 | 21.568 | 18.465 | 1 | 0.0000 | 1.542 | 1.721 |
| 1 | 24.519 | 21.568 | 18.465 | 7 | 0.0000 | 1.641 | 1.537 |
| 1 | 24.519 | 21.568 | 18.465 | 10 | 0.7988 | 1.646 | 1.629 |
| 2 | 24.519 | 21.568 | 19.077 | 1 | 0.0000 | 1.485 | 1.700 |
| 2 | 24.519 | 21.568 | 19.077 | 5 | 0.0000 | 1.598 | 1.490 |
| 2 | 24.519 | 21.568 | 19.077 | 8 | 0.7259 | 1.606 | 1.592 |
| 3 | 24.519 | 21.568 | 19.888 | 1 | 0.0000 | 1.440 | 1.613 |
| 3 | 24.519 | 21.568 | 19.888 | 5 | 0.0000 | 1.579 | 1.462 |
| 3 | 24.519 | 21.568 | 19.888 | 7 | 0.7744 | 1.571 | 1.548 |
| 4 | 24.519 | 21.568 | 20.798 | 1 | 0.0000 | 1.438 | 1.633 |
| 4 | 24.519 | 21.568 | 20.798 | 4 | 0.0000 | 1.607 | 1.474 |
| 4 | 24.519 | 21.568 | 20.798 | 6 | 0.6375 | 1.588 | 1.570 |
| 5 | 24.519 | 21.568 | 22.080 | 1 | 0.0000 | 1.530 | 1.778 |
| 5 | 24.519 | 21.568 | 22.080 | 4 | 0.0000 | 1.748 | 1.590 |
| 5 | 24.519 | 21.568 | 22.080 | 6 | 0.6455 | 1.724 | 1.714 |
| 6 | 24.519 | 21.568 | 23.418 | 1 | 0.0000 | 1.599 | 1.976 |
| 6 | 24.519 | 21.568 | 23.418 | 4 | 0.0000 | 1.912 | 1.724 |
| 6 | 24.519 | 21.568 | 23.418 | 6 | 0.6204 | 1.899 | 1.905 |
| 7 | 24.519 | 21.568 | 20.300 | 1 | 0.0000 | 1.102 | 1.331 |
| 7 | 24.519 | 21.568 | 20.300 | 5 | 0.0000 | 1.270 | 1.170 |
| 7 | 24.519 | 21.568 | 20.300 | 11 | 0.8735 | 1.515 | 1.526 |
| 8 | 24.519 | 21.568 | 20.907 | 1 | 0.0000 | 1.112 | 1.345 |
| 8 | 24.519 | 21.568 | 20.907 | 5 | 0.0000 | 1.291 | 1.184 |
| 8 | 24.519 | 21.568 | 20.907 | 9 | 0.8541 | 1.484 | 1.494 |
| 9 | 24.519 | 21.568 | 21.785 | 1 | 0.0000 | 1.146 | 1.390 |
| 9 | 24.519 | 21.568 | 21.785 | 4 | 0.0000 | 1.338 | 1.215 |
| 9 | 24.519 | 21.568 | 21.785 | 7 | 0.7616 | 1.467 | 1.462 |
| 10 | 24.519 | 21.568 | 22.711 | 1 | 0.0000 | 1.164 | 1.393 |
| 10 | 24.519 | 21.568 | 22.711 | 4 | 0.0000 | 1.376 | 1.245 |
| 10 | 24.519 | 21.568 | 22.711 | 7 | 0.7629 | 1.475 | 1.483 |
| 11 | 24.519 | 21.568 | 23.872 | 1 | 0.0000 | 1.203 | 1.438 |
| 11 | 24.519 | 21.568 | 23.872 | 4 | 0.0000 | 1.437 | 1.296 |
| 11 | 24.519 | 21.568 | 23.872 | 7 | 0.7046 | 1.500 | 1.511 |

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| SUMMARY OF MINIMUM FACTORS OF SAFETY |

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MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
24.5190=X-COOR. 21.5680=Y-COOR. 20.2997=RADIUS 1.102=F.S.
7=SLIP#
MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
24.5190=X-COOR. 21.5680=Y-COOR. 20.2997=RADIUS 1.270=F.S.
7=SLIP#
FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
24.5190=X-COOR. 21.5680=Y-COOR. 20.2997=RADIUS 1.170=F.S.
7=SLIP#
MOMENT AND FORCE EQUILIBRIUM: MORGENSTERN-PRICE METHOD
24.5190=X-COOR. 21.5680=Y-COOR. 21.7855=RADIUS 1.467=F.S.
9=SLIP#

NORMAL TERMINATION OF SLOPE

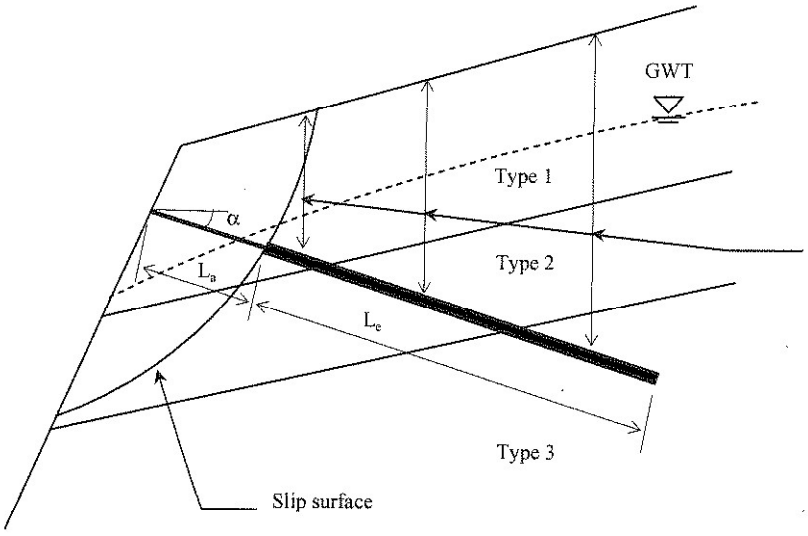
## SOIL NAIL DESIGN OF SECTIONS A-A & C-C

### DESIGN PARAMETERS

#### Soil Parameters

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type 1, | Colluvium | c ' = | 3.00 kPa | $\gamma$ = | 19.00 kN/m² | $\phi$ ' = | 33.00 ° | = | **0.58** | Radian |
| Type 2, | **CDG** | c ' = | 3.00 kPa | $\gamma$ = | 19.00 kN/m² | $\phi$ ' = | 38.00 ° | = | **0.66** | Radian |
| Type 3, | / | c ' = | 0.00 kPa | $\gamma$ = | 0.00 kN/m² | $\phi$ ' = | 0.00 ° | = | **0.00** | Radian |

Drillhole diameter (D) = 0.15 m
Soil nail inclination angle, $\alpha$ = 20.00 °
Unit weight of water, $\gamma_w$ = 9.81 kN/m²




$L_a$ : Length of soil nail in active zone
$L_e$ : Effective bond length

### A. Tension Failure of the Steel Bar

Yield stress $f_y$ = 460 MPa
Maximum tensile stess = 0.55 $f_y$ = 253 MPa
Allowable bond stress = Ultimate bond stress / SF = $[\beta (f_{cu})^{1/2}] / SF$ = 230 MPa

Maximum allowable tensile force of steel bar = $(0.55\ fy)(d - 4)^2 * \pi / 4$

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | Force per m Width | Force Required $T_r$ (kN) | Max. Allowable Tensile Force $T_{max}$ (kN) | FOS $T_{max} / T_r$ |
|---|---|---|---|---|---|---|---|---|
| **A** | 8.5 | 6.0 | T 25 | 2.0 | 13.00 | **26.00** | **79.66** | **3.06** |
| **B** | 10.0 | 7.0 | T 25 | 2.0 | 13.00 | **26.00** | **79.66** | **3.06** |
| **C** | 11.0 | 16.0 | T 40 | 2.0 | 80.00 | **160.00** | **234.11** | **1.46** |
| **D** | 12.5 | 15.0 | T 40 | 2.0 | 80.00 | **160.00** | **234.11** | **1.46** |
| **F** | 15.5 | 14.0 | T 40 | 2.0 | 80.00 | **160.00** | **234.11** | **1.46** |
| **I** | 20.0 | 14.0 | T 40 | 2.0 | 80.00 | **160.00** | **234.11** | **1.46** |
| **J** | 22.0 | 6.0 | T 25 | 2.0 | 10.00 | **20.00** | **79.66** | **3.98** |
| | | | | | | | **79.66** | |
| | | | | | | | | |
| | | | | | | | | |

The minimum factor of safety $F_{min}$ is **1.46** > 1 **O.K.**

## B. Bond Failure between Grout and Steel Bar

Cube strength of cement grout at 28 days $f_{cu}$ = 30 MPa
For type 2 deformed bar $\beta$ = 0.5
Factor of safety adopted SF = 3

Allowable bond stress = Ultimate bond stress / SF = $[\beta (f_{cu})^{1/2}] / SF$ = 912.87 kN/m$^2$

Maximum allowable force between steel / grout = $[\beta (f_{cu})^{1/2}] * \pi * (d - 4) * L_e / SF$

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | $L_a$ (m) | $L_e$ (m) | Force per m Width | Force Required $F_r$ (kN) | Max. Allowable Force $F_{max}$ (kN) | FOS $F_{max} / F_r$ |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 8.50 | 6.0 | 25 | 2 | 3.20 | 2.80 | 13.00 | 26.00 | **168.63** | **6.49** |
| B | 10.00 | 7.0 | 25 | 2 | 3.60 | 3.40 | 13.00 | 26.00 | **204.77** | **7.88** |
| C | 11.00 | 16.0 | 40 | 2 | 6.40 | 9.60 | 80.00 | 160.00 | **991.14** | **6.19** |
| D | 12.50 | 15.0 | 40 | 2 | 7.00 | 8.00 | 80.00 | 160.00 | **825.95** | **5.16** |
| F | 15.50 | 14.0 | 40 | 2 | 6.20 | 7.80 | 80.00 | 160.00 | **805.30** | **5.03** |
| G | 17.00 | 14.0 | 40 | 2 | 6.30 | 7.70 | 80.00 | 160.00 | **794.97** | **4.97** |
| H | 18.50 | 14.0 | 40 | 2 | 6.20 | 7.80 | 80.00 | 160.00 | **805.30** | **5.03** |
| I | 20.00 | 14.0 | 40 | 2 | 5.90 | 8.10 | 80.00 | 160.00 | **836.27** | **5.23** |
| J | 22.00 | 6.0 | 25 | 2 | 3.00 | 3.00 | 10.00 | 20.00 | **180.68** | **9.03** |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

The minimum factor of safety $F_{min}$ is **4.97** > 1 **O.K.**

## C. Shear Failure of Adjacent Ground

**Resisting Zone - for soil nail design**

Mobilisation Force, $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$

**Colluvium** $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 1.414 \quad + \quad 0.183 \ \sigma'_v ) \quad L_e$

**CDG** $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 1.414 \quad + \quad 0.220 \ \sigma'_v ) \quad L_e$

/ $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 0.000 \quad + \quad 0.000 \ \sigma'_v ) \quad L_e$

**Soilnail Schedule Table**

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | $L_n$ (m) | $L_e$ (m) | Force per m Width | Force Required $T_r$ (kN) |
|---|---|---|---|---|---|---|---|---|
| A | 8.50 | 6.0 | 25 | 2 | 3.20 | 2.80 | 13.00 | 26.00 |
| B | 10.00 | 7.0 | 25 | 2 | 3.60 | 3.40 | 13.00 | 26.00 |
| C | 11.00 | 16.0 | 40 | 2 | 6.40 | 9.60 | 80.00 | 160.00 |
| D | 12.50 | 15.0 | 40 | 2 | 7.00 | 8.00 | 80.00 | 160.00 |
| F | 15.50 | 14.0 | 40 | 2 | 6.20 | 7.80 | 80.00 | 160.00 |
| G | 17.00 | 14.0 | 40 | 2 | 6.30 | 7.70 | 80.00 | 160.00 |
| H | 18.50 | 14.0 | 40 | 2 | 6.20 | 7.80 | 80.00 | 160.00 |
| I | 20.00 | 14.0 | 40 | 2 | 5.90 | 8.10 | 80.00 | 160.00 |
| J | 22.00 | 6.0 | 25 | 2 | 3.00 | 3.00 | 10.00 | 20.00 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| Row No. | Resisting Zone | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Effective bond length in each layer (m) | | | Depth to mid-point of the effective bond length (m) | | | | | | | |
| | | | | Colluvium | | CDG | | | / | | |
| | Colluvium | CDG | / | Colluvium | WATER | Colluvium | CDG | WATER | Colluvium | CDG | / | WATER |
| A | 0.00 | 2.80 | 0.00 | 0.00 | 0.00 | 0.00 | 5.40 | 2.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| B | 0.00 | 3.40 | 0.00 | 0.00 | 0.00 | 0.00 | 5.10 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| C | 0.00 | 9.60 | 0.00 | 0.00 | 0.00 | 0.00 | 12.20 | 8.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| D | 0.00 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14.80 | 9.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| F | 0.00 | 7.80 | 0.00 | 0.00 | 0.00 | 0.00 | 15.00 | 7.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| G | 0.00 | 7.70 | 0.00 | 0.00 | 0.00 | 0.00 | 14.30 | 6.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| H | 0.00 | 7.80 | 0.00 | 0.00 | 0.00 | 0.00 | 13.90 | 6.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| I | 0.00 | 8.10 | 0.00 | 0.00 | 0.00 | 0.00 | 12.00 | 4.30 | 0.00 | 0.00 | 0.00 | 0.00 |
| J | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Row No. | Effective Vertical Stress $\sigma_v$ (kPa) | | | Force Mobilised $T_f$ (kN) | | | Embedded Rock Length | Bond in Rock | Total Force Mobilised | F.O.S. |
|---|---|---|---|---|---|---|---|---|---|---|
| | Colluvium | CDG | / | Colluvium | CDG | / | L (m) | T (kN) | $T_f$ (kN) | $T_f / T_r$ |
| A | 0.00 | 79.06 | 0.00 | 0.00 | 52.71 | 0.00 | 0.00 | 0.00 | 52.71 | 2.03 |
| B | 0.00 | 77.28 | 0.00 | 0.00 | 62.68 | 0.00 | 0.00 | 0.00 | 62.68 | 2.41 |
| C | 0.00 | 149.40 | 0.00 | 0.00 | 329.46 | 0.00 | 0.00 | 0.00 | 329.46 | 2.06 |
| D | 0.00 | 186.04 | 0.00 | 0.00 | 339.12 | 0.00 | 0.00 | 0.00 | 339.12 | 2.12 |
| F | 0.00 | 215.35 | 0.00 | 0.00 | 380.99 | 0.00 | 0.00 | 0.00 | 380.99 | 2.38 |
| G | 0.00 | 207.94 | 0.00 | 0.00 | 363.53 | 0.00 | 0.00 | 0.00 | 363.53 | 2.27 |
| H | 0.00 | 202.36 | 0.00 | 0.00 | 358.67 | 0.00 | 0.00 | 0.00 | 358.67 | 2.24 |
| I | 0.00 | 185.82 | 0.00 | 0.00 | 342.96 | 0.00 | 0.00 | 0.00 | 342.96 | 2.14 |
| J | 0.00 | 121.60 | 0.00 | 0.00 | 84.59 | 0.00 | 0.00 | 0.00 | 84.59 | 4.23 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

The minimum factor of safety $F_{min}$ is **2.03** > 2 **O.K.**

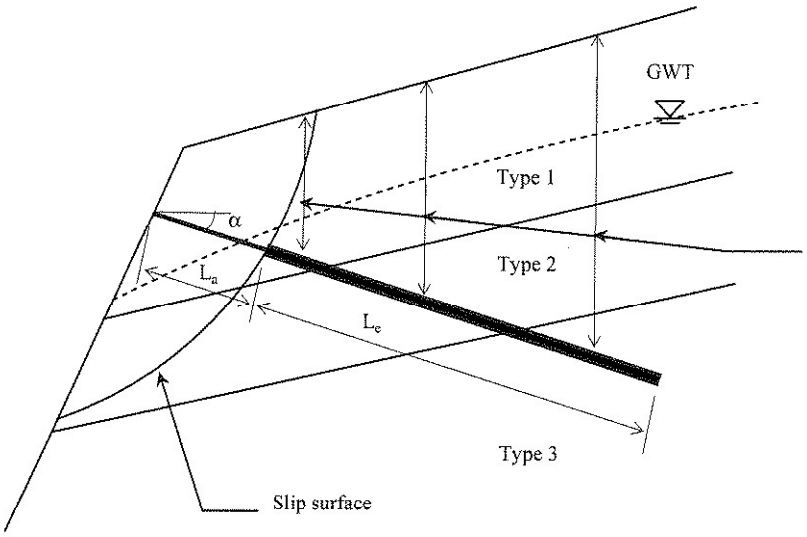
## SOIL NAIL DESIGN OF SECTION B-B

### DESIGN PARAMETERS

#### Soil Parameters

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type 1, | Colluvium | c ' = | 3.00 kPa | $\gamma$ = | 19.00 kN/m² | $\phi$ ' = | 33.00 ° | = | 0.58 | Radian |
| Type 2, | CDG | c ' = | 3.00 kPa | $\gamma$ = | 19.00 kN/m² | $\phi$ ' = | 38.00 ° | = | 0.66 | Radian |
| Type 3, | / | c ' = | 0.00 kPa | $\gamma$ = | 0.00 kN/m² | $\phi$ ' = | 0.00 ° | = | 0.00 | Radian |

Drillhole diameter (D) = 0.15 m
Soil nail inclination angle, $\alpha$ = 20.00 °
Unit weight of water, $\gamma_w$ = 9.81 kN/m²




Depth to mid-point of the effective bond length for each type of material

$L_a$ : Length of soil nail in active zone
$L_e$ : Effective bond length

### A. Tension Failure of the Steel Bar

Yield stress $f_y$ = 460 MPa
Maximum tensile stess = 0.55 $f_y$ = 253 MPa
Allowable bond stress = Ultimate bond stress / SF = $[\beta (f_{cu})^{1/2}] / SF$ = 230 MPa

Maximum allowable tensile force of steel bar = $(0.55\ fy)(d - 4)^2 * \pi / 4$

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | Force per m Width | Force Required $T_r$ (kN) | Max. Allowable Tensile Force $T_{max}$ (kN) | FOS $T_{max} / T_r$ |
|---|---|---|---|---|---|---|---|---|
| E | 14.0 | 20.0 | T 40 | 2.0 | 100.00 | 200.00 | 234.11 | 1.17 |
| F | 15.5 | 19.0 | T 40 | 2.0 | 100.00 | 200.00 | 234.11 | 1.17 |
| G | 17.0 | 18.0 | T 40 | 2.0 | 100.00 | 200.00 | 234.11 | 1.17 |
| H | 18.5 | 16.0 | T 40 | 2.0 | 100.00 | 200.00 | 234.11 | 1.17 |
| I | 20.0 | 15.0 | T 40 | 2.0 | 100.00 | 200.00 | 234.11 | 1.17 |
| L | 26.0 | 6.0 | T 25 | 2.0 | 16.00 | 32.00 | 79.66 | 2.49 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

The minimum factor of safety $F_{min}$ is 1.17 > 1 O.K.

## B. Bond Failure between Grout and Steel Bar

Cube strength of cement grout at 28 days $f_{cu}$ = 30 MPa
For type 2 deformed bar $\beta$ = 0.5
Factor of safety adopted SF = 3

Allowable bond stress = Ultimate bond stress / SF = $[\beta (f_{cu})^{1/2}] / SF$ = 912.87 kN/m$^2$

Maximum allowable force between steel / grout = $[\beta (f_{cu})^{1/2}] * \pi * (d - 4) * L_e / SF$

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | $L_a$ (m) | $L_e$ (m) | Force per m Width | Force Required $F_r$ (kN) | Max. Allowable Force $F_{max}$ (kN) | FOS $F_{max} / F_r$ |
|---|---|---|---|---|---|---|---|---|---|---|
| E | 14.00 | 20.0 | 40 | 2 | 10.30 | 9.70 | 100.00 | 200.00 | **1001.46** | **5.01** |
| F | 15.50 | 19.0 | 40 | 2 | 9.70 | 9.30 | 100.00 | 200.00 | **960.16** | **4.80** |
| G | 17.00 | 18.0 | 40 | 2 | 8.50 | 9.50 | 100.00 | 200.00 | **980.81** | **4.90** |
| H | 18.50 | 16.0 | 40 | 2 | 6.40 | 9.60 | 100.00 | 200.00 | **991.14** | **4.96** |
| I | 20.00 | 15.0 | 40 | 2 | 5.20 | 9.80 | 100.00 | 200.00 | **1011.78** | **5.06** |
| J | 22.00 | 6.0 | 25 | 2 | 2.00 | 4.00 | 16.00 | 32.00 | **240.90** | **7.53** |
| K | 24.00 | 6.0 | 25 | 2 | 2.80 | 3.20 | 16.00 | 32.00 | **192.72** | **6.02** |
| L | 26.00 | 6.0 | 25 | 2 | 2.90 | 3.10 | 16.00 | 32.00 | **186.70** | **5.83** |
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The minimum factor of safety $F_{min}$ is **4.80** > 1 **O.K.**

## C. Shear Failure of Adjacent Ground

**Resisting Zone - for soil nail design**

Mobilisation Force, $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$

**Colluvium** $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 1.414 \quad + \quad 0.183 \ \sigma'_v ) \quad L_e$

**CDG** $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 1.414 \quad + \quad 0.220 \ \sigma'_v ) \quad L_e$

/ $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 0.000 \quad + \quad 0.000 \ \sigma'_v ) \quad L_e$

**Soilnail Schedule Table**

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | $L_a$ (m) | $L_e$ (m) | Force per m Width | Force Required $T_r$ (kN) |
|---|---|---|---|---|---|---|---|---|
| E | 14.00 | 20.0 | 40 | 2 | 10.30 | 9.70 | 100.00 | 200.00 |
| F | 15.50 | 19.0 | 40 | 2 | 9.70 | 9.30 | 100.00 | 200.00 |
| G | 17.00 | 18.0 | 40 | 2 | 8.50 | 9.50 | 100.00 | 200.00 |
| H | 18.50 | 16.0 | 40 | 2 | 6.40 | 9.60 | 100.00 | 200.00 |
| I | 20.00 | 15.0 | 40 | 2 | 5.20 | 9.80 | 100.00 | 200.00 |
| J | 22.00 | 6.0 | 25 | 2 | 2.00 | 4.00 | 16.00 | 32.00 |
| K | 24.00 | 6.0 | 25 | 2 | 2.80 | 3.20 | 16.00 | 32.00 |
| L | 26.00 | 6.0 | 25 | 2 | 2.90 | 3.10 | 16.00 | 32.00 |
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| Row No. | Resisting Zone | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Effective bond length in each layer (m) | | | Depth to mid-point of the effective bond length (m) | | | | | | | | |
| | Colluvium | CDG | / | Colluvium | | CDG | | | / | | | |
| | | | | Colluvium | WATER | Colluvium | CDG | WATER | Colluvium | CDG | / | WATER |
| E | 0.00 | 9.70 | 0.00 | 0.00 | 0.00 | 0.00 | 16.50 | 11.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| F | 0.00 | 9.30 | 0.00 | 0.00 | 0.00 | 0.00 | 16.00 | 10.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| G | 0.00 | 9.50 | 0.00 | 0.00 | 0.00 | 0.00 | 15.80 | 9.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| H | 0.00 | 9.60 | 0.00 | 0.00 | 0.00 | 0.00 | 14.50 | 7.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| I | 0.00 | 9.80 | 0.00 | 0.00 | 0.00 | 0.00 | 13.10 | 6.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| J | 0.00 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.20 | 0.00 | 0.00 | 7.90 | 0.00 | 1.40 |
| K | 0.00 | 3.20 | 0.00 | 0.00 | 0.00 | 0.00 | 5.50 | 0.00 | 0.00 | 7.30 | 0.00 | 0.80 |
| L | 0.00 | 3.10 | 0.00 | 0.00 | 0.00 | 0.00 | 5.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
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| Row No. | Effective Vertical Stress $\sigma_v$ (kPa) | | | Force Mobilised $T_f$ (kN) | | | Embedded Rock Length | Bond in Rock | Total Force Mobilised | F.O.S. |
|---|---|---|---|---|---|---|---|---|---|---|
| | Colluvium | CDG | / | Colluvium | CDG | / | L (m) | T (kN) | $T_f$ (kN) | $T_f / T_r$ |
| E | 0.00 | 200.69 | 0.00 | 0.00 | 442.47 | 0.00 | 0.00 | 0.00 | 442.47 | 2.21 |
| F | 0.00 | 203.94 | 0.00 | 0.00 | 430.88 | 0.00 | 0.00 | 0.00 | 430.88 | 2.15 |
| G | 0.00 | 209.95 | 0.00 | 0.00 | 452.72 | 0.00 | 0.00 | 0.00 | 452.72 | 2.26 |
| H | 0.00 | 199.96 | 0.00 | 0.00 | 436.38 | 0.00 | 0.00 | 0.00 | 436.38 | 2.18 |
| I | 0.00 | 185.14 | 0.00 | 0.00 | 413.46 | 0.00 | 0.00 | 0.00 | 413.46 | 2.07 |
| J | 0.00 | 79.80 | 136.37 | 0.00 | 75.96 | 0.00 | 0.00 | 0.00 | 75.96 | 2.37 |
| K | 0.00 | 104.50 | 130.85 | 0.00 | 78.18 | 0.00 | 0.00 | 0.00 | 78.18 | 2.44 |
| L | 0.00 | 100.70 | 0.00 | 0.00 | 73.14 | 0.00 | 0.00 | 0.00 | 73.14 | 2.29 |
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The minimum factor of safety $F_{min}$ is **2.07** > 2 **O.K.**

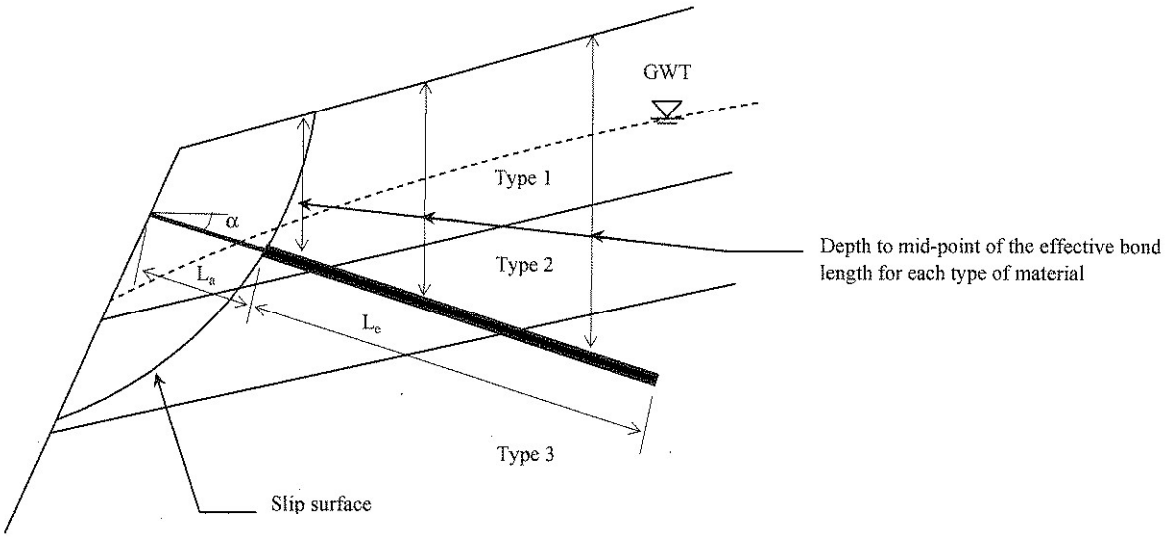
## SOIL NAIL DESIGN OF SECTION D-D

### DESIGN PARAMETERS

#### Soil Parameters

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type 1, | CDG | c ' = | 3.00 kPa | $\gamma$ = | 19.00 kN/m³ | $\phi$ ' = | 38.00 ° | = | 0.66 | Radian |
| Type 2, | / | c ' = | 0.00 kPa | $\gamma$ = | 0.00 kN/m³ | $\phi$ ' = | 0.00 ° | = | 0.00 | Radian |
| Type 3, | / | c ' = | 0.00 kPa | $\gamma$ = | 0.00 kN/m³ | $\phi$ ' = | 0.00 ° | = | 0.00 | Radian |

Drillhole diameter (D) = 0.15 m
Soil nail inclination angle, $\alpha$ = 20.00 °
Unit weight of water, $\gamma_w$ = 9.81 kN/m³




$L_a$ : Length of soil nail in active zone
$L_e$ : Effective bond length

### A. Tension Failure of the Steel Bar

Yield stress $f_y$ = 460 MPa
Maximum tensile stess = 0.55 $f_y$ = 253 MPa
Allowable bond stress = Ultimate bond stress / SF = [ $\beta$ $(f_{cu})^{1/2}$ ] / SF = 230 MPa

Maximum allowable tensile force of steel bar = (0.55 fy) $(d - 4)^2 * \pi / 4$

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | Force per m Width | Force Required $T_r$ (kN) | Max. Allowable Tensile Force $T_{max}$ (kN) | FOS $T_{max} / T_r$ |
|---|---|---|---|---|---|---|---|---|
| **M** | 11.0 | 8.0 | T 25 | 2.0 | 36.00 | **72.00** | **79.66** | **1.11** |
| **N** | 13.0 | 8.0 | T 25 | 2.0 | 28.00 | **56.00** | **79.66** | **1.42** |
| **P** | 15.0 | 8.0 | T 25 | 2.0 | 21.00 | **42.00** | **79.66** | **1.90** |
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The minimum factor of safety $F_{min}$ is 1.11 > 1 O.K.

## B. Bond Failure between Grout and Steel Bar

Cube strength of cement grout at 28 days $f_{cu}$ = 30 MPa
For type 2 deformed bar $\beta$ = 0.5
Factor of safety adopted SF = 3

Allowable bond stress = Ultimate bond stress / SF = $[\beta (f_{cu})^{1/2}] / SF$ = **912.87** kN/m$^2$

Maximum allowable force between steel / grout = $[\beta (f_{cu})^{1/2}] * \pi * (d - 4) * L_e / SF$

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | $L_a$ (m) | $L_e$ (m) | Force per m Width | Force Required $F_r$ (kN) | Max. Allowable Force $F_{max}$ (kN) | FOS $F_{max} / F_r$ |
|---|---|---|---|---|---|---|---|---|---|---|
| M | 11.00 | 8.0 | 25 | 2 | 4.00 | 4.00 | 36.00 | 72.00 | **240.90** | **3.35** |
| N | 13.00 | 8.0 | 25 | 2 | 4.20 | 3.80 | 28.00 | 56.00 | **228.86** | **4.09** |
| P | 15.00 | 8.0 | 25 | 2 | 4.20 | 3.80 | 21.00 | 42.00 | **228.86** | **5.45** |
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The minimum factor of safety $F_{min}$ is **3.35** > 1 **O.K.**

## C. Shear Failure of Adjacent Ground

**Resisting Zone - for soil nail design**

Mobilisation Force, $T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$

**CDG**

$T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 1.414 \quad + \quad 0.220 \ \sigma'_v ) \quad L_e$

/

$T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 0.000 \quad + \quad 0.000 \ \sigma'_v ) \quad L_e$

/

$T_f = (\pi D c' + 2 D \sigma_v' \tan\phi \cos\alpha) * L_e$
$= ( \quad 0.000 \quad + \quad 0.000 \ \sigma'_v ) \quad L_e$

**Soilnail Schedule Table**

| Row No. | Level (mPD) | Bar Length (m) | Bar Size | Horizontal Spacing (m) | $L_a$ (m) | $L_e$ (m) | Force per m Width | Force Required $T_r$ (kN) |
|---|---|---|---|---|---|---|---|---|
| M | 11.00 | 8.0 | 25 | 2 | 4.00 | 4.00 | 36.00 | 72.00 |
| N | 13.00 | 8.0 | 25 | 2 | 4.20 | 3.80 | 28.00 | 56.00 |
| P | 15.00 | 8.0 | 25 | 2 | 4.20 | 3.80 | 21.00 | 42.00 |
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| Row No. | Resisting Zone | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Effective bond length in each layer (m) | | | Depth to mid-point of the effective bond length (m) | | | | | | | |
| | CDG | / | / | CDG | | / | | | / | | |
| | | | | CDG | WATER | CDG | / | WATER | CDG | / | / | WATER |
| M | 4.00 | 0.00 | 0.00 | 8.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| N | 3.80 | 0.00 | 0.00 | 6.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| P | 3.80 | 0.00 | 0.00 | 5.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
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| Row No. | Effective Vertical Stress $\sigma_v$ (kPa) | | | Force Mobilised $T_f$ (kN) | | | Embedded Rock Length | Bond in Rock | Total Force Mobilised | F.O.S. |
|---|---|---|---|---|---|---|---|---|---|---|
| | CDG | / | / | CDG | / | / | L (m) | T (kN) | $T_f$ (kN) | $T_f / T_r$ |
| M | 159.60 | 0.00 | 0.00 | 146.26 | 0.00 | 0.00 | 0.00 | 0.00 | 146.26 | 2.03 |
| N | 131.10 | 0.00 | 0.00 | 115.10 | 0.00 | 0.00 | 0.00 | 0.00 | 115.10 | 2.06 |
| P | 100.70 | 0.00 | 0.00 | 89.65 | 0.00 | 0.00 | 0.00 | 0.00 | 89.65 | 2.13 |
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The minimum factor of safety $F_{min}$ is **2.03** > 2 **O.K.**

**Project :** Agreement No. CE23/2003(GE), 10-Year Extended LPM Project, Phase 4, Package G - Sha Tin
**Sub-title:** Feature No. 7SE-A/C352 Section A-A (Upgrading Condition)
**State:** Ultimate Limit State

**Prepared by :** PYWT **Date :** Dec 2006 **Page :**

**TRIAL WEDGE METHOD:**

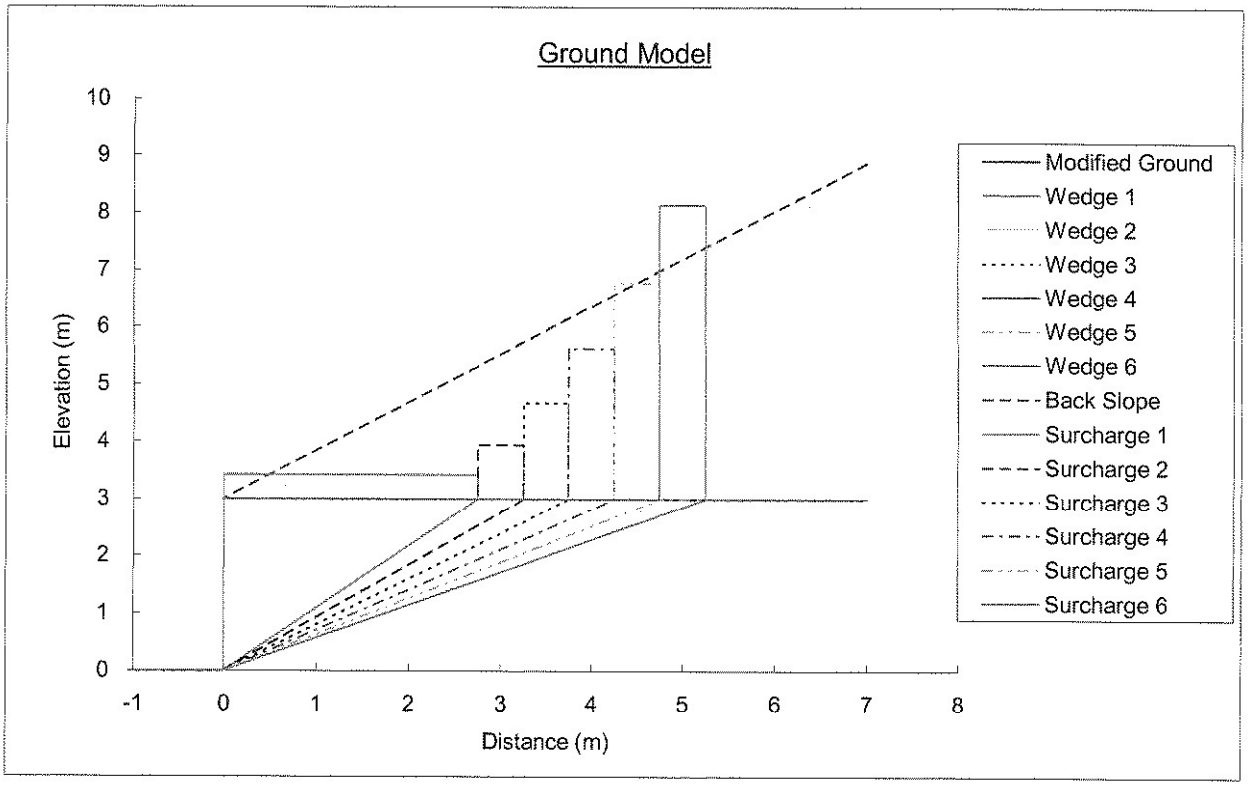
| | | | | | |
|---|---|---|---|---|---|
| $\gamma_s$ = | 19.00 | kN/m$^3$ | | | |
| c' = | 2.50 | kN/m$^2$ | | | |
| $\phi_s$' = | 33.07 | ° | $\delta$ = | 22.05 | ° |
| Water Height = | 1.00 | m | | | |
| Vertical Aagle of Inner Wall Face = | 0.00 | ° | | | |
| Vertical Angle of Outer Wall Face = | 0.00 | ° | | | |
| Back Slope Angle = | 40 | ° | | | |

**COORDINATES:**

| Wedge no. | x-coord. | y-coord. | Angle w/ vertical (degrees) | Resultant Force |
|---|---|---|---|---|
| origin | 0.00 | 0.00 | | |
| 0 | 0.00 | 3.00 | 0.00 | / |
| 1 | 1.00 | 3.00 | 18.43 | 14.55 |
| 2 | 1.50 | 3.00 | 26.57 | 20.99 |
| 3 | 2.00 | 3.00 | 33.69 | 24.32 |
| 4 | 2.50 | 3.00 | 39.81 | 24.43 |
| 5 | 3.00 | 3.00 | 45.00 | 21.28 |
| 6 | 3.50 | 3.00 | 49.40 | 14.81 |

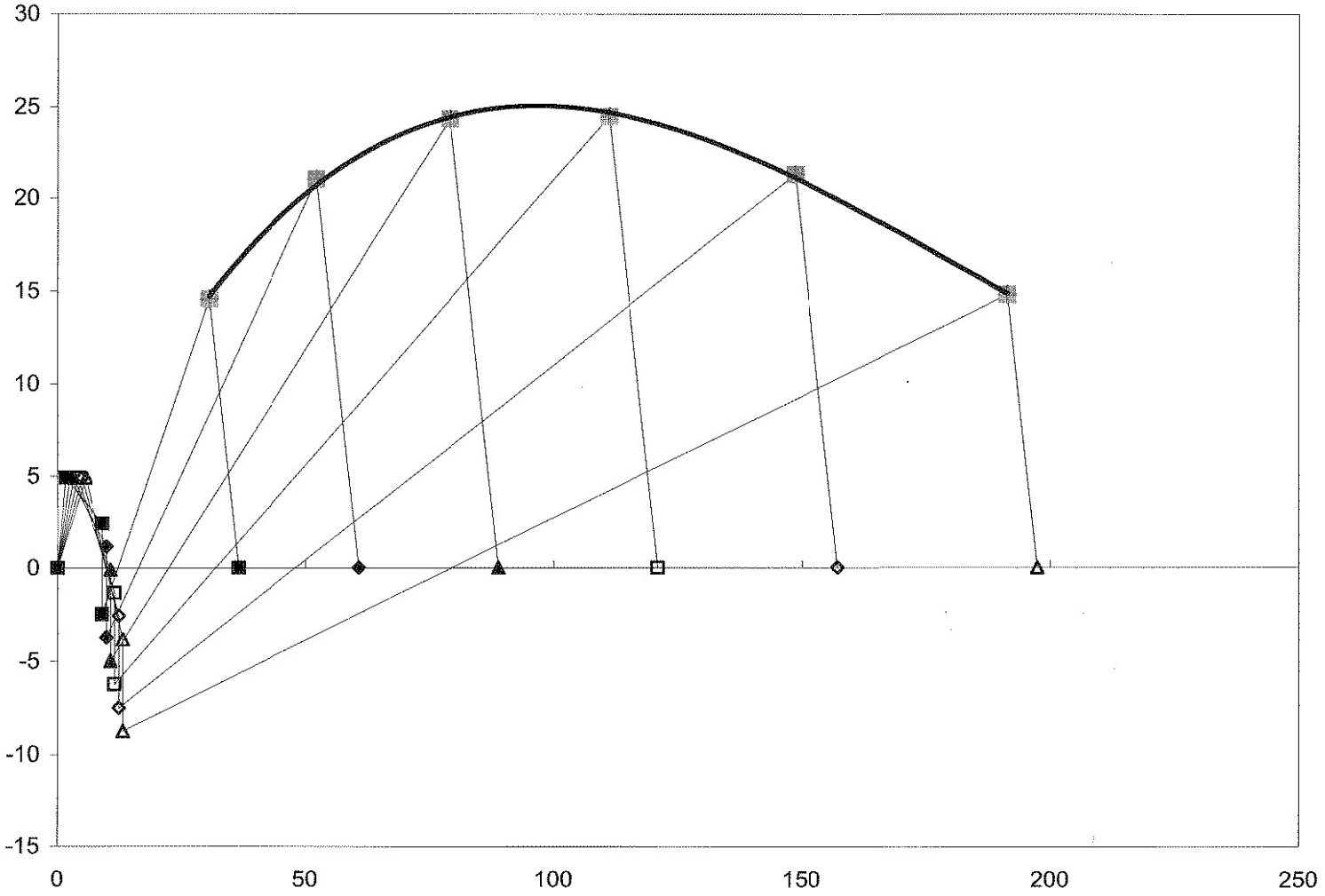
| Wedge no. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Area / sq.m | 1.50 | 2.25 | 3.00 | 3.75 | 4.50 | 5.25 |
| Weight, W / kN | 28.50 | 42.75 | 57.00 | 71.25 | 85.50 | 99.75 |
| Surcharge, Q / kN | 7.97 | 17.94 | 31.89 | 49.82 | 71.74 | 97.65 |
| U1 / kN | 5.17 | 5.48 | 5.90 | 6.38 | 6.94 | 7.54 |
| U2 / kN | 4.91 | 4.91 | 4.91 | 4.91 | 4.91 | 4.91 |
| l / m | 3.16 | 3.35 | 3.61 | 3.91 | 4.24 | 4.61 |
| C / kN | 7.91 | 8.39 | 9.01 | 9.76 | 10.61 | 11.52 |

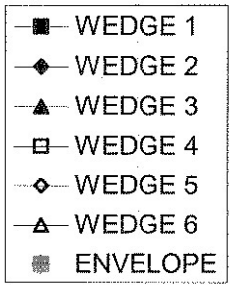
Maximum Force, Pa = 24.43 kN/m ka = 0.303

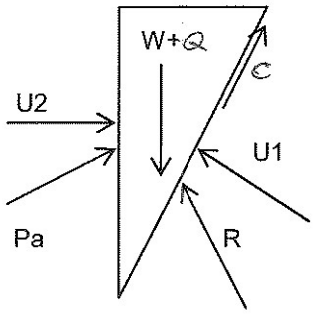


FORCE DIAGRAM
BY TRIAL WEDGE METHOD

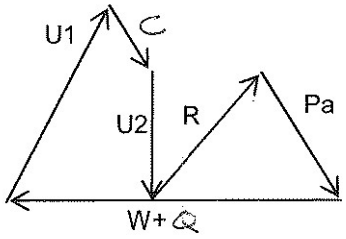
Feature No. 7SE-A/C352 Section A-A (Upgrading Condition)



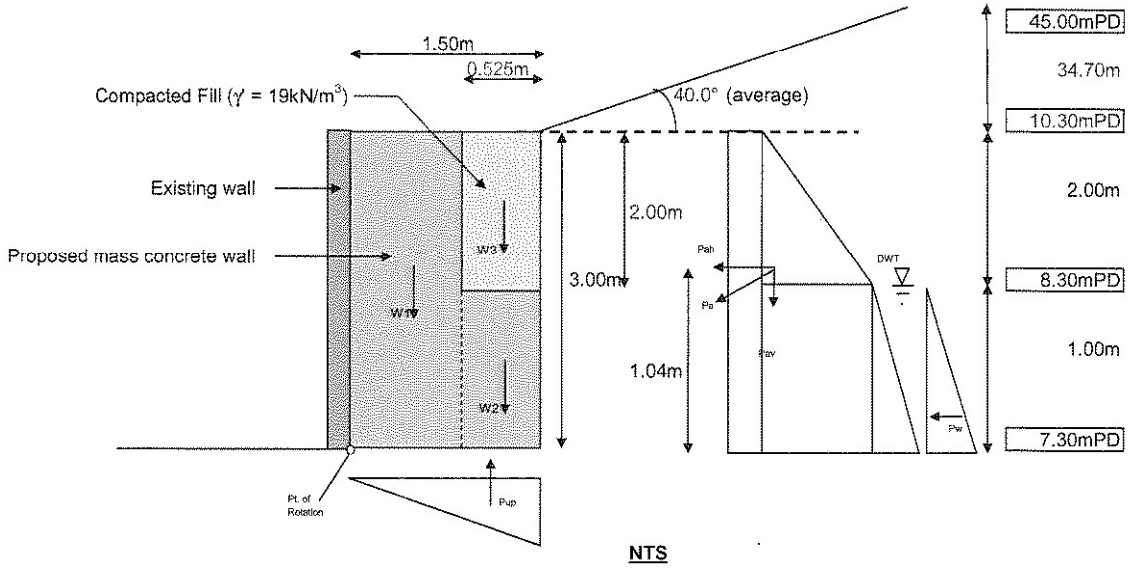

FORCE DIAGRAM




FORCE
POLYGON

**Ultimate Limit State Design**

| **Wall Back Soil: CDG** | | **Wall Dimensions:** | | **Base Material: CDG** | |
|---|---|---|---|---|---|
| $\gamma$ = | 19 kN/m$^3$ | Unit Weight = | 24 kN/m$^3$ | $\gamma$ = | 19 kN/m$^3$ |
| c' = | 2.50 kN/m$^2$ | Wall Height = | 3.00 m | c' = | 2.5 kN/m$^2$ |
| $\phi$' = | 33.1 ° | Design Water Table = | 1.00 m | $\phi$' = | 33.1 ° |
| Ka = | 0.28 (Horiz.) | Wall Base Width = | 1.50 m | $\delta_b = 2/3\ \phi'_b$ = | 22.07 ° |




**NTS**

Pa = 24.43 kN (from trial wedge method)
$\delta = 2/3\ \phi'$ = 22.07 ° (Table 14 of Geoguide 1)

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| Pah | / | 22.64 | 1.04 | 23.55 |
| Pw | 9.81 | 4.91 | 0.33 | 1.64 |
| Pup | 9.81 | / | 1.00 | 7.36 |
| | $F_h$ = | 27.55 | Mo = | 32.54 |

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| W1 | / | 70.2 | 0.4875 | 34.2 |
| W2 | / | 12.6 | 1.2375 | 15.6 |
| W3 | / | 20.0 | 1.2375 | 24.7 |
| Pav | / | 9.2 | 1.50 | 13.8 |
| Pup | -9.81 | -7.4 | / | / |
| cL | / | 3.8 | / | / |
| | N = W1 + Pav +Pup = | 104.57 | Mr = | 88.27 |

FOS of Sliding = $(N \tan \delta_b + cL) / F_h$ = **1.675** > 1.0

FOS of Overturning = Mr / Mo = **2.712** > 1.0

**Check Eccentricity**

e = B/2 - (Mr -Mo)/N = 1.5/2 - (88.27-32.54)/104.57 = **0.217m**

**Check Bearing Capacity**

q = N/B x (1± 6e/B) = 104.57/1.5 x (1+6x0.217/1.5) = **130.2kPa** < **293.7kPa** **O.K.**

**Wall Base Pressure**

q1 = 130kPa
q2 = 9kPa

**ULTIMATE BEARING CAPACITY (VESIC FORMULA)**
**(Refer to P.239 of GEOGUIDE 1)**

| | | | |
|---|---|---|---|
| Friction angle of soil | ø' = | 33.10 | ° |
| Cohesion | c' = | 2.50 | kPa |
| Density of soil | γ = | 19.00 | kN/m³ |
| Depth of embedment of foundation | d = | 0 | m |
| Angle of slope in front of foundation | ß = | 0 | ° |
| Angle of foundation base tilt | μ = | 0 | rad |
| Normal component of resultant load | Qn = | 104.57 | kN/m |
| Shear component of resultant load | Qs = | 27.55 | kN/m |
| Width of foundation base | B = | 1.50 | m |
| Length of foundation | L = | 20.00 | m |
| Eccentricity of resultant load in B direction | eb = | 0.217 | m |
| Eccentricity of resultant load in L direction | el = | 0.000 | m |
| Factor of safety | F.O.S. = | 1.00 | |

Effectiive width of foundation base $B' = B - 2eb = 1.066$ m
Effectiive length of foundation base $L' = L - 2el = 20.00$ m

$Nc = (Nq - 1) \cot ø'$ = 38.97
$Ng = 2 (Nq + 1) \tan ø'$ = 35.73
$Nq = \exp (pi \tan ø') \tan^2(pi/4 + ø'/2)$ = 26.41

Effective surcharge $q' = \gamma d \cos ß$ = 0.00 kPa

$$m = \frac{2+B'/L'}{1+B'/L'} = 1.949$$

Shape Factors :

$$Sc = 1 + \frac{B' Nq}{L' Nc} = 1.036$$

$$Sg = 1 - \frac{0.4 B'}{L'} = 0.979$$

$$Sq = 1 + \frac{B' \tan ø'}{L} = 1.035$$

Inclination Factors :

$$ic = iq - \frac{1 - iq}{Nc \tan ø'} = 0.722$$

$$ig = \left(1 - \frac{Qs}{Qn + B' L' c' \cot ø'}\right)^{m+1} = 0.624$$

$$iq = ig^{m/(m+1)} = 0.732$$

Tilt Factors :

$$tc = tq - \frac{1 - tq}{Nc \tan ø'} = 1.000$$

$tg = (1 - \mu \tan ø')^2$ = 1.000

$tq = tg$ = 1.000

Ground Slope Factors :

$Gc = \exp(-2ß \tan ø')$ = 1.000

$Gg = (1 - \tan ß)^2$ = 1.000

$Gq = Gg$ = 1.000

$qult = c' Nc Sc ic tc Gc + ½ \gamma B' Ng Sg ig tg Gg + q' Nq Sq iq tq Gq$

= 72.84+ 220.90+ 0.00 = 293.7 kPa

A factor of safety of 1.0 to be adopted

Therefore the bearing capacity $= \frac{293.7}{1.0}$

= 293.7 kPa

**Project :** Agreement No. CE23/2003(GE), 10-Year Extended LPM Project, Phase 4, Package G - Sha Tin
**Sub-title:** Feature No. 7SE-A/C352 Section A-A (Upgrading Condition)
**State:** Serviceability Limit State

**Prepared by :** PYWT **Date :** Dec 2006 **Page :**

**TRIAL WEDGE METHOD:**

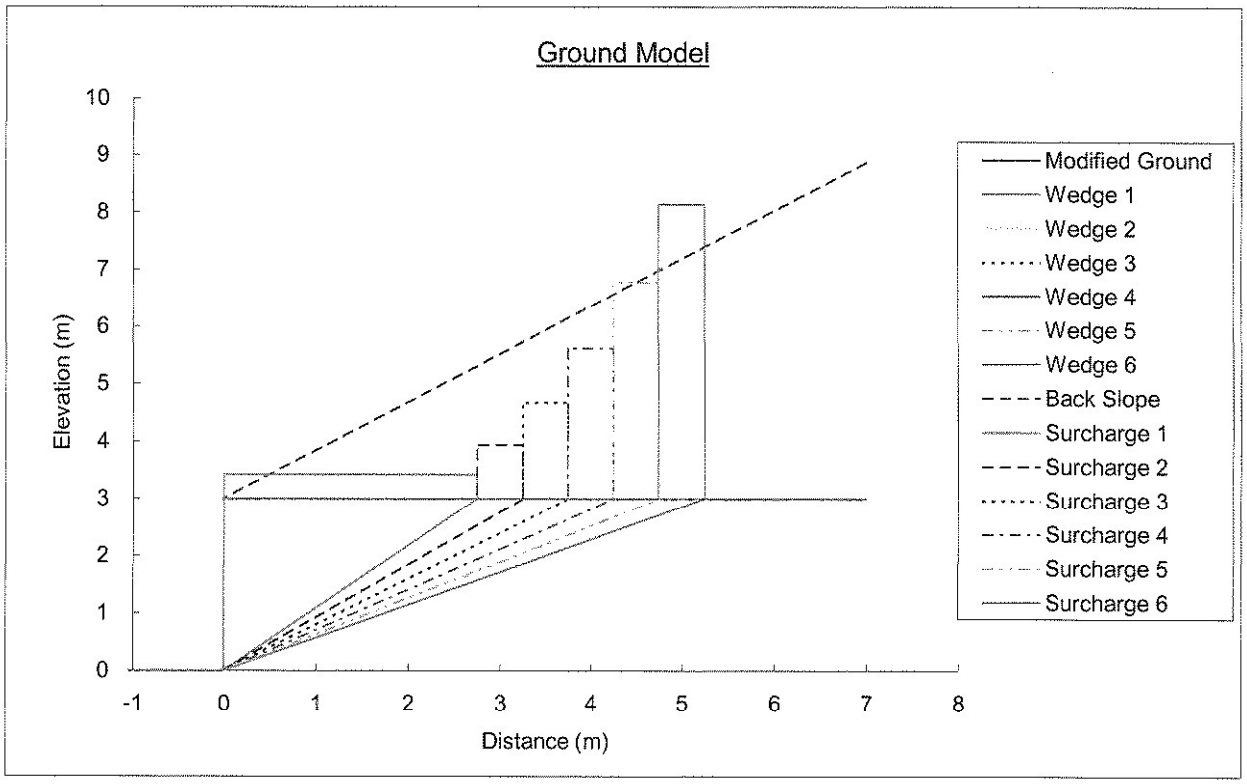
| | | | | | |
|---|---|---|---|---|---|
| $\gamma_s$ = | 19.00 | kN/m$^3$ | | | |
| c' = | 3.00 | kN/m$^2$ | | | |
| $\phi_s$' = | 38.00 | ° | $\delta$ = | 25.33 | ° |
| Water Height = | 1.00 | m | | | |
| Vertical Aagle of Inner Wall Face = | 0.00 | ° | | | |
| Vertical Angle of Outer Wall Face = | 0.00 | ° | | | |
| Back Slope Angle = | 40 | ° | | | |

**COORDINATES:**

| Wedge no. | x-coord. | y-coord. | Angle w/ vertical (degrees) | Resultant Force |
|---|---|---|---|---|
| origin | 0.00 | 0.00 | | |
| 0 | 0.00 | 3.00 | 0.00 | / |
| 1 | 1.00 | 3.00 | 18.43 | 10.76 |
| 2 | 1.50 | 3.00 | 26.57 | 15.44 |
| 3 | 2.00 | 3.00 | 33.69 | 16.73 |
| 4 | 2.50 | 3.00 | 39.81 | 14.37 |
| 5 | 3.00 | 3.00 | 45.00 | 8.13 |
| 6 | 3.50 | 3.00 | 49.40 | -2.15 |

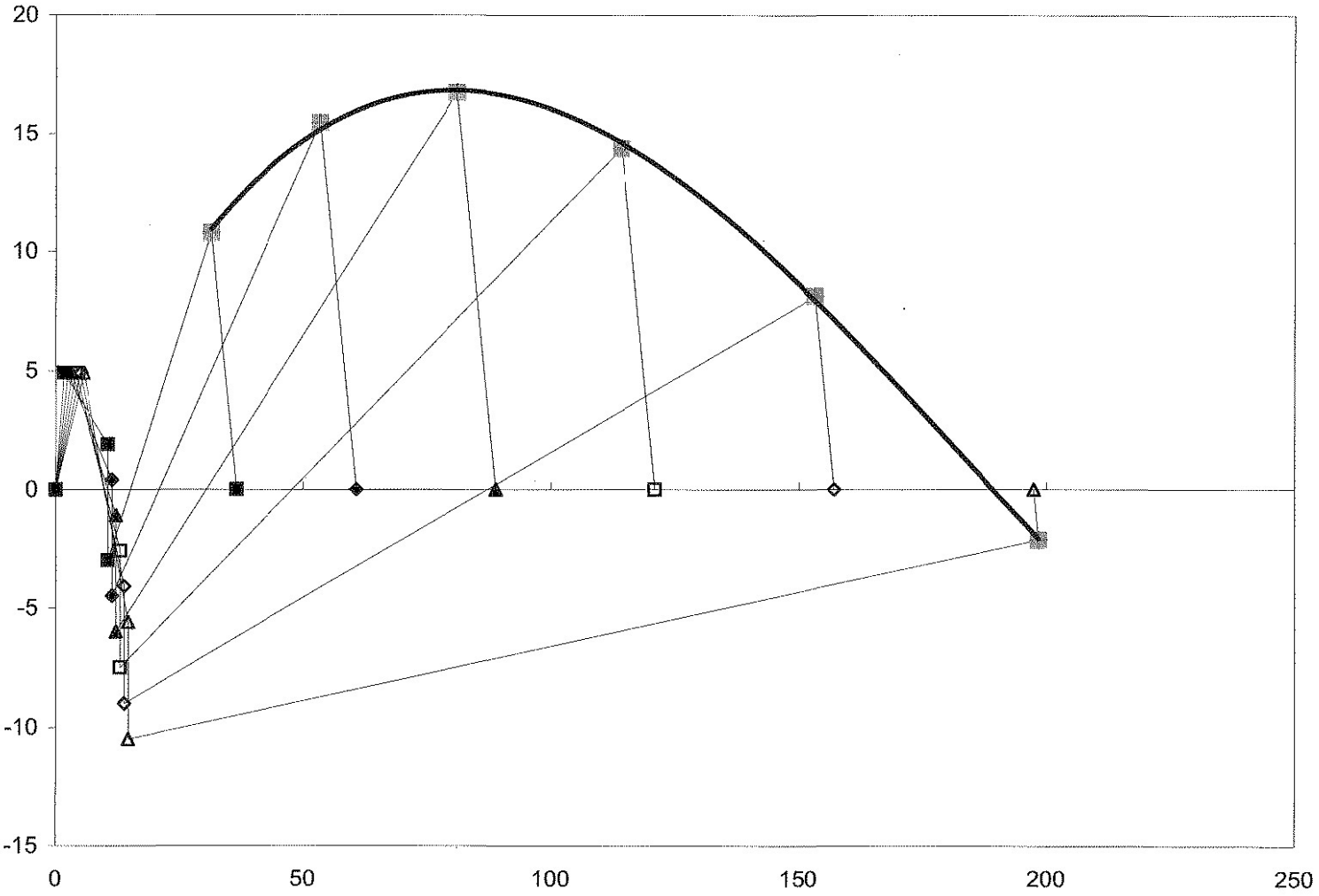
| Wedge no. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Area / sq.m | 1.50 | 2.25 | 3.00 | 3.75 | 4.50 | 5.25 |
| Weight, W / kN | 28.50 | 42.75 | 57.00 | 71.25 | 85.50 | 99.75 |
| Surcharge, Q / kN | 7.97 | 17.94 | 31.89 | 49.82 | 71.74 | 97.65 |
| U1 / kN | 5.17 | 5.48 | 5.90 | 6.38 | 6.94 | 7.54 |
| U2 / kN | 4.91 | 4.91 | 4.91 | 4.91 | 4.91 | 4.91 |
| l / m | 3.16 | 3.35 | 3.61 | 3.91 | 4.24 | 4.61 |
| C / kN | 9.49 | 10.06 | 10.82 | 11.72 | 12.73 | 13.83 |

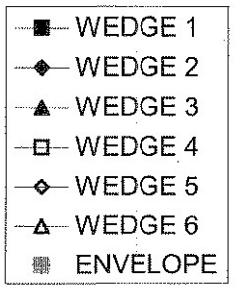
Maximum Force, Pa = 16.73 kN/m ka = 0.208

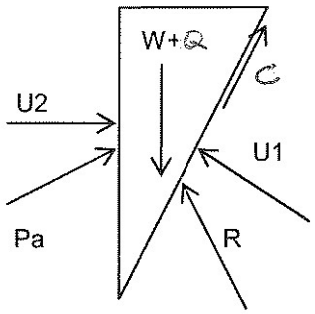


FORCE DIAGRAM
BY TRIAL WEDGE METHOD

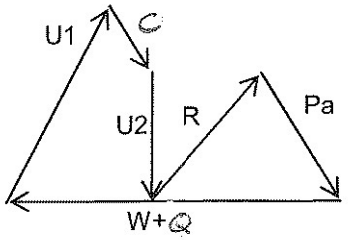
Feature No. 7SE-A/C352 Section A-A (Upgrading Condition)



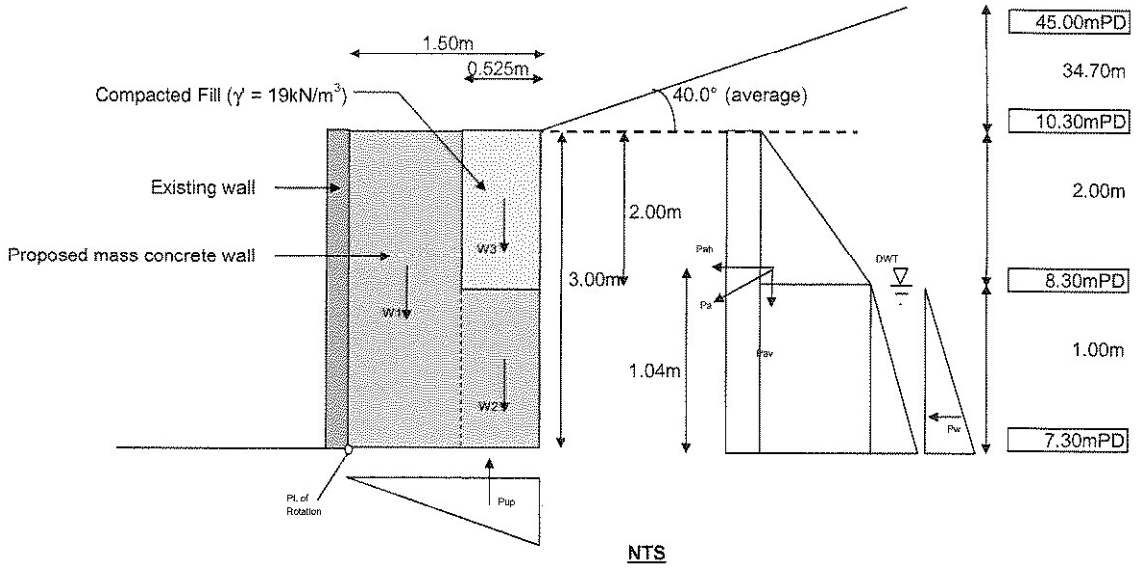

FORCE DIAGRAM




FORCE
POLYGON

**Serviceability Limit State Design**

| **Wall Back Soil: CDG** | | **Wall Dimensions:** | | **Base Material: CDG** | |
|---|---|---|---|---|---|
| $\gamma$ = | 19 kN/m$^3$ | Unit Weight = | 24 kN/m$^3$ | $\gamma$ = | 19 kN/m$^3$ |
| c' = | 2.00 kN/m$^2$ | Wall Height = | 3.00 m | c' = | 2 kN/m$^2$ |
| $\phi$' = | 38 ° | Design Water Table = | 1.00 m | $\phi$' = | 38 ° |
| Ka = | 0.19 (Horiz.) | Wall Base Width = | 1.50 m | $\delta_b$ = 2/3 $\phi'_b$ = | 25.33 ° |




NTS

Pa = 16.73 kN (from trial wedge method)
$\delta$ = 2/3 $\phi$' = 25.33 ° (Table 14 of Geoguide 1)

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| Pah | / | 15.12 | 1.04 | 15.77 |
| Pw | 9.81 | 4.91 | 0.33 | 1.64 |
| | 9.81 | / | 1.00 | 7.36 |
| | $F_h$ = | 20.03 | Mo = | 24.76 |

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| W1 | / | 108.0 | 0.4875 | 52.7 |
| W2 | / | 12.6 | 1.2375 | 15.6 |
| W3 | / | 20.0 | 1.2375 | 24.7 |
| Pav | / | 7.2 | 1.50 | 10.7 |
| Pup | -9.81 | -7.4 | / | / |
| cL | / | 3.0 | / | / |
| | N = W1 + Pav +Pup = | 140.35 | Mr = | 103.67 |

FOS of Sliding = $(N \tan \delta_b + cL) / F_h$ = **3.468** > 1.5

FOS of Overturning = Mr / Mo = **4.187** > 2.0

**Check Eccentricity**

e = B/2 - (Mr -Mo)/N = 1.5/2 - (103.67-24.76)/140.35 = **0.188m** < B/6 = **0.25m** O.K.

**Project :** Agreement No. CE23/2003(GE), 10-Year Extended LPM Project, Phase 4, Package G - Sha Tin
**Sub-title:** Feature No. 7SE-A/C352 Section D-D (Upgrading Condition)
**State:** Ultimate Limit State

**Prepared by :** PYWT **Date :** Dec 2006 **Page :**

## TRIAL WEDGE METHOD:

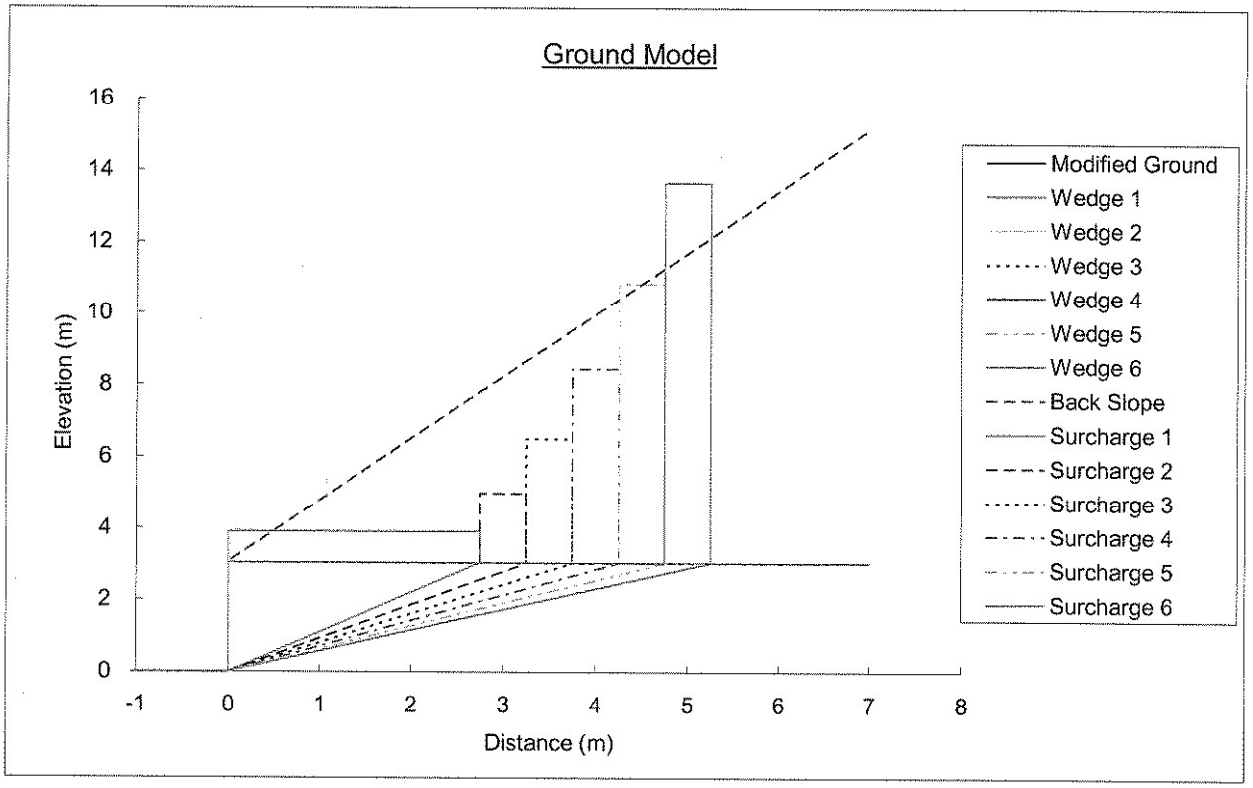
| | | | | | |
|---|---|---|---|---|---|
| $\gamma_s$ = | 19.00 | kN/m$^3$ | | | |
| c' = | 2.50 | kN/m$^2$ | | | |
| $\phi_s$' = | 33.10 | ° | $\delta$ = | 22.07 | ° |
| Water Height = | 0.67 | m | | | |
| Vertical Aagle of Inner Wall Face = | 0.00 | ° | | | |
| Vertical Angle of Outer Wall Face = | 0.00 | ° | | | |
| Back Slope Angle = | 60 | ° | | | |

**COORDINATES:**

| Wedge no. | x-coord. | y-coord. | Angle w/ vertical (degrees) | Resultant Force |
|---|---|---|---|---|
| origin | 0.00 | 0.00 | | |
| 0 | 0.00 | 3.04 | 0.00 | / |
| 1 | 1.00 | 3.04 | 18.21 | 20.49 |
| 2 | 1.50 | 3.04 | 26.26 | 31.20 |
| 3 | 2.00 | 3.04 | 33.34 | 38.19 |
| 4 | 2.50 | 3.04 | 39.43 | 40.68 |
| 5 | 3.00 | 3.04 | 44.62 | 38.10 |
| 6 | 3.50 | 3.04 | 49.02 | 30.03 |

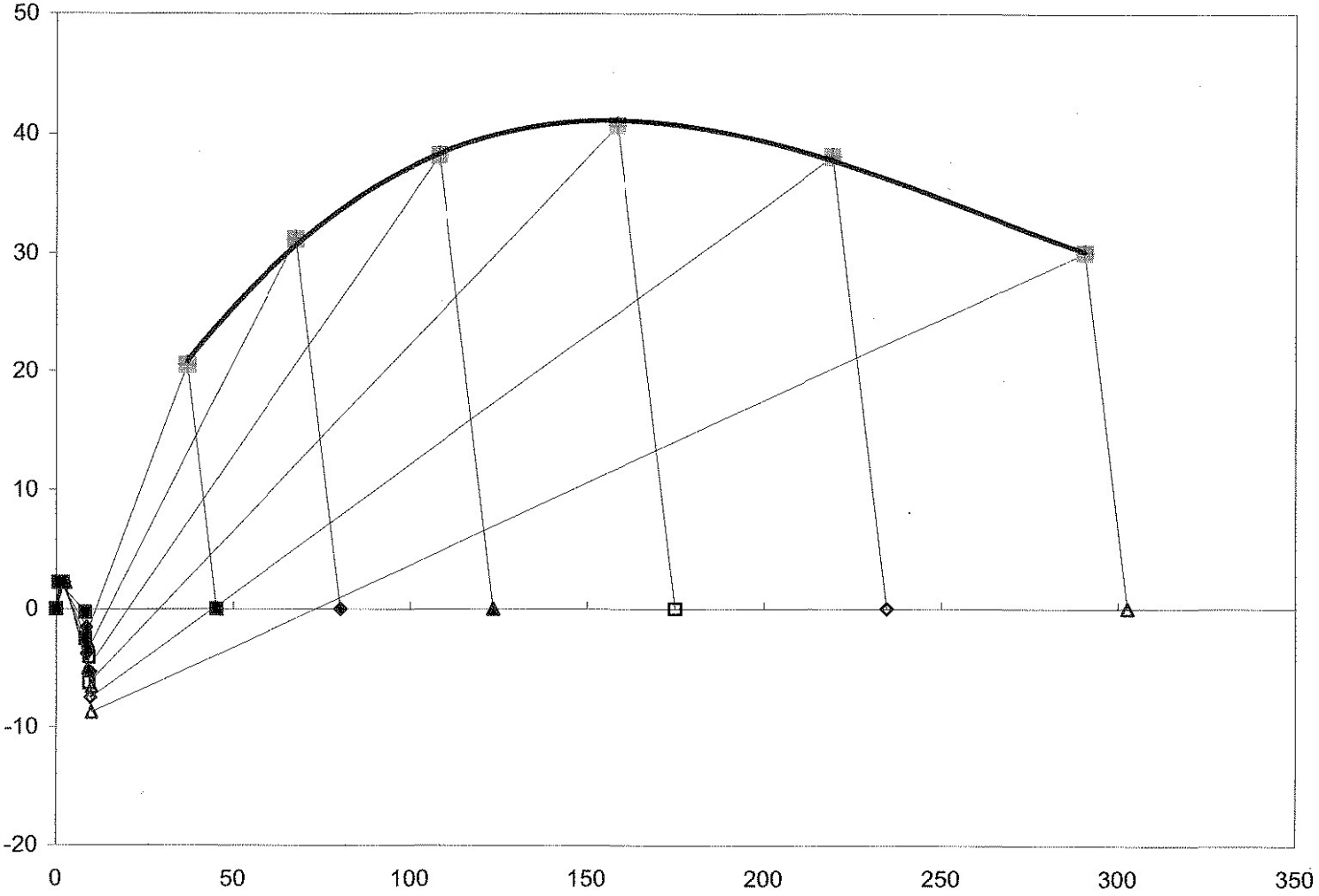
| Wedge no. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Area / sq.m | 1.52 | 2.28 | 3.04 | 3.80 | 4.56 | 5.32 |
| Weight, W / kN | 28.88 | 43.32 | 57.76 | 72.20 | 86.64 | 101.08 |
| Surcharge, Q / kN | 16.45 | 37.02 | 65.82 | 102.84 | 148.09 | 201.57 |
| U1 / kN | 2.32 | 2.46 | 2.64 | 2.85 | 3.09 | 3.36 |
| U2 / kN | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 |
| l / m | 3.20 | 3.39 | 3.64 | 3.94 | 4.27 | 4.64 |
| C / kN | 8.00 | 8.47 | 9.10 | 9.84 | 10.68 | 11.59 |

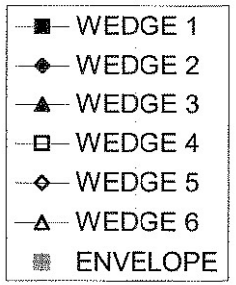
Maximum Force, Pa = 40.68 kN/m ka = 0.475

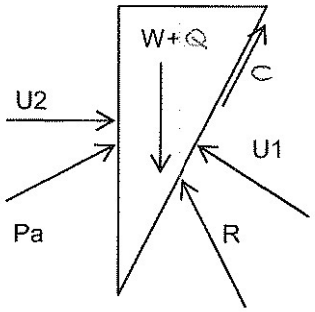


FORCE DIAGRAM
BY TRIAL WEDGE METHOD

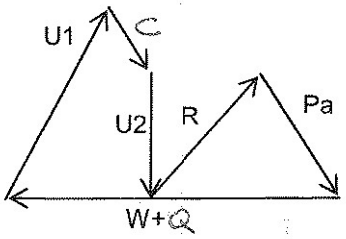
Feature No. 7SE-A/C352 Section D-D (Upgrading Condition)



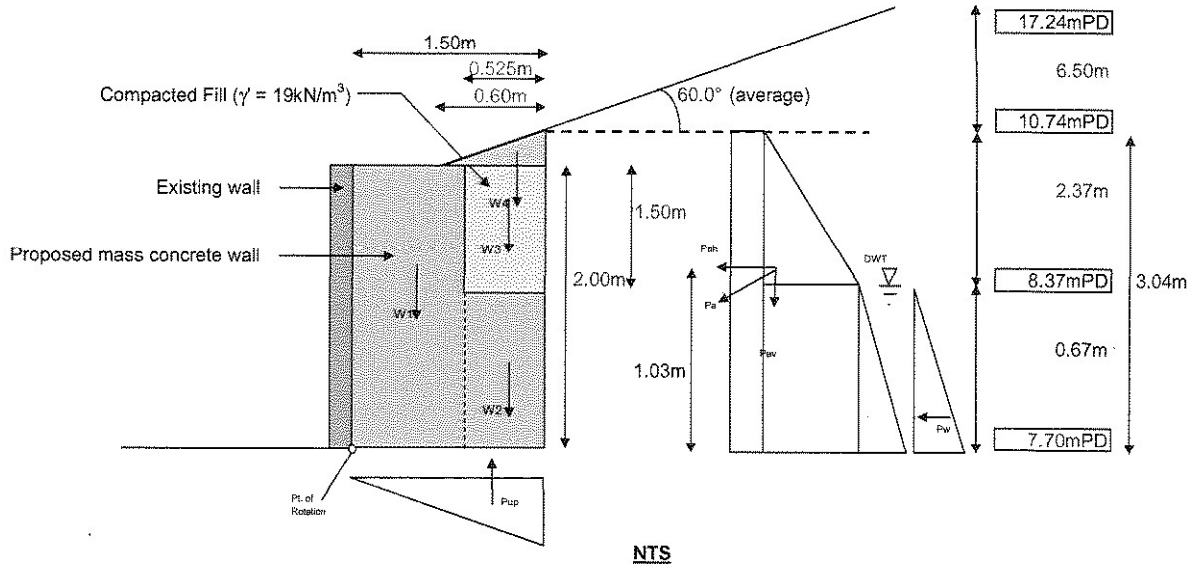

FORCE DIAGRAM




FORCE
POLYGON

**Ultimate Limit State Design**

| **Wall Back Soil: CDG** | | **Wall Dimensions:** | | **Base Material: CDG** | |
|---|---|---|---|---|---|
| $\gamma$ = | 19 kN/m$^3$ | Unit Weight = | 24 kN/m$^3$ | $\gamma$ = | 19 kN/m$^3$ |
| c' = | 2.50 kN/m$^2$ | Wall Height = | 2.00 m | c' = | 2.5 kN/m$^2$ |
| $\phi$' = | 33.1 ° | Design Water Table = | 0.67 m | $\phi$' = | 33.1 ° |
| Ka = | 0.475 | Wall Base Width = | 1.50 m | $\delta_b$ = 2/3 $\phi'_b$ = | 22.07 ° |
| Ka = | 0.44 (Horiz.) | | | | |




**NTS**

Pa = 40.68 kN (from trial wedge method)
$\delta$ = 2/3 $\phi$' = 22.07 ° (Table 14 of Geoguide 1)

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| Pah | / | 37.70 | 1.03 | 38.95 |
| Pw | 6.57 | 2.20 | 0.22 | 0.49 |
| Pup | 6.57 | / | 1.00 | 4.93 |
| | $F_h$ = | 39.90 | Mo = | 44.37 |

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| W1 | / | 72.0 | 0.4875 | 35.1 |
| W2 | / | 6.3 | 1.2375 | 7.8 |
| W3 | / | 15.0 | 1.2375 | 18.5 |
| W4 | / | 7.5 | 1.3 | 9.7 |
| Pav | / | 15.3 | 1.50 | 22.9 |
| Pup | -6.57 | -4.9 | / | / |
| cL | / | 3.8 | / | / |
| | N = W1 + Pav +Pup = | 111.10 | Mr = | 94.06 |

FOS of Sliding = $(N \tan \delta_b + cL) / F_h$ = **1.223** > 1.0

FOS of Overturning = Mr / Mo = **2.120** > 1.0

**Check Eccentricity**

e = B/2 - (Mr -Mo)/N = 1.5/2 - (94.06-44.37)/111.10 = **0.303m**

**Check Bearing Capacity**

q = N/B x (1± 6e/B) = 111.10/1.5 x (1+6x0.303/1.5) = **163.7kPa** < **201.8kPa** **O.K.**

**ULTIMATE BEARING CAPACITY (VESIC FORMULA)**
**(Refer to P.239 of GEOGUIDE 1)**

| | | | |
|---|---|---|---|
| Friction angle of soil | ø' = | 33.10 | ° |
| Cohesion | c' = | 2.50 | kPa |
| Density of soil | γ = | 19.00 | kN/m$^3$ |
| Depth of embedment of foundation | d = | 0 | m |
| Angle of slope in front of foundation | ß = | 0 | ° |
| Angle of foundation base tilt | μ = | 0 | rad |
| Normal component of resultant load | Qn = | 111.10 | kN/m |
| Shear component of resultant load | Qs = | 39.90 | kN/m |
| Width of foundation base | B = | 1.50 | m |
| Length of foundation | L = | 20.00 | m |
| Eccentricity of resultant load in B direction | eb = | 0.303 | m |
| Eccentricity of resultant load in L direction | el = | 0.000 | m |
| Factor of safety | F.O.S. = | 1.00 | |

Effectiive width of foundation base $B' = B - 2eb =$ 0.895 m
Effectiive length of foundation base $L' = L - 2el =$ 20.00 m

$Nc = (Nq - 1) \cot ø'$ = 38.97
$Ng = 2 (Nq + 1) \tan ø'$ = 35.73
$Nq = \exp (pi \tan ø') \tan^2(pi/4 + ø'/2)$ = 26.41

Effective surcharge $q' = \gamma d \cos ß =$ 0.00 kPa

$$m = \frac{2+B'/L'}{1+B'/L'} = 1.957$$

**Shape Factors :**

$$Sc = 1 + \frac{B' Nq}{L' Nc} = 1.030$$

$$Sg = 1 - \frac{0.4 B'}{L'} = 0.982$$

$$Sq = 1 + \frac{B' \tan ø'}{L} = 1.029$$

**Inclination Factors :**

$$ic = iq - \frac{1 - iq}{Nc \tan ø'} = 0.597$$

$$ig = \left(1 - \frac{Qs}{Qn + B' L' c' \cot ø'}\right)^{m+1} = 0.476$$

$$iq = ig^{m/(m+1)} = 0.612$$

**Tilt Factors :**

$$tc = tq - \frac{1 - tq}{Nc \tan ø'} = 1.000$$

$tg = (1 - \mu \tan ø')^2$ = 1.000

$tq = tg$ = 1.000

**Ground Slope Factors :**

$Gc = \exp(-2ß \tan ø')$ = 1.000

$Gg = (1 - \tan ß)^2$ = 1.000

$Gq = Gg$ = 1.000

$qult = c' Nc Sc ic tc Gc + ½ \gamma B' Ng Sg ig tg Gg + q' Nq Sq iq tq Gq$

= 59.88+ 141.95+ 0.00 = 201.8 kPa

A factor of safety of 1.0 to be adopted

Therefore the bearing capacity $= \frac{201.8}{1.0}$

= 201.8 kPa

**Project :** Agreement No. CE23/2003(GE), 10-Year Extended LPM Project, Phase 4, Package G - Sha Tin
**Sub-title:** Feature No. 7SE-A/C352 Section D-D (Upgrading Condition)
**State:** Serviceability Limit State

**Prepared by :** PYWT **Date :** Dec 2006 **Page :**

**TRIAL WEDGE METHOD:**

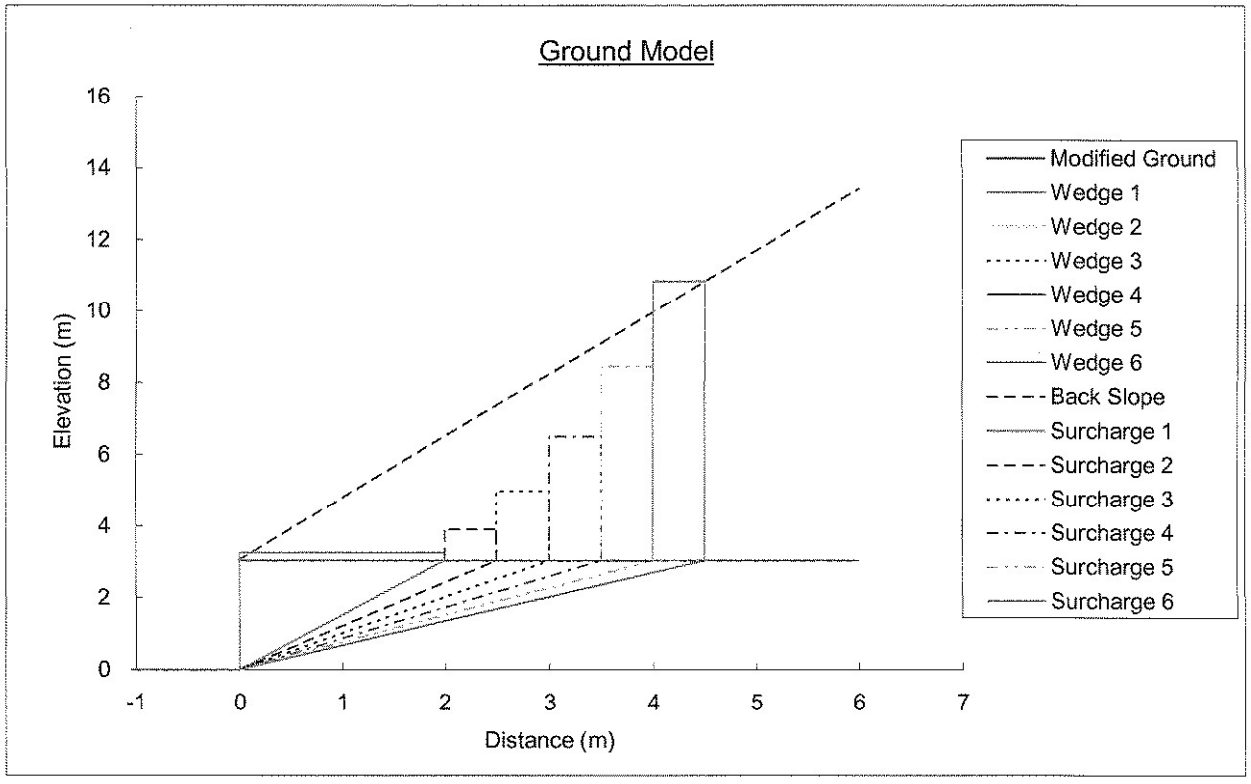
| | | | | | |
|---|---|---|---|---|---|
| $\gamma_s$ = | 19.00 | kN/m$^3$ | | | |
| c' = | 3.00 | kN/m$^2$ | | | |
| $\phi_s$' = | 38.00 | ° | $\delta$ = | 25.33 | ° |
| Water Height = | 0.67 | m | | | |
| Vertical Aagle of Inner Wall Face = | 0.00 | ° | | | |
| Vertical Angle of Outer Wall Face = | 0.00 | ° | | | |
| Back Slope Angle = | 60 | ° | | | |

**COORDINATES:**

| Wedge no. | x-coord. | y-coord. | Angle w/ vertical (degrees) | Resultant Force |
|---|---|---|---|---|
| origin | 0.00 | 0.00 | | |
| 0 | 0.00 | 3.04 | 0.00 | / |
| 1 | 0.50 | 3.04 | 9.34 | 4.78 |
| 2 | 1.00 | 3.04 | 18.21 | 15.76 |
| 3 | 1.50 | 3.04 | 26.26 | 23.86 |
| 4 | 2.00 | 3.04 | 33.34 | 27.73 |
| 5 | 2.50 | 3.04 | 39.43 | 26.31 |
| 6 | 3.00 | 3.04 | 44.62 | 18.79 |

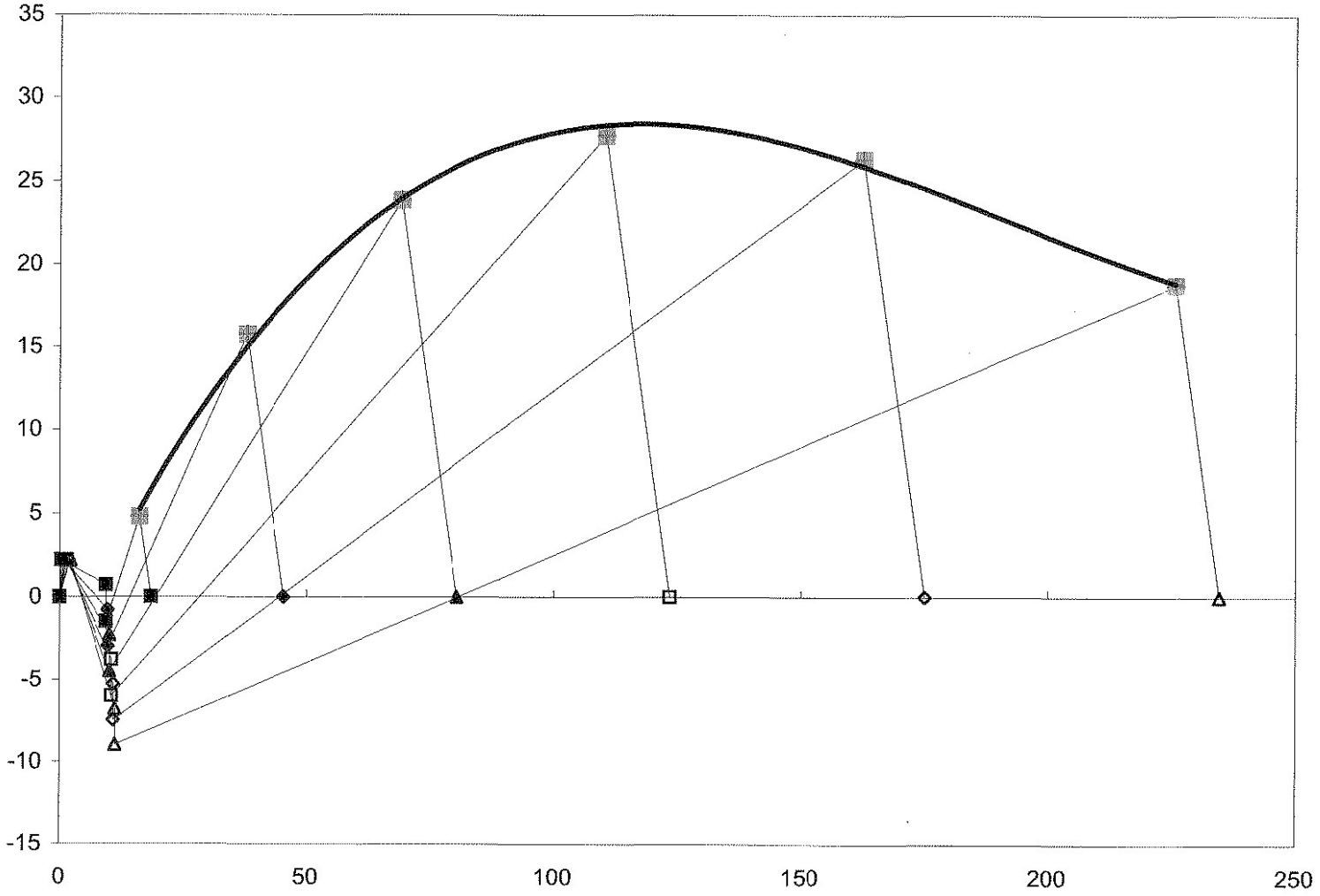
| Wedge no. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **Area / sq.m** | 0.76 | 1.52 | 2.28 | 3.04 | 3.80 | 4.56 |
| **Weight, W / kN** | 14.44 | 28.88 | 43.32 | 57.76 | 72.20 | 86.64 |
| **Surcharge, Q / kN** | 4.11 | 16.45 | 37.02 | 65.82 | 102.84 | 148.09 |
| **U1 / kN** | 2.23 | 2.32 | 2.46 | 2.64 | 2.85 | 3.09 |
| **U2 / kN** | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 |
| **l / m** | 3.08 | 3.20 | 3.39 | 3.64 | 3.94 | 4.27 |
| **C / kN** | 9.24 | 9.60 | 10.17 | 10.92 | 11.81 | 12.81 |

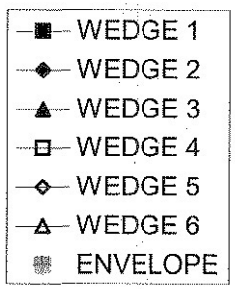
Maximum Force, Pa = 27.73 kN/m ka = 0.324

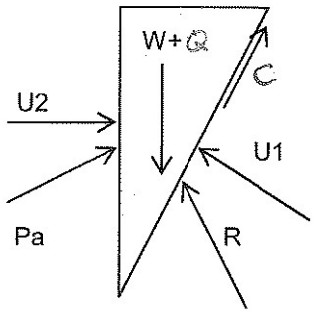


FORCE DIAGRAM
BY TRIAL WEDGE METHOD

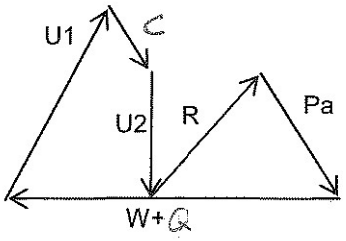
Feature No. 7SE-A/C352 Section D-D (Upgrading Condition)



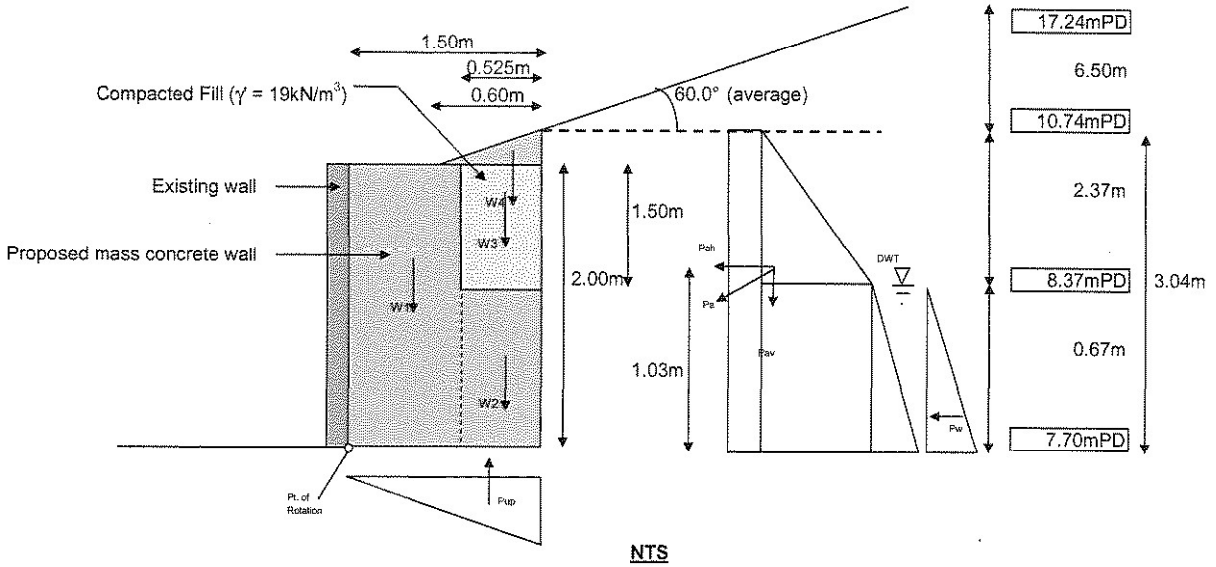

FORCE DIAGRAM




FORCE
POLYGON

**Serviceability Limit State Design**

| Wall Back Soil: CDG | | Wall Dimensions: | | Base Material: CDG | |
|---|---|---|---|---|---|
| $\gamma$ = | 19 kN/m³ | Unit Weight = | 24 kN/m³ | $\gamma$ = | 19 kN/m³ |
| c' = | 3.00 kN/m² | Wall Height = | 2.00 m | c' = | 3 kN/m² |
| $\phi'$ = | 38 ° | Design Water Table = | 0.67 m | $\phi'$ = | 38 ° |
| Ka = | 0.324 | Wall Base Width = | 1.50 m | $\delta_b = 2/3\ \phi'_b$ = | 25.33 ° |
| Ka = | 0.29 (Horiz.) | | | | |




NTS

Pa = 27.73 kN (from trial wedge method)
$\delta = 2/3\ \phi'$ = 25.33 ° (Table 14 of Geoguide 1)

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| Pah | / | 25.06 | 1.03 | 25.91 |
| Pw | 6.54 | 2.18 | 0.22 | 0.48 |
| Pup | 6.54 | / | 1.00 | 4.91 |
| | $F_h$ = | 27.24 | Mo = | 31.30 |

| | Pressure/kPa | Force/kN | Arm/m | Moment/kNm |
|---|---|---|---|---|
| W1 | / | 72.0 | 0.4875 | 35.1 |
| W2 | / | 6.3 | 1.2375 | 7.8 |
| W3 | / | 15.0 | 1.2375 | 18.5 |
| W4 | / | 7.5 | 1.3 | 9.7 |
| Pav | / | 11.9 | 1.50 | 17.8 |
| Pup | -6.54 | -4.9 | / | / |
| cL | / | 4.5 | / | / |
| | N = W1 + Pav +Pup = | 107.71 | Mr = | 88.94 |

FOS of Sliding = $(N \tan \delta_b + cL) / F_h$ = **2.037** > 1.5

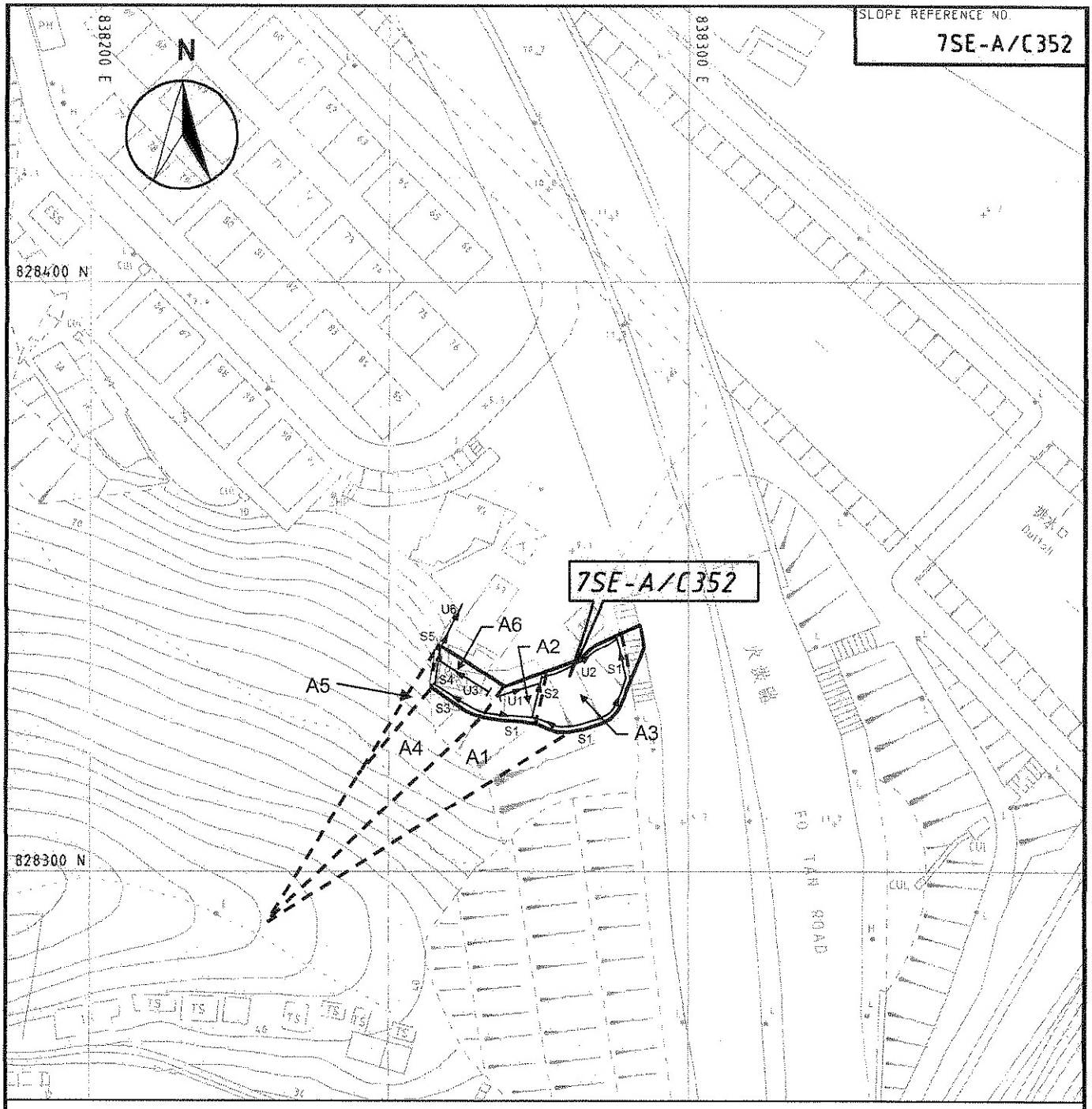
FOS of Overturning = Mr / Mo = **2.841** > 2.0

**Check Eccentricity**

e = B/2 - (Mr -Mo)/N = 1.5/2 - (88.94-31.30)/107.71 = **0.215m** < B/6 = **0.25m** O.K.

# APPENDIX I

## Surface Drainage Design




Legend:

- Feature Boundary
- Catchment Area
- S1 Stepped Channel
- U1 U-channel

| | |
|---|---|
| *Catchment Area A1 =* | 313.50 m² |
| *Catchment Area A2 =* | 105.00 m² |
| *Catchment Area A3 =* | 182.00 m² |
| *Catchment Area A4 =* | 224.25 m² |
| *Catchment Area A5 =* | 65.00 m² |
| *Catchment Area A6 =* | 80.00 m² |

MAUNSELL | AECOM

| | |
|---|---|
| Drawn : YWP | Checked : KTL |
| Ref : 52004/318 | Date : May-06 |

**AGREEMENT NO. CE 23/2003 (GE)**
**10-YEAR EXTENDED LPM PROJECT, PHASE 4, PACKAGE G**
**SHATIN**
**LANDSLIP PREVENTIVE WORKS ON GOVERNMENT SLOPES AND RELATED STUDIES -**
**INVESTIGATION, DESIGN AND CONSTRUCTION**

Scale : 1:1000

Title:

Catchment Area

Feature No. : 7SE-A/C352

## Check adequacy of the existing and proposed drainage

1. The calculation was based on the 'Geotechnical Manual for slopes', 1989 Second Edition.

2. Rational Method was used for calculating Runoff by the following equation

$$Q = \frac{K i A}{3600} \quad \text{(Eq. 1)}$$

where Q = maximum runoff (litres/second)
i = design mean intensity of rainfall (mm/hr)
A = area of catchment ($m^2$)
K = runoff coefficient

3. The runoff coefficient K is taken as 1.0 for slopes.

4. Time of concentration is calculated by Bransby Williams equation

$$t = 0.14465 \frac{L}{H^{0.2} x A^{0.1}} \quad \text{(Eq. 2)}$$

where t = time of entry (min)
L = distance measured on the line of natural flow between the design section and that point of the catchment from which water would take the longest time to reach the design section (m)
A = catchment area ($mm^2$)
H = average fall in m / 100m from summit and point of design (m)

5. The drainage was *checked/designed* for 1 in 200 years return period storm.

6. The correlation between Time of concentration and the mean rainfall intensity is derived from Figure 8.2 of the 'Geotechnical Manual for Slopes'.

7. If time of concentration is less than 1 minute, then t is taken as 1 minute.

8. The design of the drainage referred to Figure 8.7 Chart for the Rapid Design of Channel of 'Geotechnical Manual for Slopes'.

9. Maximum permissible velocity is 4m/s for U-channel.

10. Maximum permissible velocity is 5m/s for stepped channel.

MAUNSELL AECOM

Maunsell Geotechnical Services Ltd.

**FEATURE NO. 7SE-A/C352**

**DRAINAGE DESIGN**

| | | | |
|---|---|---|---|
| PROJECT NO. : | 52004 | | |
| DATE : | Sep-06 | SHEET : | |
| BY : | YWP | CHKD : | KLT |

**Detailed Calculations:**

| Channel No. | Catchment Area No. | Catchment Area A ($m^2$) | Longest Flow Path L (m) | Height of Flow Path h (m) | Average Fall H (m/100m) | Time of Concentration $t_c$ (min) | Length of Channel LC (m) | Time of Flow $t_f$ (min) | Total time $t_{total}$ (min) | Rainfall Intensity i (mm/hr) | Quantity of Flow Q (l/min) | Flow from Last Channel (l/min) | Total Runoff (l/min) | Channel Size | Channel Gradient | Flow Capacity (l/min) | OK? Yes/ No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1 (proposed) | A1 | 313.50 | 57.00 | 30.20 | 52.98 | 2.10 | 6.00 | 0.07 | 2.16 | 357.00 | 1865 | 0 | 1865 | 300S | 25° | 6500 | Yes |
| U1 (proposed) | A2 | 105.00 | 9.00 | 6.70 | 74.44 | 0.35 | 9.50 | 0.11 | 0.45 | 400.00 | 700 | 0 | 700 | 225U | 1 in 100 | 3400 | Yes |
| S2 (proposed) | A1+A2 | - | - | - | - | - | - | - | - | - | - | 2565 | 2565 | 300S | 25° | 6500 | Yes |
| U2 (proposed) | A3 | 182.00 | 11.50 | 7.40 | 64.35 | 0.43 | 9.00 | 0.10 | 0.53 | 400.00 | 1213 | 2565 | 3779 | 300U | 1 in 100 | 7500 | Yes |
| S3 (proposed) | A4 | 224.25 | 49.00 | 31.50 | 64.29 | 1.79 | 8.00 | 0.09 | 1.88 | 367.00 | 1372 | 0 | 1372 | 300S | 15° | 6500 | Yes |
| S4 (proposed) | A5 | 65.00 | 22.00 | 19.70 | 89.55 | 0.85 | 5.00 | 0.06 | 0.91 | 400.00 | 433 | 1372 | 1805 | 300S | 36° | 5500 | Yes |
| U3 (proposed) | A6 | 80.00 | 5.00 | 3.70 | 74.00 | 0.20 | 7.50 | 0.08 | 0.28 | 400.00 | 533 | 0 | 533 | 225U | 1 in 100 | 3400 | Yes |
| S5 (Proposed) | A4+A5+A6 | - | - | - | - | - | - | - | - | - | - | 2338 | 2338 | 300S | 20° | 6500 | Yes |
| U6 (Existing) | A4+A5+A6 | - | - | - | - | - | - | - | - | - | - | 2338 | 2338 | 300U | 1 in 100 | 7500 | Yes |
| | | | | | | | | | | | | | | | | | |
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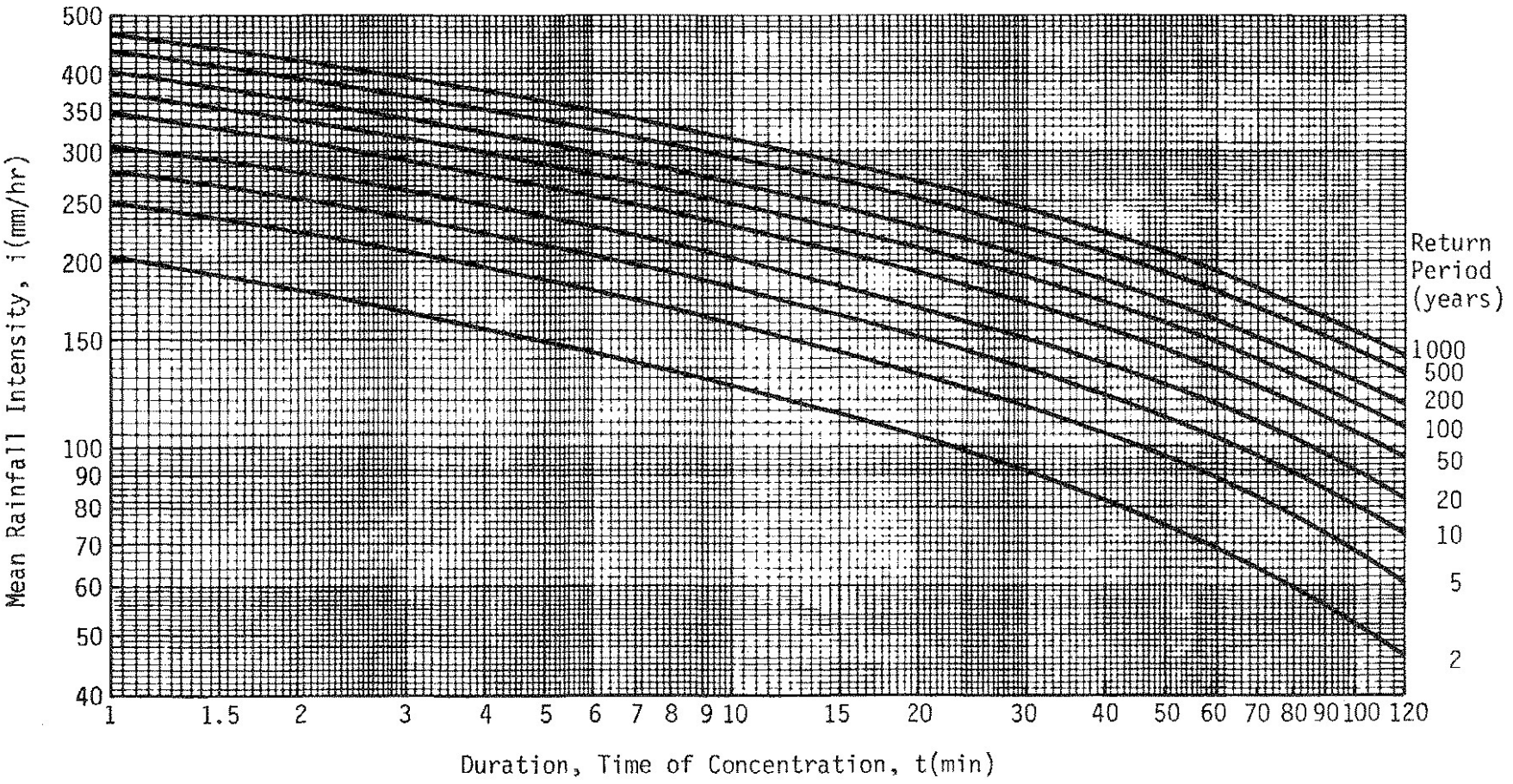



Note : The intensity-duration rainfall curves are from Peterson & Kwong (1981) - A design rainstorm profile for Hong Kong, Technical Note No. 58, Royal Observatory, Hong Kong. Data from tilting siphon records 1947-1980 (Royal Observatory) and instantaneous rate-of-rainfall records 1952-1980 (King's Park).

Figure 8.2 - Curves Showing Duration and Intensity of Rainfall in Hong Kong for Various Return Periods

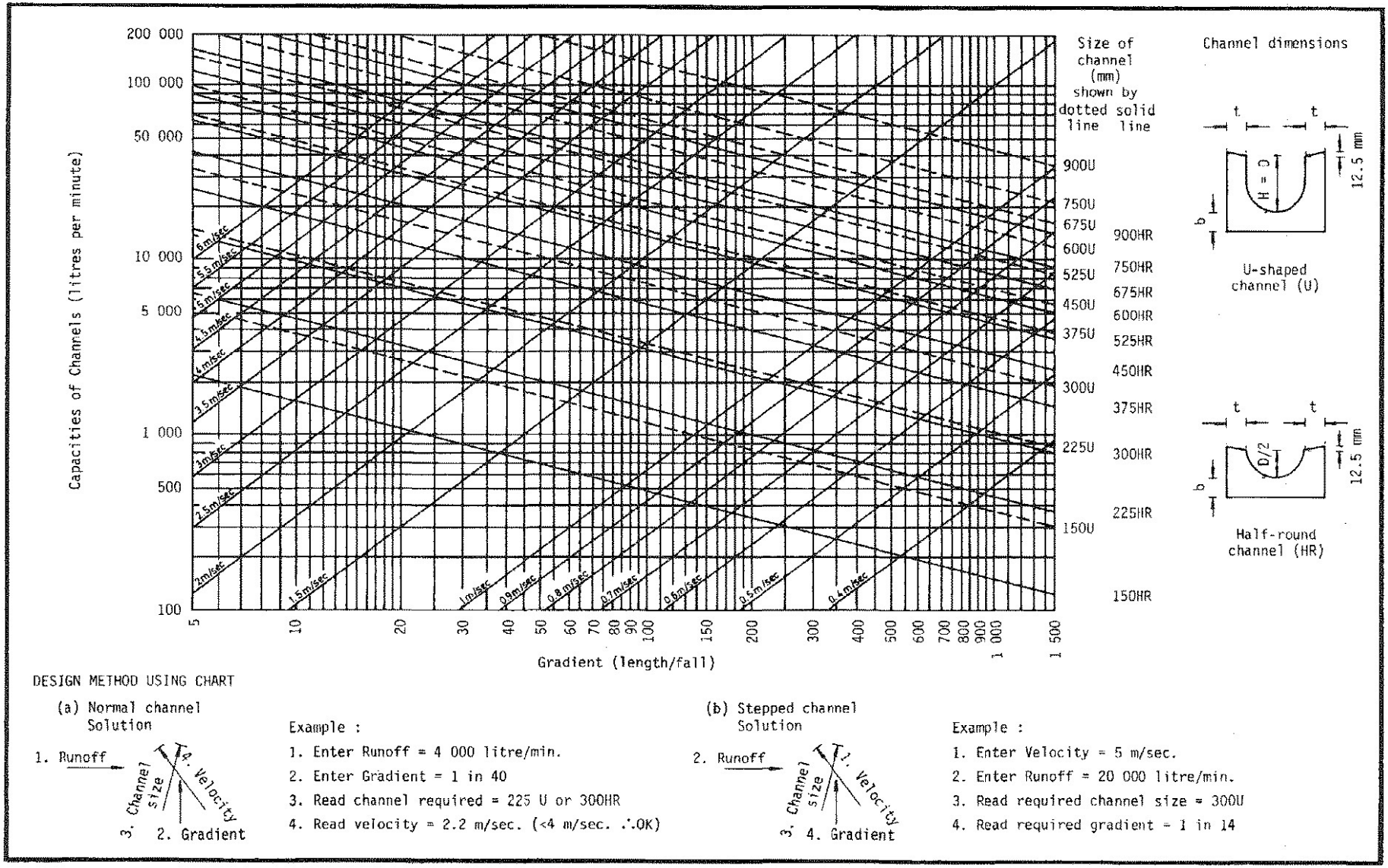
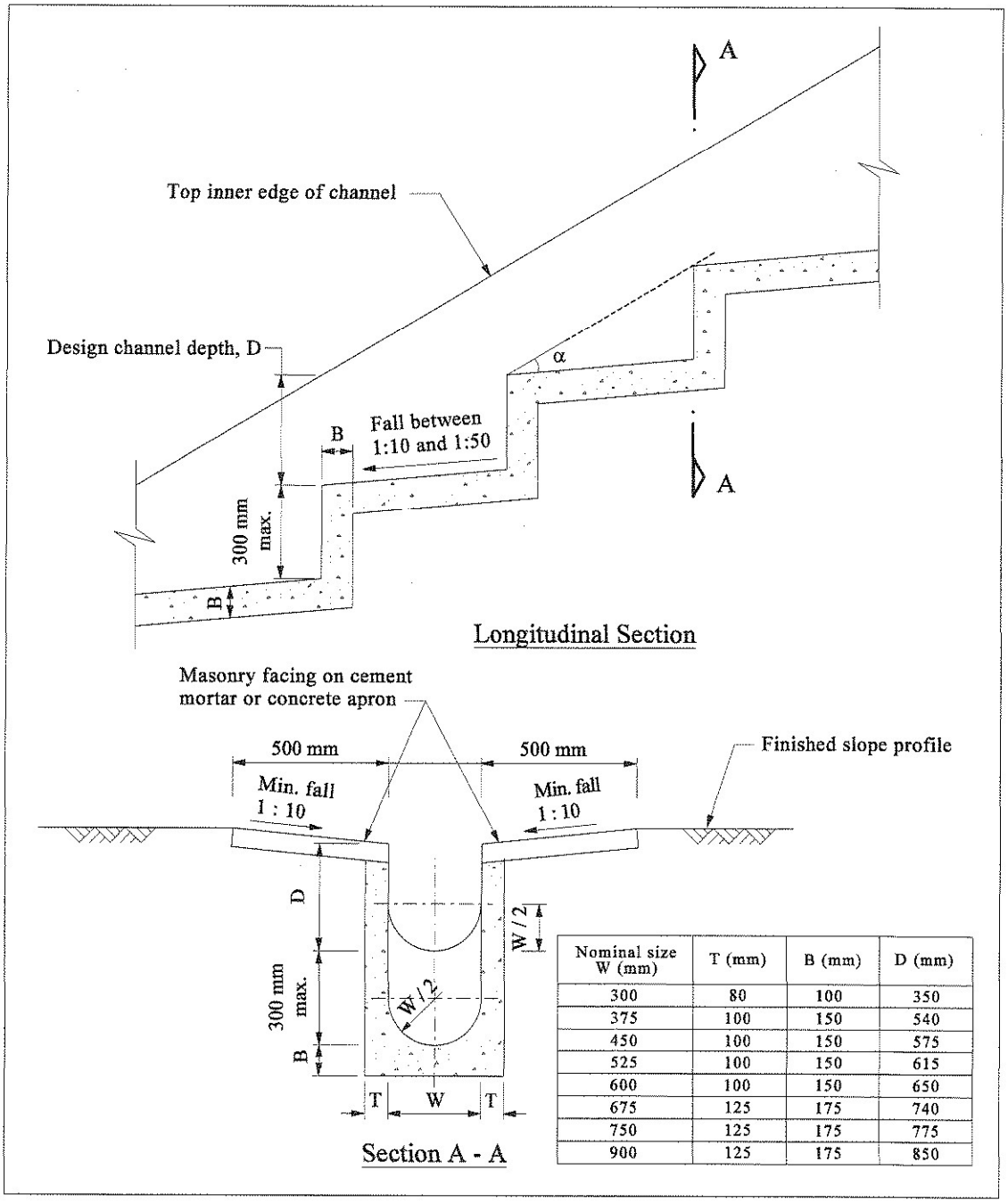



Figure 8.7 - Chart for the Rapid Design of Channels

Figure 1 – Details of Standard Sized Stepped Channels




| Nominal size W (mm) | T (mm) | B (mm) | D (mm) |
|---|---|---|---|
| 300 | 80 | 100 | 350 |
| 375 | 100 | 150 | 540 |
| 450 | 100 | 150 | 575 |
| 525 | 100 | 150 | 615 |
| 600 | 100 | 150 | 650 |
| 675 | 125 | 175 | 740 |
| 750 | 125 | 175 | 775 |
| 900 | 125 | 175 | 850 |

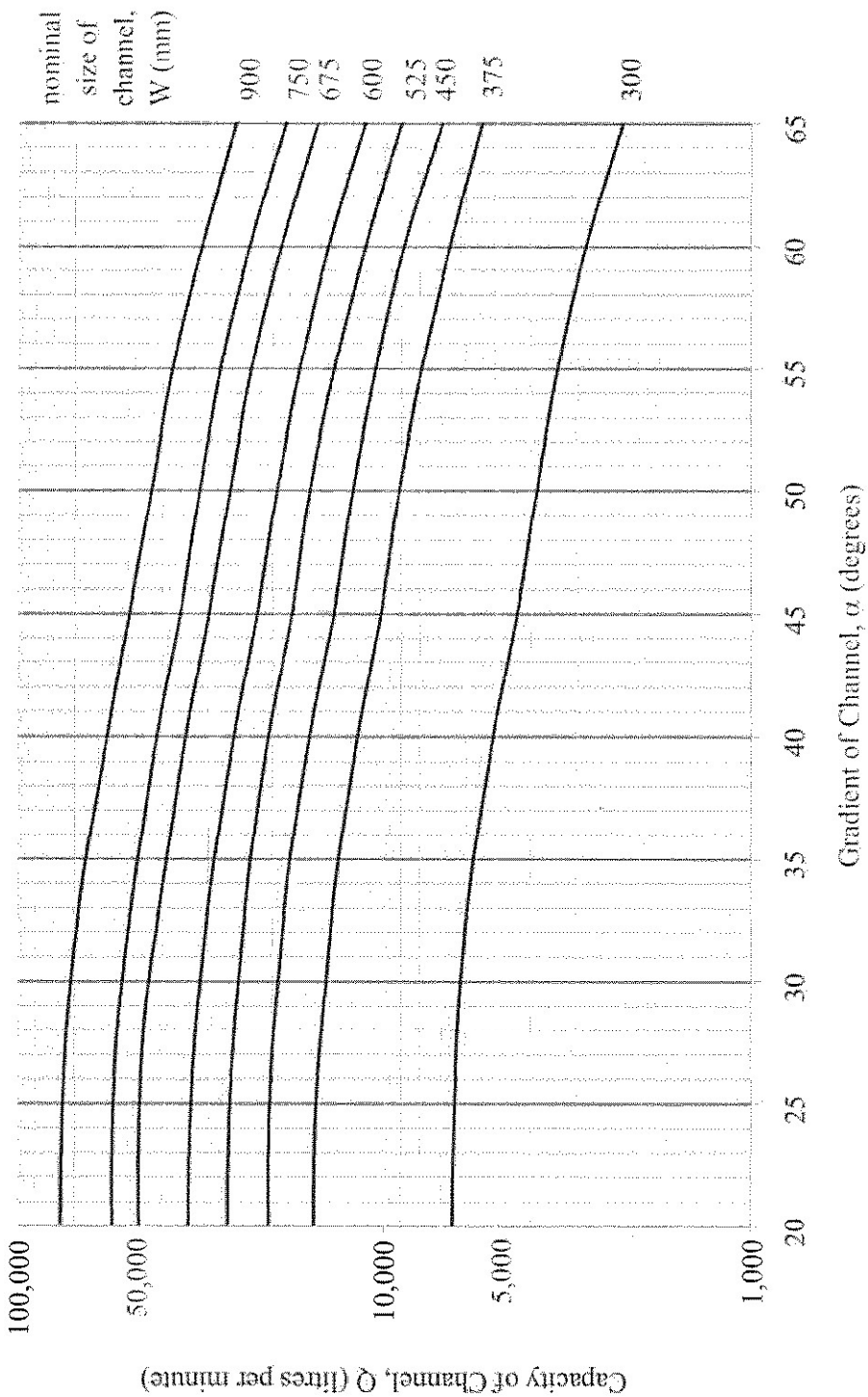



Figure 2 – Design Chart for Standard Sized Stepped Channels

Knight Frank 萊坊

Your Ref: TPB/Y/ST/47
Our Ref: LAS/AC/CK/TT (19-21788)

The Secretary
Town Planning Board
15/F North Point Government Offices
333 Java Road, North Point
Hong Kong

RECEIVED
16 JUN 2021
Town Planning Board

16 June 2021

**By Hand and Email (tpbpd@pland.gov.hk)**

Dear Sirs

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

We refer to the captioned planning application No. Y/ST/47.

Further to our original submission made to the Town Planning Board ("TPB") via letter dated 16 October 2020 and the further information submitted on 1 April 2021, we enclose a set of further information comprising the following:

**Attachment I** Responses-to-Comments table addressing comments from the Environmental Protection Department, Food and Environmental Hygiene Department and Transport Department

**Attachment II** Responses-to-Comments table addressing comments from the Public

**Attachment III** 35 hardcopies and 35 softcopies of the Revised Environmental Assessment ("EA") Report superseding the previous EA

**Attachment IV** 35 hardcopies and 35 softcopies of the Revised Management Plan ("MP") superseding the previous MP

16 June 2021
Town Planning Board
Attention: Secretary, Town Planning Board

**Attachment V** 35 hardcopies and 35 softcopies of the Revised Traffic Impact Assessment ("TIA") superseding the previous TIA

The above information is submitted to address departmental and public comments received and constitutes no material change to the application. Should there be any queries, please feel free to contact the undersigned or our Ms Tammy Tam at 2846 7483.

Yours faithfully
For and on behalf of
Knight Frank Petty Limited

**Calvin Kan** MHKIP RPP
Senior Manager, Planning & Development
Land Advisory Services
calvin.kan@hk.knightfrank.com
D +852 2846 7429

| | | |
|---|---|---|
| cc | Client | (By email) |
| | Sha Tin, Tai Po and North District Planning Office, (Attn: Miss Hannah Yick / Mr Derek Wong) | (By email) |

# Attachment I

# Responses-to-Comments table addressing comments from Government Departments

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information June 2021

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| Comments | Response(s) |
|---|---|
| **<u>Transport Officer, Traffic Engineering (NTE) Division</u>**<br>**received on 8 January 2021**<br>**(Contact: Mr. Thomas Man \| Tel: 2399 2402)** | |
| The TIA report is considered not acceptable in-principle and therefore, we are not prepared to provide our comments on the Management Plan at this moment. We reserved our right to provide further comments on the Management Plan upon the Updated TIA report is considered in order. | The Updated TIA attached has incorporated our responses to the following TD comments. |
| 1. Para. 1.3 – It was stated that the Pre-cut-off Columbarium has 2095 sold niches and 1853 vacant niches that are yet to be sold, but it does not match with the number of 1849 sold niches and 1650 unsold niches as stated in Para. 4.2 of Supporting Planning Statement. The applicant should clarify the above. | According to the updated information provided by the Applicant, there are 1,849 sold niches and 1,650 unsold niches, i.e. a total of 3,499 niches. Hence, this planning application is for 3,499 niches.<br><br>Detail status of these niches is presented in Table 2.1 of the Updated TIA. |
| 2. Para. 2.6 and 2.8 - Please provide further substantiation on simply adopting the estimated historic AADT for calculation of average annual growth rates. The estimate of traffic growth by population projection in Shatin is considered over simplified. The applicant | Further substantiation of background growth and traffic generation associated with other known / planned developments in the vicinity have been incorporated in the 2026 traffic flow.<br><br>Details are included in Chapter 4 of the Updated TIA. |

| Comments | Response(s) |
|---|---|
| should note that there are a number of planned developments in Fo Tan Area and a full assessment on the traffic growth based on those known developments should be conducted. | |
| 3. Para. 2.9 - It is considered that the proposed area of influence is incomplete. Please include the critical junctions (i) Fo Tan Road / Lok King Street, (ii) Tai Po Road - Sha Tin Slip Road / Fo Tan Road, (iii) Fo Tan Read / Yuen Wo Road, and (iv) Fo Tan Road / Tai Chung Kiu Road, in the report. | Assessments of junctions (i) to (iv) have been incorporated in the updated TIA. Please refer to Chapter 2 and 4 of the Updated TIA for details |
| 4. Para. 2.14 - The applicant should advise whether there are long occupied niches without being conducted grave-sweeping for a period (e.g. more than 2 year), and review whether it is reasonable to use the total number of occupied niches for calculation of the visitor generation rate in Table 2.5. | Information on long occupied niches with no grave sweeping is not available.<br><br>Nevertheless, the Applicant has implemented Visit-by-Appointment Arrangement for the Subject Site since October 2019, which requires all visitors to register with the Applicant prior to visiting throughout the whole year, including to the Ching Ming and Chung Yeung Festival Periods,.<br><br>As stated in Chapter 3 of the Updated TIA, a visiting capacity of 75 visitors per 30-minute is proposed and this is equivalent to a visiting capacity of 150 visitors per hour.<br><br>Hence, the visitor generation will be capped at 150 visitors per hour in the future, and is adopted in the analyses presented in the Updated TIA. |
| 5. Para. 2.24 - According to pedestrian routes showing in Figure 2.1, the footpaths and staircases to the bus stop and mini-bus stop at Fo Tan Road should be included in the report. | Detail assessments of the footpaths and staircases to and from Fo Tan Road Bus Stops are included in Chapter 2 and 4 of the Updated TIA. |

| Comments | Response(s) |
|---|---|
| 6. Para. 2.25 - It was stated that a “dead area’’ of 0.5m is assumed on both sides of the footpaths when calculating the footpath “Effective Width”. However, the measured width and effective width of FP04 as stated in Table 2.9 was 3.1m and 2.9m respectively. The applicant should clarify the above. | The effective width for FP04 should read “2.1m”. Detail assessments are included in Chapter 2 and 4 of the Updated TIA. |
| 7. Para. 3.9 - Please justify the holding capacity of the columbarium building of 160 people by a quantitative assessment. | The holding capacity within the Subject Site is updated to 120 visitors at any one time, and this is determined based on the available holding area at the forecourt, which is measured to be approximately 40 $m^{2,}$<br><br>Assuming a standing capacity of 4 persons per square metre with a usable floor area of 75%, the total holding area of 30$m^2$ could accommodate 120 visitors at any one time [Calculation: 40 x 75% x 4 = 120]. |
| 8. Para. 4.1 - The applicant should provide substantiation that the assumption of full occupation of unsold niches in 2025 is reasonable. | The Proposed Columbarium has a capacity to conduct 1 placement of ashes at a time, and each placement ceremony takes around 30 minutes. The placement ceremony will take place during the opening hours between 9am and 5pm, i.e. 8 hours per day. Hence, the daily capacity of occupation, i.e. placing cremated ashes into niches, is calculated as follows:<br><br>*1 master x 30 min / ceremony ÷ 60 min / hr x 8 hrs / day = 16 placements / day*<br><br>Hence, the daily capacity of occupation is 16 placements.<br><br>At present, there are 2,698 vacant niches at the Proposed Columbarium, and the number of days required to reach full occupancy with the daily capacity of occupation is calculated as follows: |

| Comments | Response(s) |
|---|---|
| | *2,698 vacant niches ÷ 16 placements / day = 168.6, says 169 days*<br><br>As shown above, it is possible to take just 169 days, or no more than a year, for the Proposed Columbarium to achieve full occupancy. Hence, the assumption that it takes 5 years from 2021, i.e. a design year of 2026, to reach full occupancy is possible. |
| 9. Para. 4.2 and 4.5 - In conjunction with Comment 2 above, please review the proposed growth rate of 2.0% and the junction capacity analysis accordingly. | Further substantiations of background growth and traffic forecast have been updated. Details are included in Chapter 4 of the Updated TIA. |
| 10. Para. 4.8 - The assumption of a nominal growth rale of 1.0% per annum for pedestrian forecast is considered too simplified. The applicant should note that there are a number of known planned developments in Fo Tan Area. Also, there is a project for the proposed escalator link system between Sui Wo Court and MTR Fo Tan Station. A full assessment on the pedestrian growth based on the known developments should be conducted. | **Substantiations on Background Growth Rate**<br>Further substantiations of background growth and traffic forecast have been updated. Details are included in Chapter 4 of the Updated TIA.<br><br>**Pedestrian Generation of Other Know Developments**<br>Pedestrian generation in association with the other known and planned developments (Table 4.3 of the Updated TIA refers), in Fo Tan Area was considered, and it is determined that the pedestrian generation of these planned developments will **NOT** have interface conflict with those pedestrian facilities analysed because:<br>(i) *The Proposed Home Ownership Scheme Development* at Wo Sheung Tun Street, and *the Proposed Industrial Development with Public Vehicle Park* at Tsung Tau Ha Road are both far, i.e. some 800m to 1km, away from the Subject Site, and hence, pedestrian generated would not pass through the concerned pedestrian facilities;<br>(ii) *The Comprehensive Development at Au Pui Wan Street adjoining Fo Tan Station* will have direct and convenient elevated walk connection with Fo Tan Station, hence, pedestrian generation at grade level along the concerned pedestrian facilities is not expected. |

| Comments | Response(s) |
|---|---|
| | **<u>Escalator Link between Sui Wo Court and Fo Tan Station</u>**<br>Pedestrian generation associated with proposed escalator link between Sui Wo Court and Fo Tan Station was estimated, and included in the 2026 analyses. Details are presented in Chapter 4 of the Updated TIA, and determined that the Proposed Columbarium will have no adverse to the existing pedestrian facilities. |
| 11. Table 4.3 - Please clarify the definition of "Pre-cut-off Columbarium with Current Occupancy". Besides, the assessment result of the scenario "Post-cut-Off Columbarium with Fully Occupied" is found missing in the table. Also the figures stated in the table is not traceable. | The "Pre-cut-off Columbarium with Current Occupancy" and the "Post-cut-Off Columbarium with Fully Occupied" are redefined as scenarios of "Without the Proposed Columbarium" and With the Proposed Columbarium".<br><br>Detail status of niches at the Proposed Columbarium is summarized in Table 2.1 of the Updated TIA. The updated tables and figures for the above scenario are included in Chapter 4 of the updated TIA. |
| 12. Based on the visitor generation associated with 835 occupied niches and the estimation of visitor generation associated with 1,853 unsold niches and 1,260 unoccupied sold niches shown in Table 2.5, 3.1 and 4.1, there would be about 836 visitors per hour for the scenario "Post-cut-off Columbarium with Fully Occupied", which is much more than the assumed holding capacity of columbarium building and waiting area of 320 people. The applicant should propose appropriate measures to avoid adverse traffic impact arising from the development. | The Applicant has implemented Visit-by-Appointment Arrangement for the Subject Site since October 2019, which requires all visitors to register with the Applicant prior to visiting throughout the whole year, including to the Ching Ming and Chung Yeung Festival Periods.<br><br>As stated in Chapter 3 of the Updated TIA, a visiting capacity of 75 visitors per 30-minute is proposed and this is equivalent to a visiting capacity of 150 visitors per hour.<br><br>Hence, the visitor generation will be capped at 150 visitors per hour in the future, and is adopted in the analyses presented in the Updated TIA. |

| Comments | Response(s) |
|---|---|
| 13. The assessment on the impact of the public transport services is found missing. Further comments from public transport point of view will be given by TONT of TD, if any, separately. | Assessment on the impact of public transport services are found in Chapter 2 and 4 of the Updated TIA, and determined that the Proposed Columbarium will have no adverse impact to the public transport services. |
| **Environmental Protection Officer, Environmental Protection Department**<br>**received on 24 May 2021**<br>**(Contact: Mr. Nicholas Tsang \| Tel: 2835 1096)** | |
| Noise<br><br>1. The fixed noise source standard of the HKPSG (see S4.2.13 of Chapter 9 of the HKPSG) is adopted for the noise assessment. To avoid confusion, the Applicant should review if the last sentence of S3.2.5 should be revised to "The noise criteria for ~~involving existing~~ fixed noise sources impacting on NSRs are…". Moreover, elaboration of ANL-5 (e.g. determination of ASR, effect of IF if any etc.) and comparison with the prevailing background noise should be given to justify the adoption of prevailing background noise as the fixed noise source standard. | Section 3.2.5 and Note 2 of Table 3.4 have been revised accordingly. |
| 2. While Table 3.3 mentions "APCE", the full term is not explained in earlier paragraphs. For proper presentation, description of the fixed noise sources at the application site should be provided before Table 3.3. For example, S3.3.1 could mention that the set of Air Pollution Control Equipment (g.d. fixed noise source S01) is also indicated in Figure 3.1 and Figure 3.3. | The description of the fixed noise sources is now provided in Section 3.4. |

| Comments | Response(s) |
|---|---|
| 3. Without information such as the nos. and locations of the split type air conditioners (not indicated on Figure 3.3), excluding these noise sources from the quantitative fixed noise impact assessment is not justified. Site photos of the noise sources should be provided. | The six air conditioners placed on the roof of the columbarium building are typical residential split-type air conditioners (see site photos below), noise generation from these split-type units are much less than that from the joss paper furnace cum APCE and therefore considered as insignificant.<br> <br> |
| 4. The applicant shall clarify and clearly state if there is no public address system installed at the application site and that there will be no outdoor noisy religious activities involving the use of musical instruments in S3.5.2. | Section 3.4.2 has been revised accordingly. |
| 5. Note [2] of Table 3.4: The date(s) and time of the measurement of prevailing background noise and relevant results should be provided to justify that measured BGL is considered the representative or typical existing noise level in the concerned area during the concerned period in the absence of extraneous noise. | Note 3 has been added under Table 3.4 to provide the details of background noise measurement. |
| 6. Appendix 3.1: While it is noted that the sound pressure level was measured at 5m away from the APCE, it is unclear how the consultant come up with the corrected sound power level of the APCE (i.e. 91.2 dB(A)). | The corrected sound power level is calculated based on the corrected sound pressure level of the APCE and the directivity factor (Q). |

| Comments | Response(s) |
|---|---|
| **<u>Director of Food and Environmental Hygiene</u>**<br>**received on 24 May 2021**<br>**(Contact: Mr. Raymond Chan \| Tel: 3141 1231)** | |
| 骨灰所辦就「香港孝思園有限公司」所提交的管理方案的意見如下：<br><br><u>第(1)骨灰安置所基本資料</u><br><br>1. 骨灰安置所地址與指明文書申請資料不符。根據本署紀錄，申報的骨灰安置所地址應為「新界沙田火炭火炭村93 號(丈量約份第176 約地段第551 號A 段及餘段、第640 號及第644 號A 分段、B 分段及餘段) 」。申請人請澄清骨灰安置所的地址。 | 申請人請澄清骨灰安置所的地址為新界沙田火炭火炭村 93 號 (丈量約份第 176 約地段第 551 號餘段 (部分)、第 640 號 (部分)、第 644 號 B 分段 (部分), 第 644 號餘段 (部分) 及 毗連政府土地 (部分) ) 。有關資料已在相應地方修改，詳情可參閱管理方案（**附件 IV**）。 |
| <u>第(2) 場地資料及樓宇排列</u><br><br>1. 骨灰安置所所佔面積及總樓宇面積、骨灰安置所的建築物及其他支援骨灰安置所運作的必要配套設施建築物，與申請人向本署遞交的指明文書申請摘要的資料不符。 | 有關資料已在相應地方修改，詳情可參閱管理方案（**附件 IV**）。 |
| 2. 「安放灰位總數[只包括 2017 年 6 月 30 日前已出售的龕位]」與之前申請人向本署遞交的指明文書申請的龕位資料不符。 | 有關資料已在相應地方修改，詳情可參閱管理方案（**附件 IV**）。 |
| <u>第(3) 可容納的客量及入場管制</u><br><br>1. 訪客在清明節及重陽節期間需要電話預約，並遵循骨灰安置所的建議或雙方的協商的之指定日子和時間方可進入骨灰安置所拜祭先人的規定與第(5)V的預約訪園的安排及具體執行有所不符。 | 有關資料已在相應地方修改，詳情可參閱管理方案（**附件 IV**）。 |

| Comments | Response(s) |
| --- | --- |
| 2. 管理方案和牌照獲批准後，申請人需書面通知”已出售龕位的買方”將會實行的訪客注意事項。 | 申請人會特別留意，謝謝。 |
| 第(9) 遵從發牌委員會訂明的發牌條件、指引及業務守則<br><br>1. 申請人應說明將採取什麼措施，以確保其骨灰安置所遵從發牌委員會訂明的發牌條件及發出的指引及實務守則，包括確保其骨灰安置所的管理人員受前線人員熟知該等條件、指引及實務守則而作出監察、記錄及報告規定。 | 有關措施已在第(9) 遵從發牌委員會訂明的發牌條件、指引及業務守則增加，詳情可參閱附件IV。 |

# Attachment II

# Responses-to-Comments table addressing comments from the Public

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information June 2021

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| Public Comments | Response(s) |
|---|---|
| 1. Incompatible Land use<br><br>The application is not suitable for columbarium use as it is surrounded by various residential development (both existing and work in progress), vegetated land and particularly close to Fo Tan Village. As such, it is not compatible to have the columbarium in the area.<br><br>Fo Tan will be accommodating new high-density residential developments. The latest residential development situated opposite to the columbarium across the Shing Mun River which will provide more than 1000 units. As such, the columbarium use is not compatible with the surrounding residential area.<br><br>It is inappropriate to place a columbarium in the area surrounding by residential developments. | The abutting Fo Tan Road and Shing Mun River help separate the Application Site from the high-rise and high-density residential and industrial developments. With 6.19m of building height, i.e. 2 storeys, the proposed amendment will remain as a low-rise development, which is similar to the local village setting. Viewing from the east of the Application Site, the proposed amendment will be visually blocked by the flyover and trees at the northeast of the Application Site, which provides a screening effect to shield the view from public roads. The proposed development is barely to be seen from the surroundings. |

| Public Comments | Response(s) |
|---|---|
| 2. Urban Sprawl<br><br>It is important to preserve our precious land resources in "Green Belt" ("GB") zone especially when Fo Tan area lacks green space. Therefore, rezoning the "GB" to columbarium use is undesirable and unreasonable.<br><br>There is insufficient supply of "GB" zone and hence further rezoning it to other uses will affect the livelihood of local residents.<br><br>Rezoning the "Green Belt" would reduce the buffering effect to contain urban sprawl from the surrounding residential and industrial developments. | The applicant has no plan to intensify the scale of Memorial Park Hong Kong ("MPHK") or further encroach onto the adjacent "Green Belt" ("GB") zone. The "GB" area within the Application Site is mainly slope. The current application only includes a small portion of the green belt and hence the area of "GB" is largely safeguarded. In fact, the proposed amendment to permit a columbarium can maintain the tranquil and calming ambience of the area while functioning as the transitional area from "Village Type Development" zone to "GB" zone to contain urban sprawl. |
| 3. Overloaded pedestrian flow<br><br>Residents in Fo Tan rely heavily on the use of MTR. However, Fo Tan Station is a small metro station which can barely accommodate the additional flows on racing days. During Ching Ming and Chung Yeung festival period, it is seen that the pedestrian flow has already reached its maximum capacity with more people coming in Fo Tan from the southern part of Hong Kong.<br><br>The livelihood of the Fo Tan residents has been adversely affected as MPHK significantly increases the pedestrian flow along Fo Tan Village. | The pedestrian condition within the Fo Tan area is observed to be quite on Sundays and public holidays, when most grave sweepers are expected to visit the proposed development.<br><br>The proposed development is relatively small with only 3,499 niches. Crowd management proposal has been implemented by the Applicant to reduce the number of pedestrians generated by the proposed development during the Ching Ming and Chung Yeung festival periods, and the Applicant will continue to implement these measures.<br><br>Hence, the proposed development is expected to have minimal pedestrian impact to the surrounding pedestrian and public transport network. |

| Public Comments | Response(s) |
|---|---|
| The adjoining pedestrian path is rather narrow which cannot accommodate large number of pedestrians at once. The spill-over effect will affect the residents living in Fo Tan Village<br><br>The new large-scale residential development in Fo Tan will contribute to the high population density and pedestrian flow of the area. The columbarium will add up to this situation by exceeding the capacity of Shan Mei Street and exits of Fo Tan MTR station. | |
| 4. Illegal Parking<br><br>Since MPHK does not provide any parking facilities, illegal / on-street parking emerges and worsens the problem of traffic congestion. Emergency services are also delayed as those cars block the exits illegally. | The Shatin Galleria Car Park located at 18 – 24 Shan Mei Street is about 420m away from the MPHK and is within walking distance allowing visitors by private car to park the vehicle off-street.<br><br>The MPHK will continue to discourage the use of private car and taxi to access the Application Site, promote the use of nearby car park, and encourage the use of public transport to reduce the potential traffic impact associated with the visitors. |
| 5. Burdening the Public Transport System<br><br>New and existing residential development arise in Fo Tan, coupled with the visitors of the columbarium, heavy burden will be added onto the current public transport system.<br><br>The traffic in Fo Tan area is already very congested with insufficient public transport system. | The MPHK has implemented Visit-by-Appointment Arrangement requiring all visitors to register prior to visiting. The Applicant proposes to control the number of visitors visiting the Application Site to be no more than 150 persons per hour to avoid overcrowding within the MPHK. Hence, the number of visitors generated is controlled and to be kept minimal, and therefore, the additional demand on public transport services is negligible with no adverse impact. |

| Public Comments | Response(s) |
|---|---|
| | |
| 6. Worsening Traffic within Fo Tan Area<br><br>Fo Tan Road is the only access road to Fo Tan Village and a few estate developments. Roads in the area are congested due to parking on streets and high usage of vehicles. It is anticipated the columbarium will further worsen the traffic condition during the Ching Ming and Chung Yeung festival period as more visitors will come to the columbarium for commemoration.<br><br>The only vehicular access to the site is via Fo Tan Road which is very congested already. With Fo Tan Industrial Area in the vicinity, the traffic condition at Fo Tan area, including Sui Wo Road and Shan Mei Street, are always congested.<br><br>A large-scale columbarium, like Po Fok Hill Cemetery could potentially collapse the traffic network at Fo Tan Area, which is an industrial area with lots of heavy vehicles coming in and out on a daily basis.<br><br>While there are six similar applications in Sha Tin area and one application in Fo Tan area that involve the change of land use into columbarium. Such applications will undeniably add onto the traffic and pedestrian flow of the area. | Traffic condition within the Fo Tan area on Sundays and public holidays, when most grave sweepers are expected to visit the proposed development, is observed to be quiet.<br><br>Furthermore, the proposed development is relatively small with only 3,499 niches. Crowd management proposal has been implemented by the Applicant to reduce the amount of traffic generated by the proposed development during the Ching Ming and Chung Yeung festival periods, and the Applicant will continue to implement these measures.<br><br>Hence, the proposed development is expected to have minimal traffic impact to the surrounding road network. |

| Public Comments | Response(s) |
|---|---|
| 7. Usage of Public Transport<br><br>There are many visitors using non-public transport to access the application site and the application does not provide any details in respect of the traffic impact assessment. | Most of the visitors are observed to visit the MPHK by public transport services, i.e. MTR, franchised bus and Green Minibus. An Updated Traffic Impact Assessment is supplemented to support the application. |
| 8. Feng Shui<br><br>The columbarium is located within the area of Fo Tan Village, a traditional village which has a strong belief in Feng Shui. Apparently, the village development is carefully designed to meet with the Feng Shui requirements to ensure health and prosperity. However, the establishment of the columbarium has ruined the sophisticated Feng Shui setting and brought bad spirits to the village. | Prior to establishment of MPHK, the Application Site was being used as a Buddhist worship hall known as "Hing Lung Buddhist Hall"(興隆佛堂). Since then, the Application Site has been continuously serving the community as a venue for half-monthly religious congregation and social gatherings in early and recent years, as well as bringing peace and harmony among the villagers and patrons.<br><br>The Application Site has separate entrance and is far away from the main village cluster (approximately 25m). In this connection, the adverse impact induced from the proposed amendment is generally minimised. |
| 9. Lease contravene<br><br>It was the court order in 2018 that the columbarium should be shut down and returned niches to customers since human remains are not permissible at the application site. Therefore, the approval of the current application for rezoning the "Village Type Development" and "Green Belt" is utterly inconsistent with the judgement and set an | Court of Appeal ("CA") has delivered its judgement of MPHK's appeal on 9 March 2021. While CA has reconfirmed that cremated human ashes are human remains, MPHK may still proceed with its application for a licence under the Private Columbarium Ordinance ("PCO"). |

| Public Comments | Response(s) |
|---|---|
| undesirable precedent, as well as encouraging illegal occupation of Government Land. | The current planning application includes three strips of Government lands which are disperse in different directions. Each of the Government land involves small area and is rather alienated. Upon TPB's acceptance of the proposed amendment, the applicant will apply for the lease modification to rectify the columbarium use as well as the grant of a Short Term Tenancy through Lands Department to regularize the occupation of the Government land. |
| 10. Air impact<br><br>The site is situated within proximity of residential area, namely, Chun Yeung Estate, residents at Sui Wo Road and the residential development at Fo Tan Road that is under construction. The smoke, ashes and chemical emitted from burning offering and incense are blown to the residential area and significantly affect the air quality. The pollutants such as dusts and carbon monoxide also threaten people's health, particularly on children and elderlies. The smell is intimidating that residents can no longer open windows. A lot of ashes are found in the balcony and roof floor. The ashes emitted implies the air pollution control equipment does not have sufficient capacity. The air pollution is particularly serious throughout the whole month of Hungry Ghosts Festival. It is inevitable that the proposed amendment of plan, which includes 1,650 unsold niches, will bring even more pollutants to the area, and affect the livelihood of the neighbourhood.<br><br>Should the proposed columbarium approved by the TPB, burning offering, joss paper and incense shall be banned to minimize impact on the local residents. | An integrated joss paper furnace cum dry-type air pollution control equipment (APCE) is currently used by MPHK to control the emission of smoke from joss paper burning activities. The treatment of flue gas involves the extraction of fine portion of fly ash and smoke through industrial grade, high-efficiency dry filters driven by an extraction fan. Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance. Therefore, emissions of dark smoke and ashes are not expected from the burning of joss paper and artifacts. The management of MPHK has dedicated trained staff to collect and put visitors' offerings into the joss paper furnace in a controlled manner and feeding rate. Wrapping materials, especially plastic ones are to be removed before they are burnt in the furnace. Hence, hazardous substances emitted during the burning of plastic materials are not expected from the joss paper burning activities. |

| Public Comments | Response(s) |
|---|---|
| | |
| 11. Noise impact<br><br>The hymns and prayers from running regular religious ceremony and funeral is disturbing and scary. | Musical instruments and outdoor public address (PA) system will not be used during the religious activities. The only low noise source on site is the integrated joss paper furnace cum air pollution control equipment (APCE). Without any mitigation, the predicted noise levels at nearby representative noise sensitive receivers (NSRs) are well below the established noise criteria for daytime operation. |
| 12. Visual Impact<br><br>The columbarium will affect the visual of the area, where the public open space and the leisure space of the local residents will be disrupted. | With 6.19m of building height, i.e. 2 storeys, the proposed amendment will remain as a low-rise development, which is similar to the local village setting. Viewing from the east of the Application Site, the proposed amendment will be visually blocked by the flyover and trees at the northeast of the Application Site, which provides a screening effect to shield the view from public roads. The proposed development is barely to be seen from the surroundings. |
| 13. Lack of consultation<br><br>The columbarium has been operating without any government permission. The local residents have not been consulted regarding the scheme. The approval of this application will allow such | Based on the information, the columbarium has been operating since 2008, long before the effective date of the PCO. This application is submitted to fulfil the statutory planning requirements under the PCO to obtain relevant licence for the continuous operation of the current |

| Public Comments | Response(s) |
| --- | --- |
| problematic malpractice of using the site illegally to continue and neglect the public opinions. | columbarium without disrupting the stakeholders and surrounding area. The application also aims to rectify and regulate the current land use. Should TPB accept the proposed amendment, relevant Government departments can have more holistic control on the development and operation of MPHK. |
| 14. Limited Development Capacity<br><br>Since the application site is currently zoned "Village Type Development" and "Green Belt", there is not sufficient provision of infrastructure, such as road capacity and environmental mitigation measures to address the problems arose from the application. | The existing columbarium has been operating with crowd control management plan in recent years and no complaint has been received so far.<br><br>Based on the traffic impact assessment report, the performance of the local key junctions and footpath will be satisfactory with adequate reserved capacities. Together with the traffic and crowd management measures, there will be no adverse traffic impact on the road networks arising from the proposed amendment.<br><br>On the other hand, no insurmountable environmental problems with respect to air quality, noise and sewerage are anticipated. In order to reduce air pollution to the surrounding area, an integrated joss paper furnace, which can control the emission of smoke is currently in use. Large pieces of fly ashes can be filtered and collected at the bottom of tray. Eco-friendly offerings such as electronic incense and flowers are encouraged to reduce the air pollution. |

| Public Comments | Response(s) |
|---|---|
| 15. Abundant Supply of Niches in Vicinity<br><br>A large-scale columbarium (Po Fok Hill Cemetery) and other small-scale columbaria are situated in the Sha Tin area, indicating that there is sufficient supply of such facilities in the vicinity, where the addition of it is unnecessary.<br><br>A large-scale columbarium is to be constructed in Sandy Ridge and Shek Mun. These imply that the supply of niches will be sufficient for the future demand. | Despite the establishment of several public columbaria, the supply of public niches remains insufficient to cater the increasing number of deaths per year. With the complicated consultation process with the neighbouring residents and Districts Council members, existing private columbaria help meet the urgent demand for niches. In this connection, private columbaria remain crucial in serving the general public. Instead of searching new sites that will likely be unwelcomed by its surrounding neighbourhoods, MPHK can provide niches to moderately relieve the short-term pressure. |
| 16. Geotechnical Technical Report<br><br>The data used by the applicant on the Geotechnical Planning Review Report is out-of-date. | The data used for the Geotechnical Report is the latest information which is valid for assessment purpose. |
| 17. Undesirable Precedence<br><br>Should the application be approved by the Town Planning Board, it will set an undesirable precedence for other similar applications which intended to rezone the “Village Type Development” and “Green Belt” zones for other uses. | This approval of this application will not set an undesirable precedent for similar applications as each site is to be considered on its own merits which will include the current background history, scale, site compatibility with the surrounding environment and the current policy initiatives. |
| 18. Psychological Impacts on Local Residents | Prior to establishment of MPHK, the Application Site was being used as a Buddhist worship hall known as “Hing Lung Buddhist Hall”(興隆佛堂). |

| Public Comments | Response(s) |
| --- | --- |
| Villagers fear to pass by the columbarium at night. Therefore, villagers do not welcome the columbarium as it has been affecting both physical and mental health of villagers.<br><br>Knowing that the religious ceremonies are occurring in the vicinity, local residents may feel scared and irritated constantly. Moreover, the hearses may occasionally drive through the neighbourhood, which frightens the local residents. | Since then, the Application Site has been continuously serving the community as a venue for half-monthly religious congregation and social gatherings in early and recent years, as well as bringing peace and harmony among the villagers and patrons.<br><br>The Application Site has separate entrance and is far away from the main village cluster (approximately 25m). In this connection, the adverse impacts induced from the proposed amendment is generally minimised. |
| 19. Fire Safety<br><br>Due to the burning of offerings, fire hazard is possible to occur in the columbarium. However, the fire engines cannot assess to application site due to the limited headroom underneath the flyover. Therefore, the efficiency of firefighting is adversely affected, ultimately threatening the lives and properties of the local residents. | The Applicant has submitted the fire safety plan including evacuation route plan along with this planning application and the Fire Services Department has no objection. The Application Site is fully compliant with the fire safety requirements. |
| 20. Building Safety<br><br>The applicant should clarify how the existing building bulk accommodates the increased niches and visitor flow without any alterations works. It is also concerning if the fire safety installations, means of escape and means of access are fully compliant with the Buildings Ordinance. | The applicant would carry out the improvement /remedial works to be fully compliant with the Buildings Ordinance and allied regulations. |

| Public Comments | Response(s) |
| --- | --- |
| 21. Small House Development<br><br>Approval of the proposed rezoning application will reduce the land available for small house development and hence shall not be pursued. | Since the applicant is not an indigenous villager, he has no intention and is not eligible to apply for small house development. Moreover, prior the establishment of MPHK, the Application Site has been used as a religious institution which should be excluded from the land available for village developments. As such, the approval of the current application does not reduce the land supply for small house development. |

# Attachment III

# Revised Environmental Assessment

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information June 2021

Prepared for

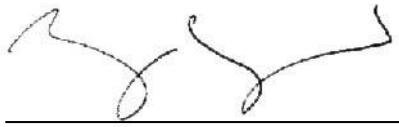
**Memorial Park Hong Kong**

Prepared by

**Ramboll Hong Kong Limited**

# SECTION 12A REZONING APPLICATION FOR EXISTING COLUMBARIUM AT MEMORIAL PARK HONG KONG NO. 93 FO TAN VILLAGE, SHA TIN, N.T.

## ENVIRONMENTAL ASSESSMENT

| | |
|---|---|
| Date | **08 June 2021** |
| Prepared by | **Rachel Wong**<br>**Assistant Environmental Consultant** |
| Signed | |
| Approved by | **Katie Yu**<br>**Senior Manager** |
| Signed |  |
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# 1. INTRODUCTION

## 1.1 Project Background

1.1.1 The Application Site (or "the Site"), Memorial Park Hong Kong, is mainly falls within an area zoned "V" with a minor encroachment onto "GB" zone under the Approved Sha Tin OZP (Statutory Plan No.: S/ST/34) and is currently used as a Buddhist and Taoist temple with ancillary columbarium.

1.1.2 Memorial Park Hong Kong is a pre-cut-off columbarium and has ashes interred in niches well before 8 a.m. on the cut-off date on 18 June 2014 referred under Section 20(1)(d) in the Private Columbaria Ordinance ("PCO").

1.1.3 Ramboll Hong Kong Limited has been commissioned by the Applicant to conduct this Environmental Assessment (EA) for the subject S12A rezoning application.

1.1.4 The EA will assess the air quality, noise, water quality, land contamination and waste management impacts associated with the operation of existing columbarium.

## 1.2 Application Site and its Environ

1.2.1 The Application Site is located at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land). It is situated in Fo Tan urban area bounded by village type developments to the north and Fo Tan Road to the east. It can be accessed on foot by a 5-minute walk from the Fo Tan MTR Station. **Figure 1.1** shows the location of the Application Site and its environ.

## 1.3 Proposed Development

1.3.1 Memorial Park Hong Kong has a 2-storey building comprising worshipping halls, columbarium (G/F and 1/F) with ancillary office, toilets and fishponds on G/F. **Figure 1.2** shows the general layout of different uses and **Figure 1.3** shows an outlook of the Site.

## 1.4 Operating Hours

1.4.1 Memorial Park Hong Kong opens in the hours of 09:00 – 18:00 daily for worshipping. Shorter worshipping times in the hours of 10:00 – 14:00 would apply during Lunar New Year (from New Year's Eve to the seventh day of Lunar New Year).

# 2. AIR QUALITY IMPACT ASSESSMENT

## 2.1 Introduction

2.1.1 This section evaluates and summarises the potential off-site air quality impacts that could be caused by the existing air pollution sources on-site during operation of the columbarium and its related activities.

## 2.2 Air Pollution Sources Related to Columbarium Operations

2.2.1 An existing joss paper furnace cum dry-type air pollution control equipment ("APCE") is provided for shared use by general Buddhist and Taoist worshipping activities and columbarium related uses. **Figure 2.1** and **Figure 2.2** show the location of the existing joss paper furnace cum APCE and its photo record respectively. There is no incense furnace in the Site for columbarium use. Eco-friendly offerings (i.e. electronic incense offering, flower and fruit) are encouraged instead. Hence, joss paper furnace is the only source of air pollution concern.

## 2.3 Area of Air Pollution Concern

2.3.1 The area of air pollution concern is defined within 500m from the Application Site boundary as shown in **Figure 2.3**.

## 2.4 Air Sensitive Receivers

2.4.1 Air sensitive receivers (ASRs) are those defined in the HKPSG and fall within the area of air pollution concern. These include existing, committed and planned uses, if any, at time of submission of this Application based on the best available information from the following sources:

1. Existing sensitive uses verified by site surveys;
2. Planned sensitive uses demarcated in the Approved Sha Tin OZP (No.: S/ST/34);
3. Known, committed sensitive uses by private or public sectors;
4. Planned sensitive uses as a result of approved planning applications; and
5. Planned sensitive uses arising from approved rezoning requests of plans or approved applications for amendment of plans.

2.4.2 After thorough desktop review and ground-truthing, the nearest representative ASRs are identified in **Table 2.1** and shown in **Figure 2.4**. Photo record of these ASRs are shown in **Figure 2.5**.

**Table 2.1 Representative ASRs during the Operation of Columbarium**

| ASR Label | Description | Existing/ Planned Uses | Nature of Use | Horizontal Distance from APCE Exhaust Outlet (m) |
|---|---|---|---|---|
| A01 | No.92 Fo Tan Village | Existing | Residential | 21 |
| A02 | No.1 Shek Shui Wan Village | Existing | Residential | 76 |
| A03 | Po Leung Kuk Siu Hon Sum Primary School | Existing | Educational Institution | 173 |
| A04 | Fung Yue House, Sui Wo Court | Existing | Residential | 188 |
| A05 | Residential Development at CDA(1) Site | Planned | Residential | 89 |
| A06 | Jockey Club Ti-i College | Existing | Educational Institution | 239 |
| A07 | Fo Tan Railway House | Existing | Commercial | 172 |

## 2.5 Air Pollution Control Measures

2.5.1 In order to control air pollution associated with flue gas emission from joss paper burning, Memorial Park Hong Kong is currently using an integrated joss paper furnace cum dry-type APCE to mitigate air quality impacts.

2.5.2 The dry-type "Bamako Burner™" (Model: FAST-D7) is currently used as the integrated joss paper furnace cum dry-type APCE (cartridge filters) to control the emission of smoke. It is installed at the open area next to the fishpond, where the exhaust outlet of final discharge of treated flue gas from the furnace is located at a place with good ventilation and at sufficient separation distance from any sensitive receivers in the vicinity. Its location and image are given in **Figure 2.1** and **Figure 2.2** respectively.

2.5.3 The treatment of flue gas involves the extraction of fine portion of fly ash and smoke emitted during the burning of joss paper through industrial grade, high-efficiency dry filters driven by an extraction fan. Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance.

2.5.4 The existing joss paper furnace cum APCE is targeted to handle flue gas emissions from burning up to 7 kg/hr of joss paper. A catalogue with design drawing is appended in **Appendix 2.1** for reference.

Arrangements for Burning of Paper Offerings

2.5.5 From safety considerations, the management of the Columbarium has dedicated trained staff to help visitors to burn offerings in the joss paper furnace in a controlled manner and feeding rate. Wrapping materials, especially plastic ones are to be removed before they are burnt in the furnace. A notice stating that the joss paper furnace must be operated by staff has been placed in front of the furnace to ensure proper control of the joss paper feeding rate. The photo record of the notice is shown in **Figure 2.2**.

2.5.6 In order to maintain the operation of joss paper furnace cum APCE, the Applicant should follow the operational and maintenance plan given below and the operation manual given in **Appendix 2.2**.

Operational Plan

2.5.7 To ensure proper use of joss paper furnace with APCE, Memorial Park Hong Kong committed to adopt the following operational and maintenance practices:

1. All joss paper burning is carried out by trained operator to ensure proper operation. Furnace is fenced by wire and turned off when not operating, to prevent visitors from burning joss paper without assistance of operator. **Figure 2.2** shows the photo record of locked furnace.
2. The operator would make sure the air pollution control equipment has been turned on and running normally.
3. Only paper-made offerings material can be burnt in the furnace. Other wrapping materials, e.g. plastic materials, would be removed before burning.
4. The operator would control the feeding rate of joss paper to the furnace not exceeding the designed capacity. In case visible emissions are observed at the flue gas discharge, the feeding rate should be reduced as appropriate. If the visible emissions persist, the operator will stop burning activities and call for maintenance.
5. The operator would clean the burning chamber regularly to clear away ash remains inside the burning chamber. The ash would be wetted sufficiently by water spraying during ash clearing process to prevent emission.

Maintenance Plan

2.5.8 Maintenance and repair would be carried out by manufacturer's competent personnel with sufficient training. All components would be inspected, cleaned and serviced regularly. The proposed maintenance plan is shown below:

**Table 2.2 Maintenance Plan for Joss Paper Furnace cum APCE**

| Description | Recommended Schedule |
|---|---|
| Clear the ash from joss paper burner<br>• Open the access door at the bottom of the joss paper burner<br>• Clear the ash from the joss paper burner by using shovel | Daily |
| Check the following items:<br>• The condition of treated flue gas discharge (i.e. the colour and the flow rate)<br>• Running current of blower<br>• Any abnormal noise or vibration during the operation<br>• Performance of back flow function | Monthly |

2.5.9 Eco-friendly offerings (i.e. electronic incense offering, flower and fruit) are encouraged to reduce the joss paper burning activities on-site.

2.5.10 Off-site joss paper burning would be considered by the Applicant from time to time should the need arises.

## 2.6 Conclusion

2.6.1 The existing Columbarium is undergoing a regularization process, first through this S12A planning application. During this period, the Applicant freezes selling of niches. Being an existing established use, the Columbarium does not need to be constructed nor does it require any expansion/ alteration works.

2.6.2 Given the use of dry-type joss paper furnace cum APCE employing the best available technology, and the sufficient separation distances with nearby air sensitive receivers,

the air quality impacts arising from the Columbarium operation should be well under control. With the implementation of air pollution control measures stated in **Section 2.5**, no adverse air quality impact is anticipated.

# 3. NOISE IMPACT ASSESSMENT

## 3.1 Introduction

3.1.1 This section evaluates and summarises the potential off-site noise impacts that could be caused by existing noise sources on-site during operation of the Columbarium and its related activities.

## 3.2 Relevant Legislation, Standards and Guidelines

Acceptable Noise Levels

3.2.1 Fixed noise sources impacting on existing uses are regulated under the Noise Control Ordinance ("NCO"), which requires that impacts shall comply with the Acceptable Noise Levels ("ANL") laid down in Table 2 of the Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites ("IND-TM").

3.2.2 In setting the ANL, reference has been made to the Area Sensitivity Rating ("ASR") in Table 1 of IND-TM (reproduced in **Table 3.1**) reflecting the nature of area where noise sensitive receivers ("NSRs") are situated.

**Table 3.1 Area Sensitivity Ratings (ASRs)**

| Type of Area Containing NSR | Degree to which NSR is affected by Influencing Factor | | |
|---|---|---|---|
| | Not Affected | Indirectly Affected | Directly Affected |
| (i) Rural area, including country parks or village type developments | A | B | B |
| (ii) Low density residential area consisting of low-rise or isolated high-rise developments | A | B | C |
| (iii) Urban area | B | C | C |
| (iv) Area other than those above | B | B | C |

**Source:** Table 1 of Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites.

3.2.3 Based upon the different ASRs, the ANLs are shown in **Table 3.2** below.

**Table 3.2 Acceptable Noise Levels (ANLs), dB(A)**

| Area Sensitivity Ratings in relevant Time Periods | ASR | | |
|---|---|---|---|
| | A | B | C |
| Day (0700 to 1900 hours) | 60 | 65 | 70 |
| Evening (1900 to 2300 hours) | | | |
| Night (2300 to 0700 hours) | 50 | 55 | 60 |

**Source:** Table 2 of Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites.

3.2.4 To plan for a better environment, HKPSG requires the operation noise at the façade of the nearest NSR to be 5 dB(A) below the respective ANL for the NSR, or in the case of the background being lower than the ANL by 5 dB(A) or more, should not be higher than the background.

3.2.5 As there is no evening/ night-time operation at the Columbarium, the noise impacts should meet ANL – 5 or not higher than the background during the daytime periods. The noise criteria for fixed noise sources impacting on NSRs are listed in **Table 3.4**.

## 3.3 Assessment Area

3.3.1 Assessment area for fixed noise sources impact is generally defined within 300m from the Site boundary as shown in **Figure 3.1**.

## 3.4 Identification of Noise Sources

3.4.1 The existing joss paper furnace cum air pollution control equipment ("APCE") is considered as the major noise source on site and is the focus in the current assessment. Other existing noise source such as the six domestic split-type air conditioners placed on the roof are considered relatively minor.

3.4.2 There is no public address system installed at the Application Site and there will not be any outdoor noisy religious activities involving the use of musical instruments to be held at the site. The Applicant has not received any noise complaints from its neighbours since its operation in 2008.

3.4.3 The location of major fixed noise source on site is shown in **Figure 3.3**.

## 3.5 Noise Sensitive Receivers

3.5.1 Noise sensitive receivers ("NSRs") defined under the HKPSG, and fall within the assessment area are considered NSRs of concern. These include existing, committed, and planned uses, if any, at time of the submission of this Application based on the best available information including:

1. Existing sensitive uses verified by site surveys;
2. Planned sensitive uses demarcated in the Approved Sha Tin OZP (No.: S/ST/34);
3. Known, committed sensitive uses by private or public sectors;
4. Planned sensitive uses as a result of approved planning applications; and
5. Planned sensitive uses arising from approved rezoning requests of plans or approved applications for amendment of plans.

3.5.2 After thorough desktop review and ground-truthing, the nearest existing and planned sensitive uses are considered relevant and representative for the purpose of assessment.

3.5.3 **Figure 3.1** shows the first tier of representative NSRs selected in the assessment area by virtue of their being close to the Site. A description of these representative NSRs and their particulars are given in **Table 3.3** with their record photos given in **Figure 3.2**.

**Table 3.3 Representative NSRs Off-site for Assessment**

| NSR Label | Description | Existing/ Planned Uses | Nature of Use | Horizontal Distance from APCE (m) |
|---|---|---|---|---|
| N01 | No.92 Fo Tan Village | Existing | Residential | 21 |
| N02 | No.1 Shek Shui Wan Village | Existing | Residential | 82 |
| N03 | Po Leung Kuk Siu Hon Sum Primary School | Existing | Educational Institution | 178 |
| N04 | Fung Yue House, Sui Wo Court | Existing | Residential | 194 |
| N05 | Residential Development at CDA(1) Site | Planned | Residential | 88 |
| N06 | Yuk Wo Court | Existing | Residential | 211 |
| N07 | Jockey Club Ti-i College | Existing | Educational Institution | 238 |
| N08 | Tower 1, The Palazzo | Existing | Residential | 245 |

**Note:** The above NSRs rely on opened windows for ventilation.

## 3.6 Assessment Approach and Methodology

3.6.1 The assessment of noise impact arising from various fixed noise source(s) has been based on standard acoustic principles, and procedures given in the *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites* ("IND-TM") issued under the *NCO*.

3.6.2 Impacts due to individual noise source(s) have been calculated and logarithmically summed at the individual NSRs for calculation of the overall impacts:

$$PNL = \sum [SWL_i + C_{dist} + C_{impulse} + C_{tonality} + C_{barrier} + C_{facade}]$$

where

| | | |
|---|---|---|
| $PNL$ | = | Overall predicted noise level arising from individual source after various corrections |
| $SWL_i$ | = | Sound power level of individual noise source |
| $C_{dist}$ | = | Correction for distance attenuation |
| $C_{impulse}$ | = | Correction [+3 dB(A)] for impulsive noise in IND-TM, if applicable |
| $C_{tonality}$ | = | Correction [+6 dB(A)] for tonality as in IND-TM, if applicable |
| $C_{barrier}$ | = | Correction [-5 to -10 dB(A)] for barrier effects due to various architectural features/ topography/ obstacles/ purpose-built noise barrier/ parapet wall, if any |
| $C_{facade}$ | = | Correction [+3 dB(A)] for façade reflection at receiver |

3.6.3 The steps of calculations are outlined below:

- Identify the relevant noise source(s) on-site;
- Prepare an inventory of noise source(s) that will impact on the selected representative NSRs in the assessment area shown in **Figure 3.1**;
- Calculate the PNL due to various sources;

- Compare the PNL with the established noise criteria at any one of the representative NSR after adjustments for various applicable corrections; and
- Recommend, as necessary, the appropriate mitigation measures to address/ mitigate the noise impact to ensure no exceedance.

3.6.4 An in-situ noise measurement was conducted to determine the SWL of the existing joss paper furnace cum APCE. Details of the noise measurement are provided in **Appendix 3.1**.

3.6.5 Background noise measurement was also conducted to obtain the prevailing background noise level at the nearest NSR N01 within the operating hours of the Application Site. The lowest background noise level measured in $L_{90}$ (1 hour) during the operating hours is adopted for the assessment.

## 3.7 Assessment Results

3.7.1 As N01 is the NSR closest to the Application Site, it is expected that it will be mostly affected and hence has been selected as the representative NSR for assessment. Without any mitigation, the PNL have been predicted as given in **Table 3.4** with details appended in **Appendix 3.1**.

**Table 3.4 Summary of Unmitigated Impacts on Representative NSRs**

| NSR Label | Description | Noise Criteria, $L_{eq}$ (30 min) (0700 to 1900) | Daytime (0700-1900), $L_{eq}$ (30 min), dB(A) |
|---|---|---|---|
| N01 | No.92 Fo Tan Village | 58.8[2,3] | 49.8 |

**Note:**
[1] The above NSRs rely on opened windows for ventilation.
[2] ASR of "B" is considered representative of the NSR as it is located in area other than rural area, low density residential area or urban area, and is indirectly affected by the influencing factors (i.e. Tai Po Road - Sha Tin with AADT >30,000 and industrial area at Fo Tan).
[3] The background noise measurement was conducted at N01 on 2 March 2021 from 09:00 to 18:00. The lowest background noise level (in $L_{90}$ (1-hour)) of 58.8 dB(A) was recorded from 12:20 to 13:20, which is lower than the ANL by more than 5 dB(A). Hence, the prevailing background noise level is adopted as the noise criteria for fixed noise sources.

3.7.2 Given full compliance with the established noise criteria for the daytime period at the nearest NSR N01, adverse noise impact from the fixed noise source is not envisaged. The noise impact would diminish for NSRs located further away. Noise mitigation would not be necessary.

## 3.8 Conclusion

3.8.1 The current assessment has revealed that the only major noise source of concern will be due to the integrated joss paper furnace cum dry-type APCE comprising extraction fans and dry filters.

3.8.2 As the predicted noise level ("PNL") does not exceed the established noise criteria for daytime operation, effective noise control on-site is envisaged.

# 4. WATER QUALITY IMPACT ASSESSMENT

## 4.1 Introduction

4.1.1 This section presents a water quality impact assessment for the operation of the existing columbarium and recommends mitigation measures where required.

## 4.2 Identification of Water Pollution Sources On-site

4.2.1 Major existing facilities that generate effluent include the following:

1. Toilets (Two for public and one for staff); and
2. Hand-washing basins (One in public toilet and one in staff toilet).

4.2.2 Water contained in all fish and turtle ponds on-site are self-circulated by a closed loop pumping system, and hence no effluent would be generated and discharged. Leaves and trash are sieved out regularly and no detergents are used for pond cleaning process. **Figure 4.1** shows the photo record of these facilities.

4.2.3 There is no open car park on-site. There are existing septic/ soakaway facilities on-site serving the toilets, which is located underneath the open area near the gate.

4.2.4 As no wet scrubber is involved in the operation of integrated joss paper furnace with APCE, there is no wastewater generation associated with its use.

4.2.5 Fertilisers would not be used during gardening, watering of plants would only be involved in the gardening process.

4.2.6 Potential water quality impact from site runoff during the operation of columbarium and its related activities is not anticipated. Wastewater generated from toilets and hand-washing basins is the key source of potential water pollution concern.

## 4.3 Sewerage Infrastructure

4.3.1 Wastewater from toilets are collected and treated in septic and soakaway facilities as shown in **Figure 4.2**. They are regularly de-sludged to maintain their optimum use. The approximate dimension of the septic tank is 2740mm x 2000mm x 3600mm (depth x width x length). Photo record of manhole covers is provided in **Figure 4.3**.

## 4.4 Drainage Layout Plan

4.4.1 A drainage layout plan has been drawn as shown in **Figure 4.4** to present the following key information in connection with this Application:

1. Location of the premises;
2. Main facilities that produce effluent;
3. Effluent discharge routes; and
4. Location of discharge points (i.e. soakaway pit).

## 4.5 Ancillary Facilities for Visitors to the Columbarium

4.5.1 Memorial Park Hong Kong does not have a kitchen. The toilets and hand-washing basins in the Site are intended for staff and visitors.

4.5.2 The toilets and hand-washing basins in the toilets are connected to the septic tank/ soakaway facilities as shown in **Figure 4.2**.

## 4.6 Operation Plan to Address Peak Effluent Flow

4.6.1 It is envisaged that upon full occupation of the niches, some 1,258 nos. of visitors per day would be an extreme upper estimate when all visitors were assumed to come on

the very same day during Ching Ming or Chung Yeung Festivals. From past experience/ observations, visitors usually stay for 30 minutes to an hour, and hence the toilet usage rate is not particularly high. Given the relatively short stay, the surge in sewage generation is not envisaged due to a high number of visitors.

4.6.2 Based on the number of toilets, basins, flow rate and daily use duration/pattern, the amount of effluent generation from all on-site facilities has been estimated at 4.7 $m^3$/day in **Appendix 4.1**. In other words, the existing septic tank/soakaway facilities have sufficient capacity to cope with peak flows in peak seasons.

4.6.3 Licensed sewage collector would be engaged at least once every 6 months, or on as-needed basis, to remove some of the sewage collected in the septic tank to relieve loading before and/or during the peak seasons. As long as the septic tank is not overloaded, the integral soakaway system would have ample capacity to cater for the treated effluent coming from the septic tank as usual.

## 4.7 Conclusion

4.7.1 Effluents generated on site are collected and treated in septic and soakaway facilities within the Application Site. There is no potential water quality impact from site runoff during the operation of columbarium and its related activities.

4.7.2 Based on the sewage estimation, the existing septic tank/soakaway facilities have sufficient capacity to cope with peak flows in peak seasons.

# 5. WASTE MANAGEMENT

## 5.1 Introduction

5.1.1 This section identifies the possible types of waste arising from the daily operation of the Columbarium.

## 5.2 Relevant Legislation, Standards and Guidelines

5.2.1 The following legislation shall be followed during the handling, treatment and disposal of waste:

- Waste Disposal Ordinance (Cap 354);
- Land (Miscellaneous Provisions) Ordinance (Cap 28); and
- Public Health and Municipal Service Ordinance (Cap 132).

## 5.3 Waste Generation during Operation of Columbarium

Non-combustible Residues

5.3.1 Given the scale of the columbarium operation, small amount of non-combustible residues (i.e. furnace bottom ash) generated from the joss paper burning activities would be collected in polyethene bags and disposed of to landfill together with other general refuse on a regular basis.

General Refuse

5.3.2 An insignificant amount of general refuse generated by the visitors and staff during daily operation of columbarium is anticipated. The amount of general refuse is expected to be higher during festivals.

5.3.3 The general refuse shall be stored in covered waste skips and removed from the Application Site on daily basis to minimise odour, pest and litter impacts. Burning of refuse shall be strictly prohibited.

5.3.4 Waste generated in office could be minimised by segregating and collecting recyclable waste materials such as aluminium cans, plastic bottles, packaging materials and paper for recycling.

## 5.4 Conclusion

5.4.1 With the implementation of appropriate waste management practices, potential environmental impacts arising from the handling, storage and disposal of non-combustible residues and general refuse are not anticipated from the daily operation of columbarium.

# 6. LAND CONTAMINATION REVIEW

## 6.1 Introduction

6.1.1 This section evaluates and assesses the potential land contamination issues due to previous land uses and the existing operation, which could cause impacts on the proposed development.

## 6.2 Environmental Legislation and Guidelines

6.2.1 The following guidelines published by EPD have been followed:

- Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management (GM), dated December 2007;
- Guidance Note for Contaminated Land Assessment and Remediation (GN), dated 15 August 2007; and
- Practice Guide for Investigation and Remediation of Contaminated Land (PG), dated August 2011.

## 6.3 Currently Available Information

Land Uses

6.3.1 The Application Site is currently occupied for columbarium use. In order to identify any past land uses which may have the potential to cause land contamination, the development history of the Application Site has been reviewed with the aid of selected historical aerial photos between 1945 and present (2020).

6.3.2 According to the available historical aerial photos, the Application Site was occupied with village house since 1945 and the land use of the Application Site has not been changed.

6.3.3 **Table 6.1** below presents the land use summary of the Application Site. The aerial photos of Years 1945, 1963, 1978, 1990, 2003, 2015 and 2020 are attached in **Appendix 6.1**.

**Table 6.1 Land Use Summary of the Application Site**

| Period / Year | Land Use / Description | Owner or Occupier | Sources of Information | Off-Site Property Affected? |
|---|---|---|---|---|
| 2006 and before | The Application Site was occupied by village house. | Hing Lung Buddhist Hall (興隆佛堂) was one of the previous owner/occupier | Aerial photographs from the Lands Department and information provided by the Applicant. | No. |
| 2006 to 2020 | The Application Site was occupied by village house for columbarium use. | Memorial Park Hong Kong | Aerial photographs from the Lands Department and information provided by the Applicant. | No. |

Site Inspection and Observation

6.3.4 The Consultant has visited the Application Site on 2 March 2021. Photo records of the Application Site taken during the site visit are presented in **Appendix 6.2**.

6.3.5 Upon the site visit on 2 March 2021, the Application Site was observed to be consistent with the abovementioned information which is currently occupied by village house for columbarium use. No aboveground/underground oil storage tank, chemicals and dangerous goods observed to be stored on site.

6.3.6 A Site Walkover Checklist has been completed with the Applicant as required in the Practice Guide and attached in **Appendix 6.3**.

Information from Government Departments

6.3.7 Apart from the information reviewed, the following departments of the Government of HKSAR have been enquired on the latest update on the availability of land use status and records of land contamination and/or spillage for the Application Site. The summary of correspondence is presented in **Table 6.2** below. Copy of the letters which the Consultant sent to various departments of the Government of HKSAR and relevant replies from various departments of the Government of HKSAR are included in **Appendix 6.4** for reference.

**Table 6.2 Enquiries and Responses on Land Contamination Related Records in the Application Site**

| Consultant's Letter Ref. | Department | Response Letter Ref. | Response Date | Summary |
|---|---|---|---|---|
| MPHKLPCOEA00_0_0005L.21 | Fire Services Department | (20) in FSD GR 6-5/4 R Pt. 32 | 3 March 2021 | ➢ Neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found at the Application Site. |
| MPHKLPCOEA00_0_0008L.21 | Explosive Ordinance Disposal Bureau, Hong Kong Police Force | (16) in CP OPS EOD 6-20/1 Pt. 5 | 22 February 2021 | ➢ The office has not found any record and location of explosive storage, as well as explosive spillage reports for the Application Site. |
| MPHKLPCOEA00_0_0006L.21 | Lands Department | (27) in LD DLO/ST 373/ZLT/75 Pt. 2 | 2 March 2021 | ➢ The Application Site is occupied for columbarium use. |

6.3.8 The Consultant reviewed the registry of chemical waste producers maintained at the Territory Control Office of EPD in February 2021. With reference to registry records, there was no registered chemical waste producer within the Application Site.

6.3.1 The Consultant visited the Building Records Access and Viewing Online (BRAVO) of Buildings Department (BD) over the internet to obtain records for completed private building. There is neither records of building, structural, drainage, alternation & additions, site formation, minor works nor existing building available for the Application Site. The captured screen of BRAVO is provided in **Appendix 6.5** for reference.

## 6.4 Discussion

6.4.1 A land contamination review has been conducted for the Application Site. Background information including selected aerial photos from Lands Department were reviewed and site survey was conducted to identify the potential land contamination in the Application Site.

6.4.2 With reference to the aerial photos obtained from Lands Department, the Application Site was occupied with village house since 1945 and the land use of the Application Site has not been changed.

6.4.3 Moreover, after reviewing the available information, the Application Site would not have involved storage and handling of chemicals, oils and/or hazardous waste, etc., which are considered as contaminative activities and facilities. In addition, from the site inspection, there was no aboveground/underground oil storage tank, chemicals and dangerous goods observed to be stored on site. Therefore, the Application Site are not considered to have any potential land contamination issues.

## 6.5 Conclusion

6.5.1 Based on the findings of the site appraisal on the historical and current land uses and site visit of the assessment area, there is no potential land contamination issues identified within the Application Site.

# 7. CONCLUSION

## 7.1 General

7.1.1 The existing Columbarium is undergoing a regularization process, first through this S12A planning application. During this period, the Applicant freezes selling of niches. Being an existing established use, the Columbarium does not need to be constructed nor does it require any expansion/ alteration works.

7.1.2 According to various assessments conducted, it is anticipated that no significant adverse impacts would be induced by the operation of columbarium, in terms of air quality, noise, water quality, waste management and land contamination.

## 7.2 Air Quality Impact

7.2.1 Given the use of dry-type joss paper furnace cum APCE employing the best available technology, and the sufficient separation distances with nearby air sensitive receivers, the mitigated air quality impacts should be well under control. Adverse air quality impact is not envisaged.

## 7.3 Noise Impact

7.3.1 The current assessment has revealed that the only major noise source of concern will be due to the integrated joss paper furnace cum dry-type APCE comprising extraction fans and dry filters. As the predicted noise level ("PNL") does not exceed the established noise criteria for daytime operation, adverse noise impact is not is envisaged.

## 7.4 Water Quality Impact

7.4.1 Effluents generated on site are collected and treated in septic and soakaway facilities within the Application Site. Based on the sewage estimation, the existing septic tank/soakaway facilities have sufficient capacity to cope with peak flows in peak seasons.

7.4.2 Based on the site operation, potential water quality impact from site runoff during the operation of columbarium and its related activities is not anticipated.

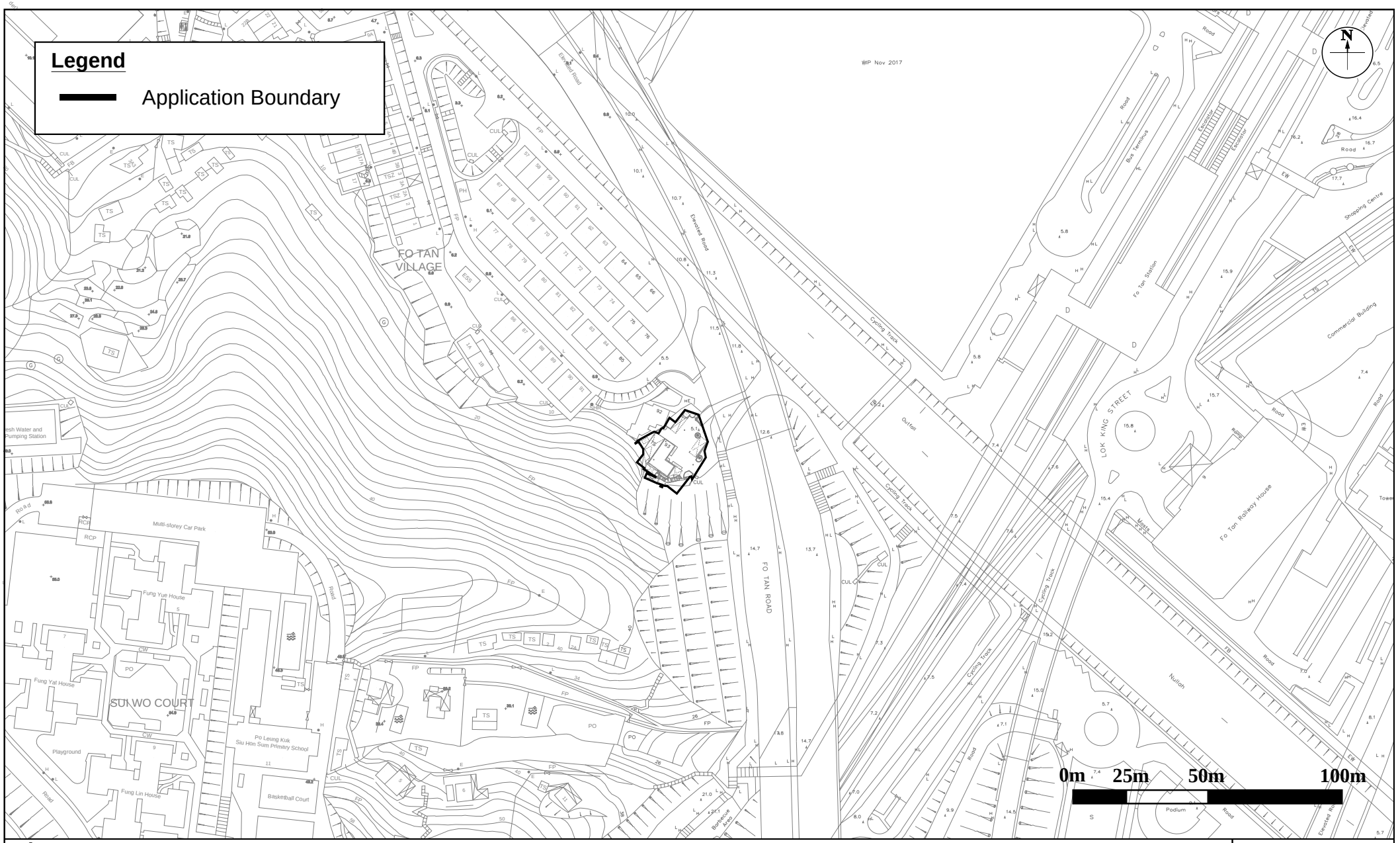
## 7.5 Waste Management

7.5.1 With the implementation of appropriate waste management practices, potential environmental impacts arising from the handling, storage and disposal of non-combustible residues and general refuse are not anticipated from the daily operation of columbarium.

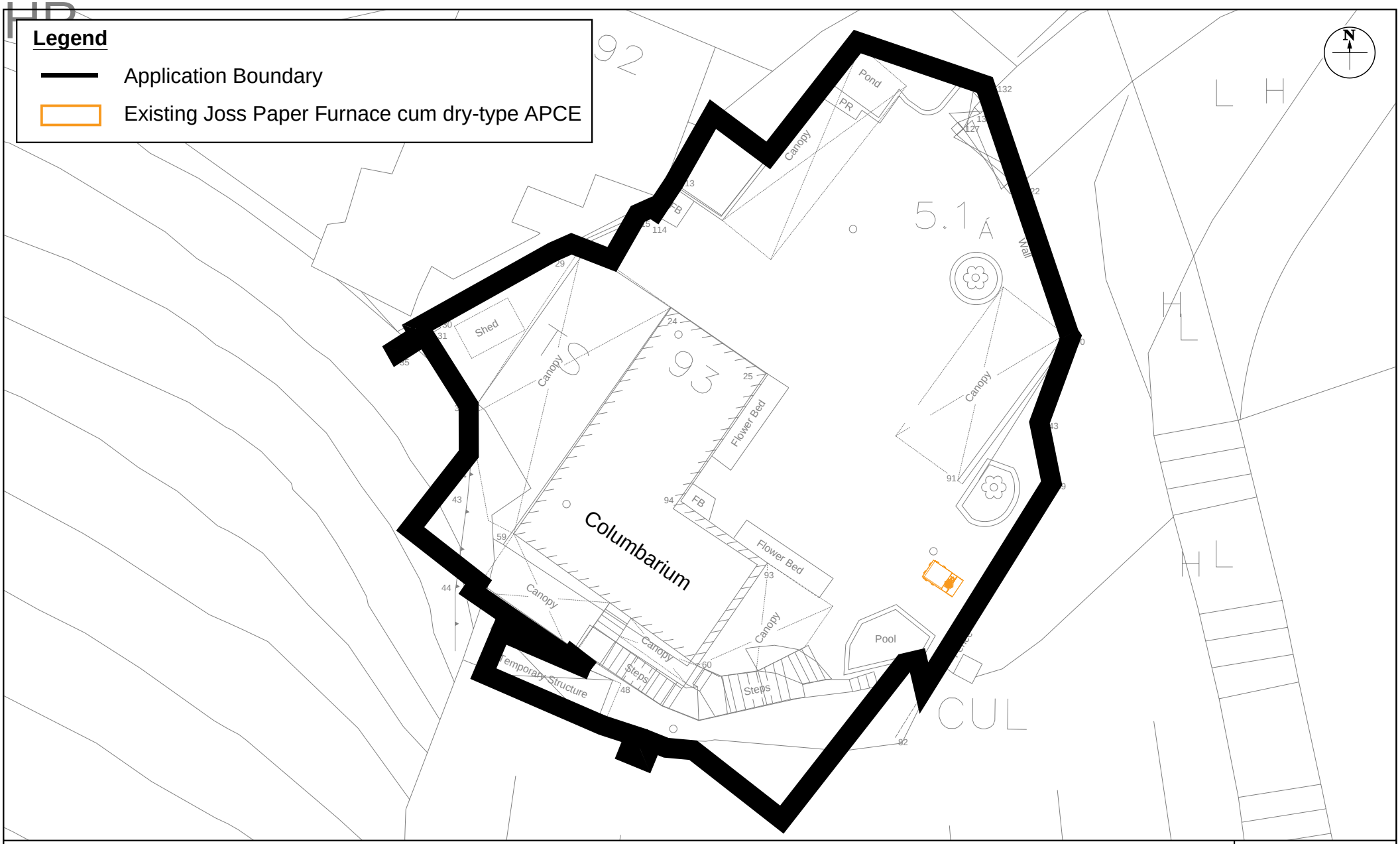
## 7.6 Land Contamination Review

7.6.1 Based on the findings of the site appraisal on the historical and current land uses and site visit of the assessment area, there is no potential land contamination issues identified within the Application Site.

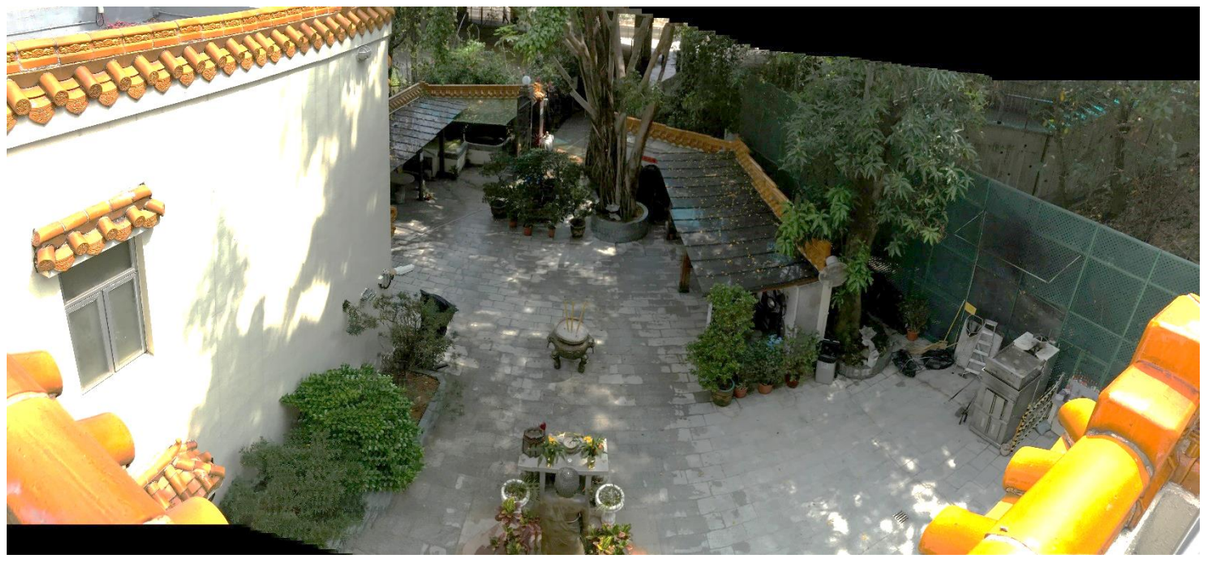
**Figures**



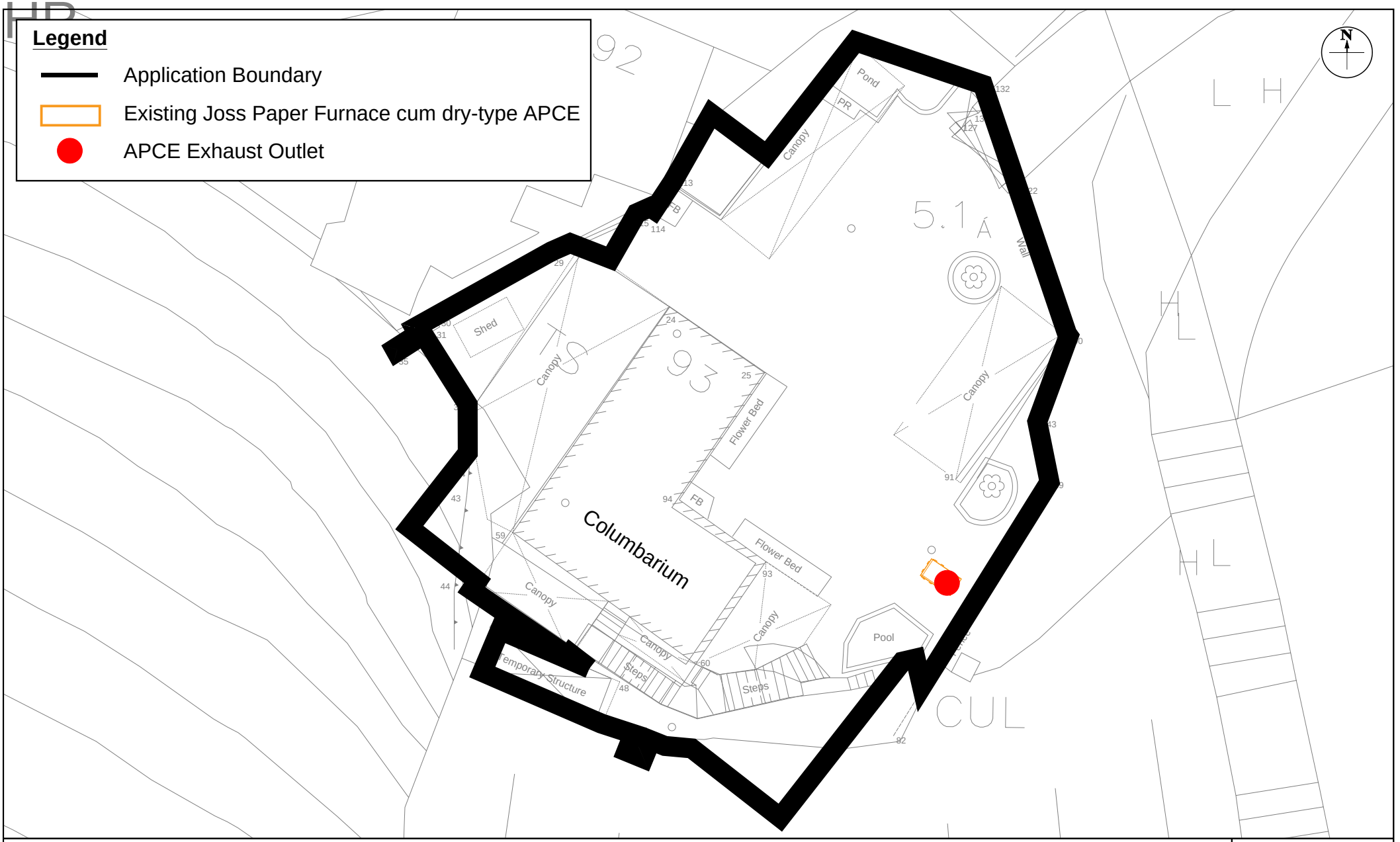

| | |
|---|---|
| **Figure:** 1.1 | RAMBOLL |
| **Title:** Site Location and the Environ | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | | |
|---|---|---|
| **Figure:** | 1.2 | RAMBOLL |
| **Title:** | Master Layout Plan (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong,<br>No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |



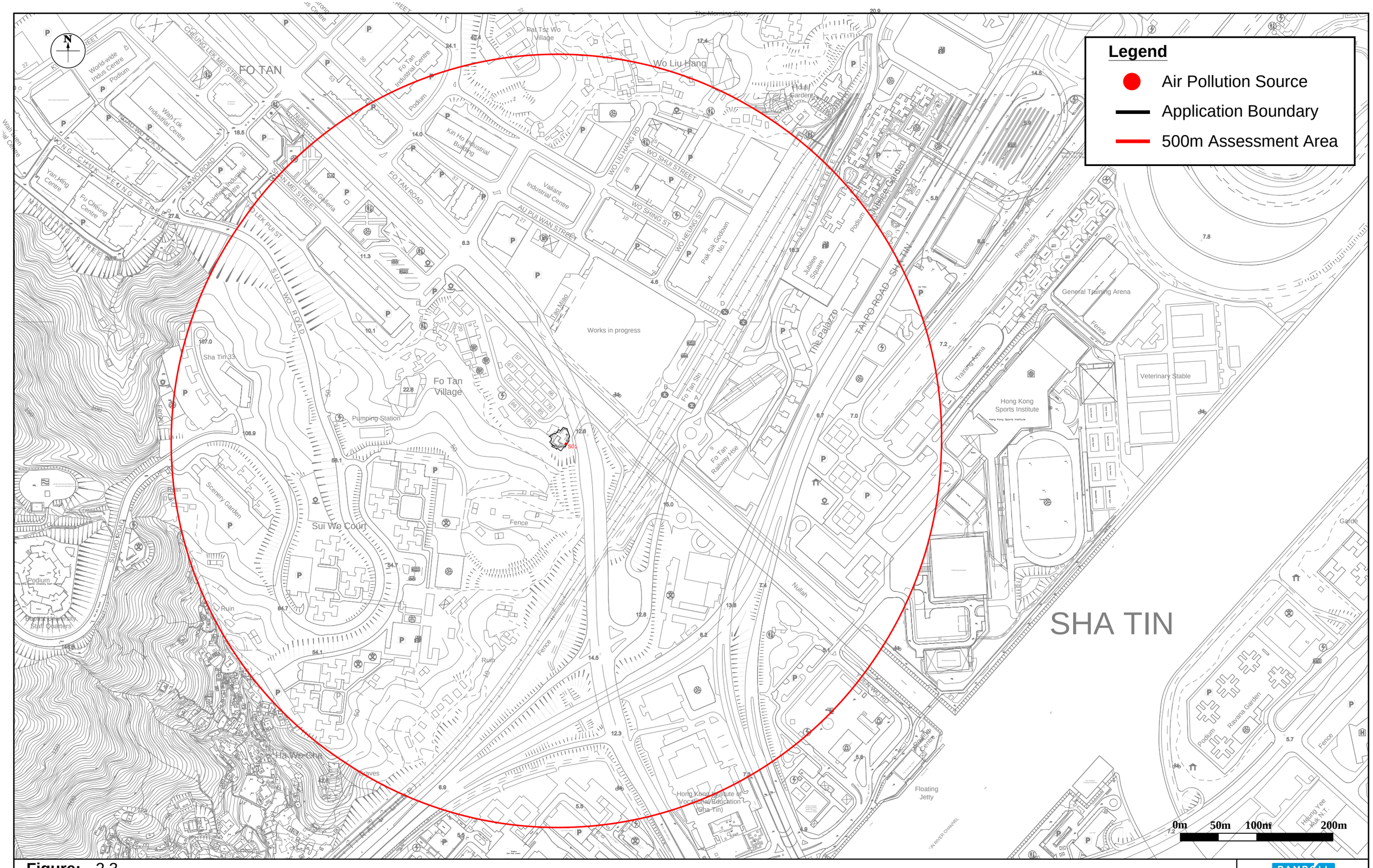
| | |
|---|---|
| **Figure:** 1.3 | RAMBOLL |
| **Title:** An Outlook of Memorial Park Hong Kong | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | |
|---|---|
| **Figure:** 2.1 | RAMBOLL |
| **Title:** Location of Air Pollution Sources (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

**Existing Joss Paper Furnace cum APCE**

| | | | |
|---|---|---|---|
| **Figure:** | 2.2 | RAMBOLL | |
| **Title:** | Image of Existing Joss Paper Furnace cum Dry-type Air Pollution Control Equipment | Drawn by: | RW |
| | | Checked by: | KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: | 1.0 |
| | | Date: | Mar 2021 |




| | |
|---|---|
| **Figure:** 2.3 | RAMBOLL |
| **Title:** Area of Air Pollution Concern | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

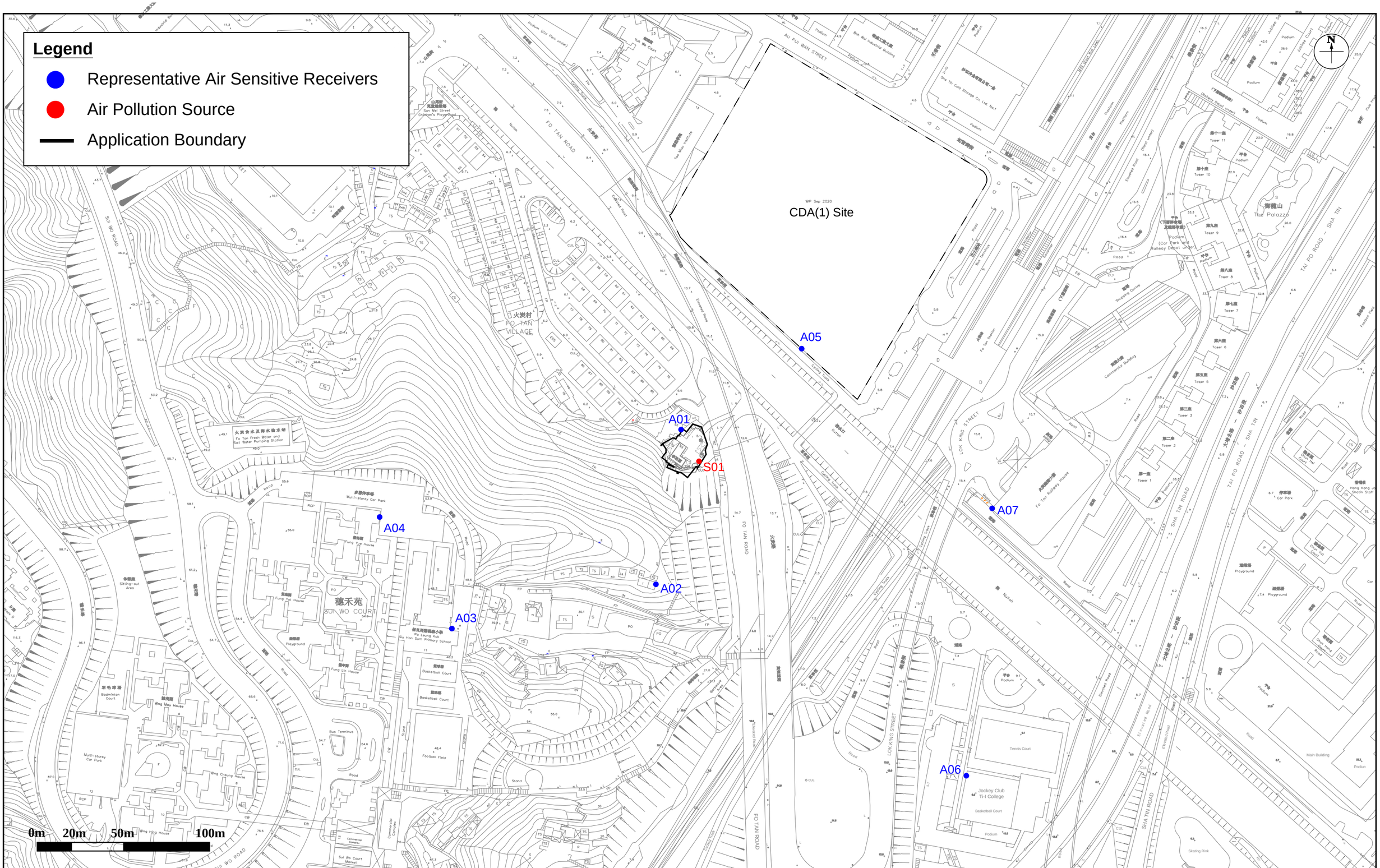



**Figure:** 2.4

**Title:** Location of Major Air Pollution Sources and Air Sensitive Receivers

**Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T.

RAMBOLL

| | |
|---|---|
| Drawn by: | RW |
| Checked by: | KY |
| Rev.: | 1.0 |
| Date: | Mar 2021 |

6

**A01: No.92 Fo Tan Village**

**A02: No.1 Shek Shui Wan Village**

**A03: Po Leung Kuk Siu Hon Sum Primary School**

**A04: Fung Yue House, Sui Wo Court**

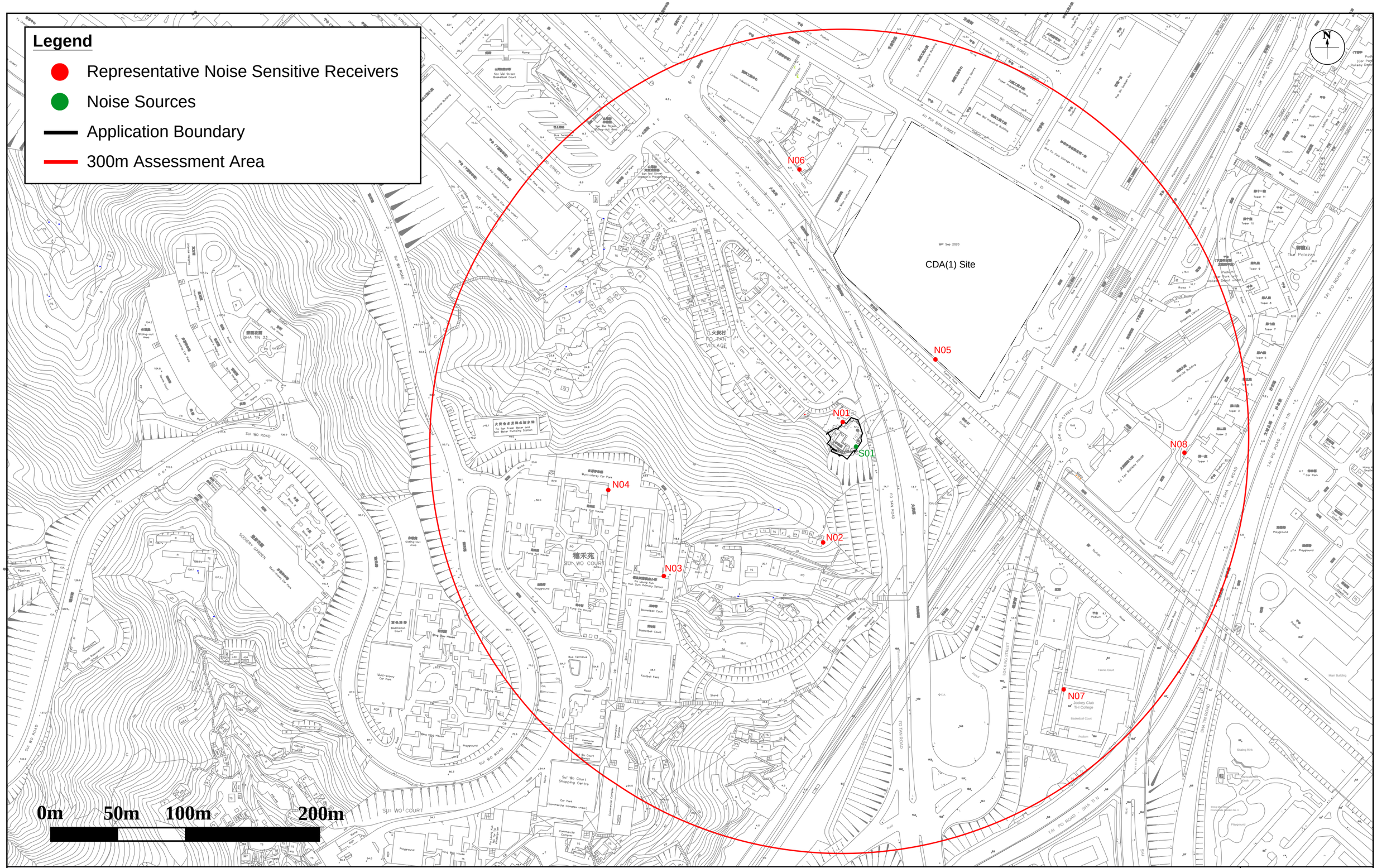
| | |
|---|---|
| **Figure:** 2.5 | RAMBOLL |
| **Title:** Photo Record of Representative Air Sensitive Receivers | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

**A05: Residential Development at CDA(1) Site**

**A06: Jockey Club Ti-i College**

**A07: Fo Tan Railway House**

| | |
|---|---|
| **Figure:** 2.5 | RAMBOLL |
| **Title:** Photo Record of Representative Air Sensitive Receivers | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |




| | | |
|---|---|---|
| **Figure:** | 3.1 | RAMBOLL |
| **Title:** | Assessment Area for Noise Impact and Representative NSRs Off-site | Drawn by: RW |
| | | Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | | Date: Mar 2021 |

**N01: No.92 Fo Tan Village**

**N02: No.1 Shek Shui Wan Village**

**N03: Po Leung Kuk Siu Hon Sum Primary School**

**N04: Fung Yue House, Sui Wo Court**

| | |
|---|---|
| **Figure:** 3.2 | RAMBOLL |
| **Title:** Photo Records of Representative NSRs | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

6

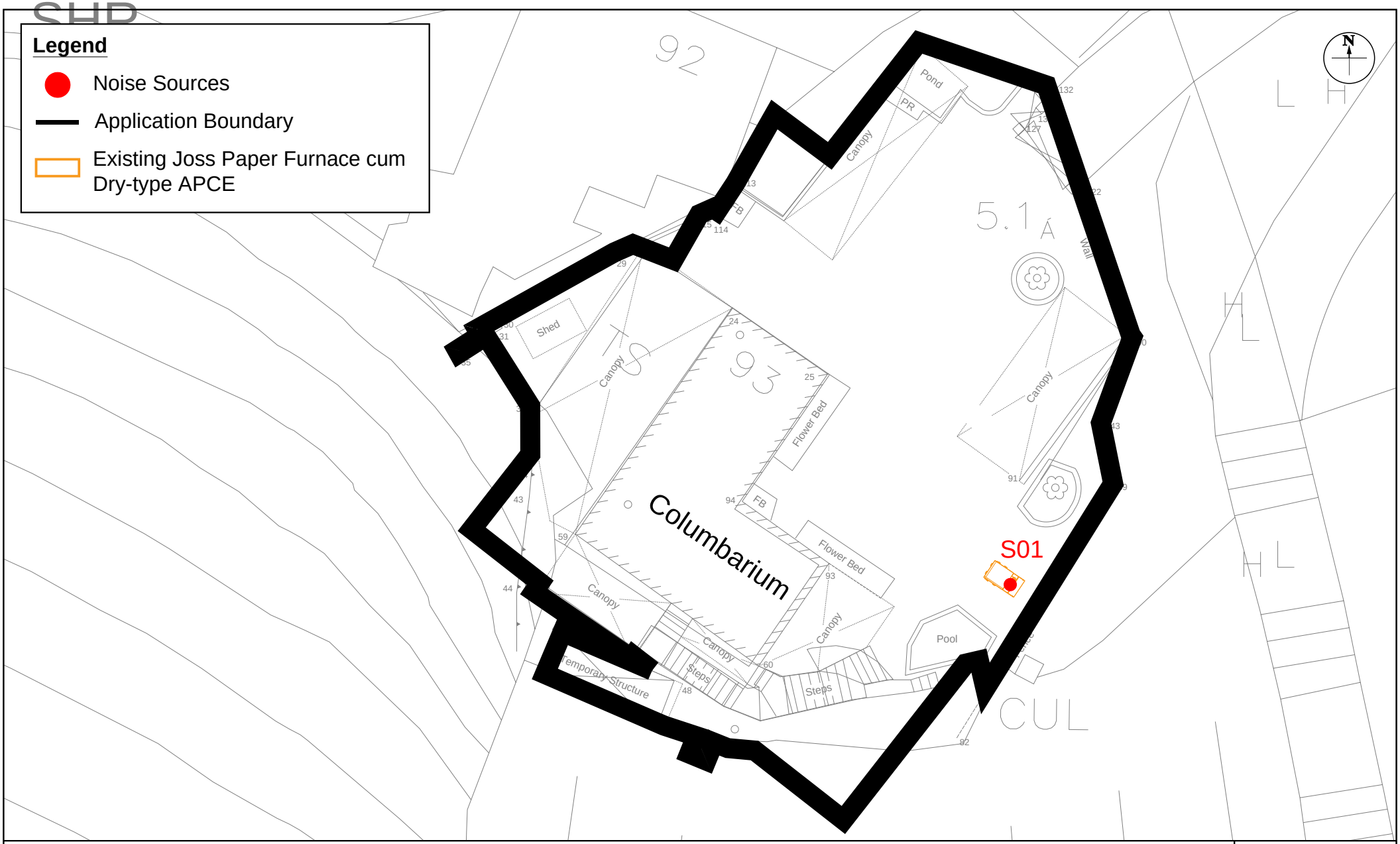
**N05: Residential Development at CDA(1) Site**

**N06: Yuk Wo Court**

**N07: Jockey Club Ti-i College**

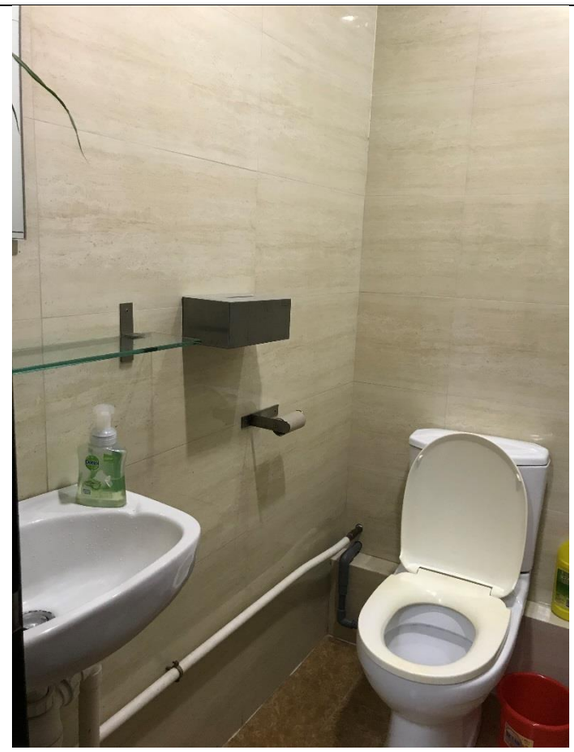
**N08: Tower 1, The Palazzo**

| | |
|---|---|
| **Figure:** 3.2 | RAMBOLL |
| **Title:** Photo Records of Representative NSRs | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | | |
|---|---|---|
| **Figure:** | 3.3 | RAMBOLL |
| **Title:** | Location of Major Fixed Noise Sources (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

Public Toilet: 2 nos. of water closets and 1 nos. of hand-washing basin



Staff Toilet: 1 nos. of water closet and 1 nos. of hand-washing basin

1 nos. of Fish Pond near the stairs

2 nos. of Fish and Turtle Ponds near the gate

**Figure:** 4.1

**Title:** Photo Record of Toilets, Fish and Turtle Ponds

**Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T.

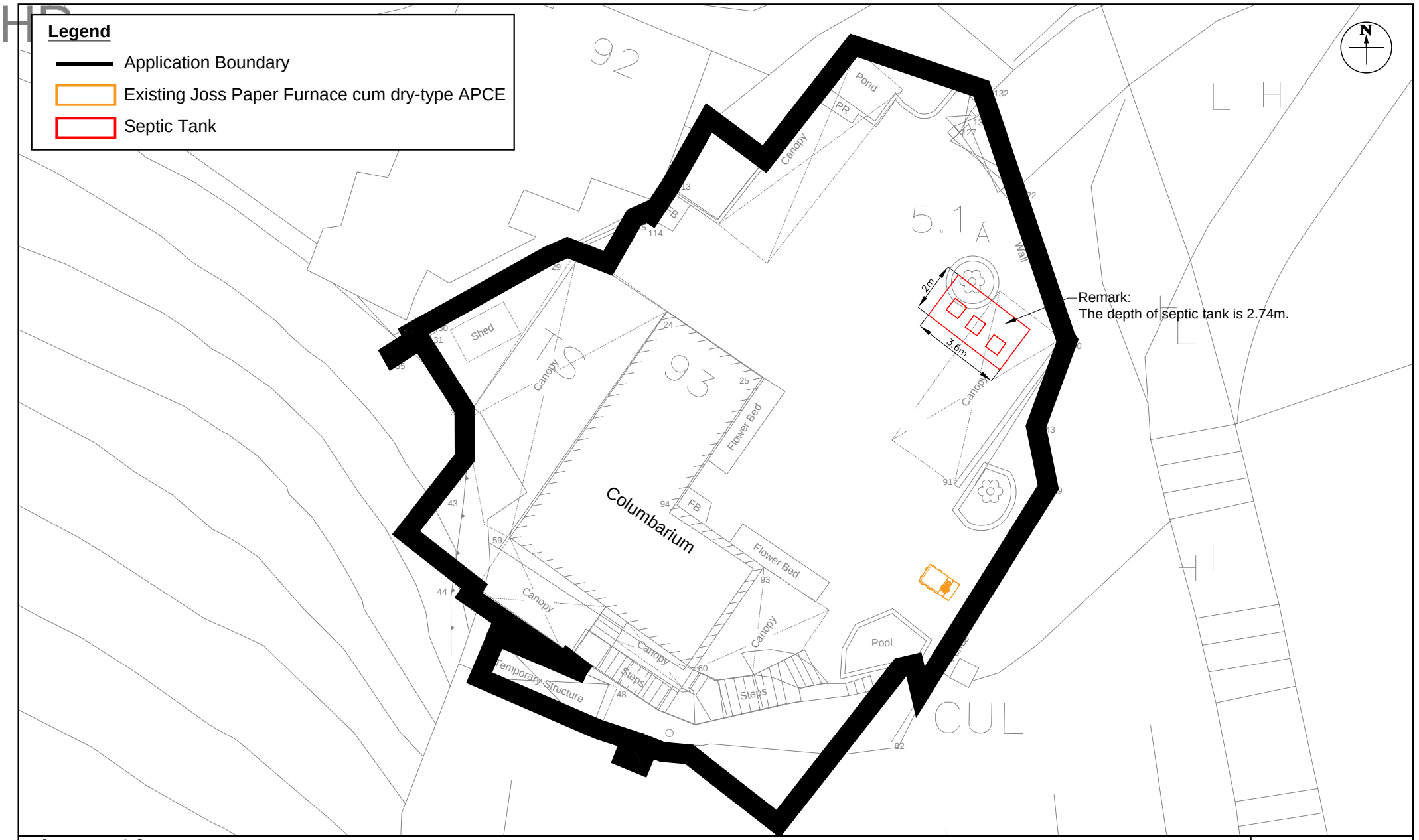
RAMBOLL

Drawn by: RW

Checked by: KY

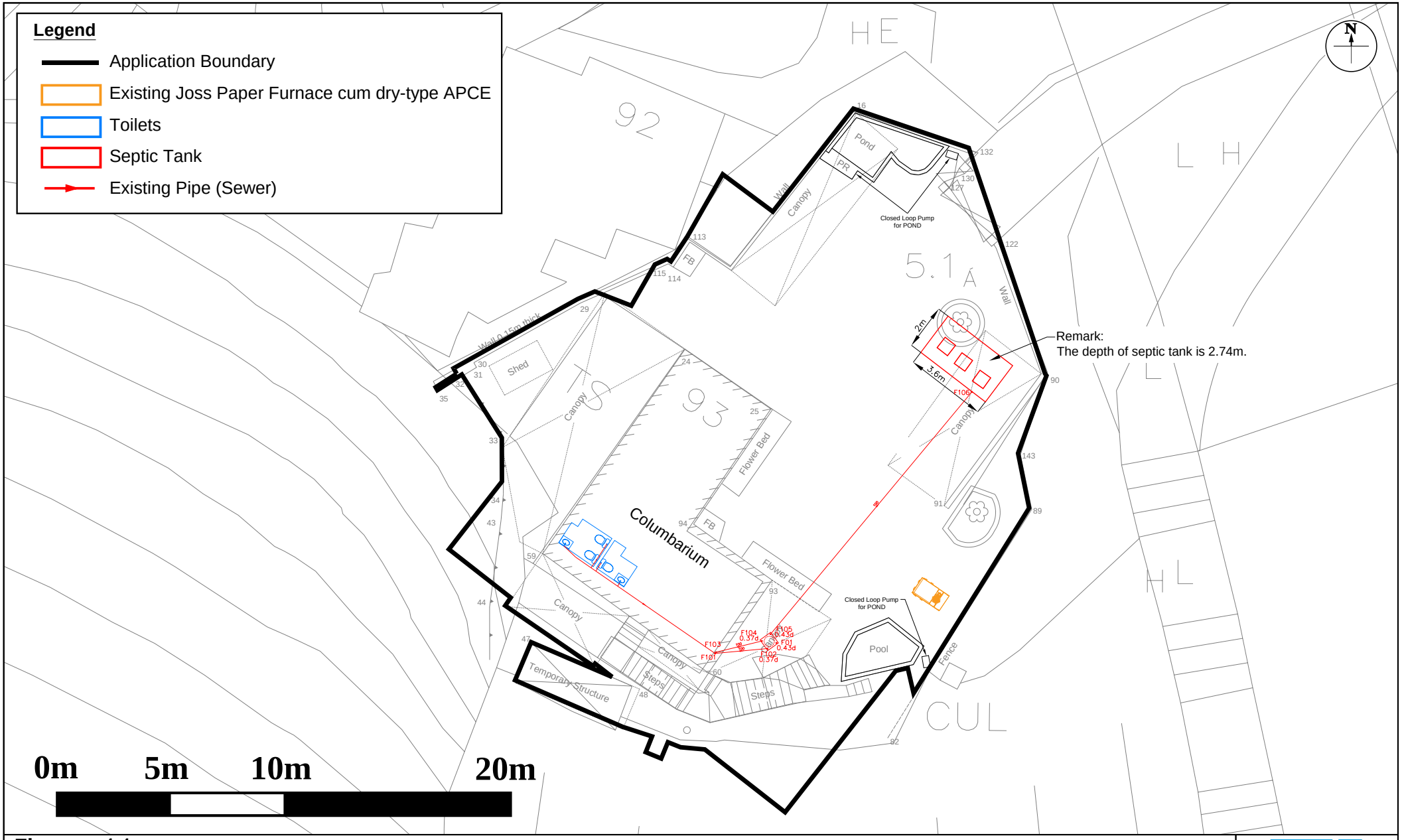
Rev.: 1.0

Date: Mar 2021




| | |
|---|---|
| **Figure:** 4.2 | RAMBOLL |
| **Title:** Location of Existing Septic/ Soakaway Facilities (Scale 1:200 when printed on A4 paper) | Drawn by: RW<br>Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

| | | |
|---|---|---|
| **Figure:** | 4.3 | RAMBOLL |
| **Title:** | Manhole Covers of Existing Septic/ Soakaway Facilities | Drawn by: RW |
| | | Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | | Date: Mar 2021 |




| | |
|---|---|
| **Figure:** 4.4 | RAMBOLL |
| **Title:** Drainage Layout Plan | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

**Appendix 2.1**

**Catalogue and Design Drawing of the Joss Paper Furnace fitted with Air Pollution Control Equipment**

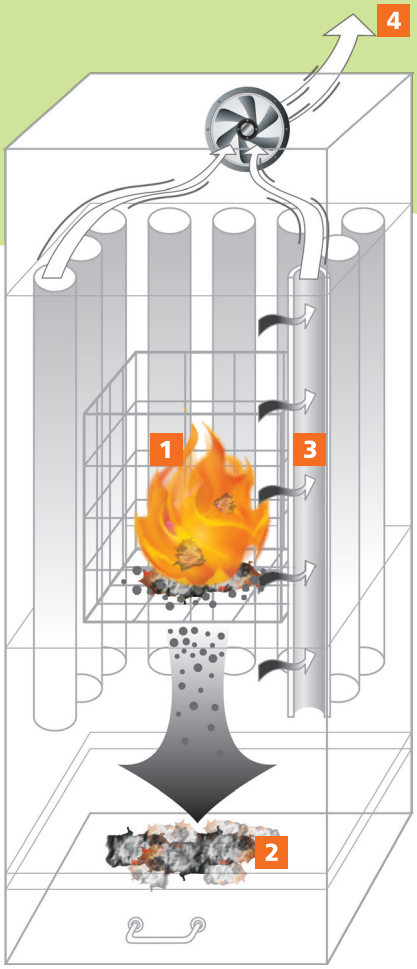
Bamako Burner™
寶潔科　綠化寶系統™

# 乾式「寶潔科　綠化寶系統™」零黑煙排放

## Dry-Type "Bamako Burner™" Zero Black Smoke Emission

升級流動版
Upgraded mobile version

- **革命性除煙塵技術，除煙塵效率 > 90%**
  Revolutionary smoke and fly ash removal technology with > 90% removal rate
- **締造寧靜環境**
  Tranquil environment created
- **適用於各道堂、屋苑、廟宇、骨灰龕場、醫院殮房等**
  Excellent for Taoist Institution, Estates, Temples, Columbaria, Mortuaries, and etc.




## 運作原理 System Schematic

1. 從燃燒爐產生的黑煙及飛灰被抽入系統；
   Black smoke and fly ash from the combustion chamber will be extracted to the treatment system;
2. 較大灰塵會被爐灰盤收集；
   Large smoke particulate matter will be collected by ash tray;
3. 最後，高效乾式濾芯再過濾煙氣中剩下較微細的灰塵；
   The remaining fine ash will be filtered by high efficiency dry filters ;
4. 排出已淨化的空氣。
   The smokeless clean air will be discharged at the air outlet diffuser.

## 產品特點 Product Features

- ✔ 使用工業級乾式濾芯，達致零黑煙排放
- ✔ 高效除煙除塵，可處理2.5μm(PM2.5)微粒
- ✔ 全自動清潔系統
- ✔ 一鍵操作
- ✔ 2 年保養

- ✔ Zero black smoke emission achieved through adoption of industrial grade dry type filter and strictest process
- ✔ Highly efficient treatment system; particulates removed up to 2.5μm (PM2.5)
- ✔ Automatic cleaning system
- ✔ Intuitive single button control
- ✔ Warranty : 2 years

## 產品規格 Product Specifications

| 型號 Model | FAST-D7 | FAST-D20 |
|---|---|---|
| 化寶量 (公斤/小時)<br>Joss Paper Burning Capacity (kg/hr) | 7 | 20 |
| 外形尺寸 (闊x深x高)(毫米)<br>Dimension (W x D x H) (mm) | 800 x 1439 x 1825 | 1950 x 1260 x 2290 |
| 燃燒爐爐口尺寸 (闊x高)(毫米)<br>Opening Dimension (W x H) (mm) | 300 x 370 | 500 x 600 |
| 燃燒倉內部尺寸 (闊x深x高)(毫米)<br>Interior Dimension (W x D x H) (mm) | 400 x 600 x 618 | 600 x 630 x 830 |
| 風量<br>Air Flow Rate | 0.1m³/s | 0.25m³/s |
| 總重量 (噸)<br>Total Weight (ton) | 0.35 | 1.8 |
| 電功率 (千瓦)<br>Rated Power (kW) | 1 | 3.3 |
| 輸入電壓<br>Input Voltage | 220V/1ph/50Hz | |
| 煙塵排放濃度<br>Particulates Matter | 少於 Below 30mg/m³<br>(最佳可達 Optimum result < 5mg/m³) | |
| 除煙塵效率<br>Particulates Matter Removal Efficiency | 高於 Above 90% | |
| 煙氣排放黑度<br>Darkness of Smoke | 低於林格曼黑度1級 (無黑煙)<br>Below Grade 1 of Ringelmann Smoke Scale<br>(No black smoke) | |

## 一站式服務 One-stop Service

盈電環保科技有限公司能為你提供一站式的服務。

1. 實地評估及系統設計
2. 供應及安裝
3. 保養及維修

REC Green Technologies Company Limited provides one-stop service for our clients including:

1. On-site Inspection & System Design
2. Supply & Installation
3. Maintenance Service

資料如有更改，恕不另行通知。
Information is subject to change without prior notice.

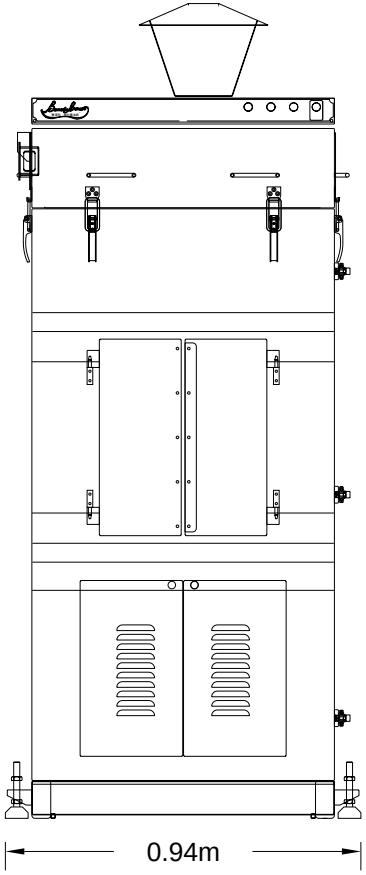
REC GREEN Technologies Co., Ltd.
A wholly-owned subsidiary of Yau Lee Holdings Limited


如欲查詢更多「寶潔科 綠化寶系統™」的資訊，歡迎與盈電環保科技有限公司聯絡。
For more information of Bamako Burner™, please contact REC Green Technologies Co., Ltd. via any of the below channels.

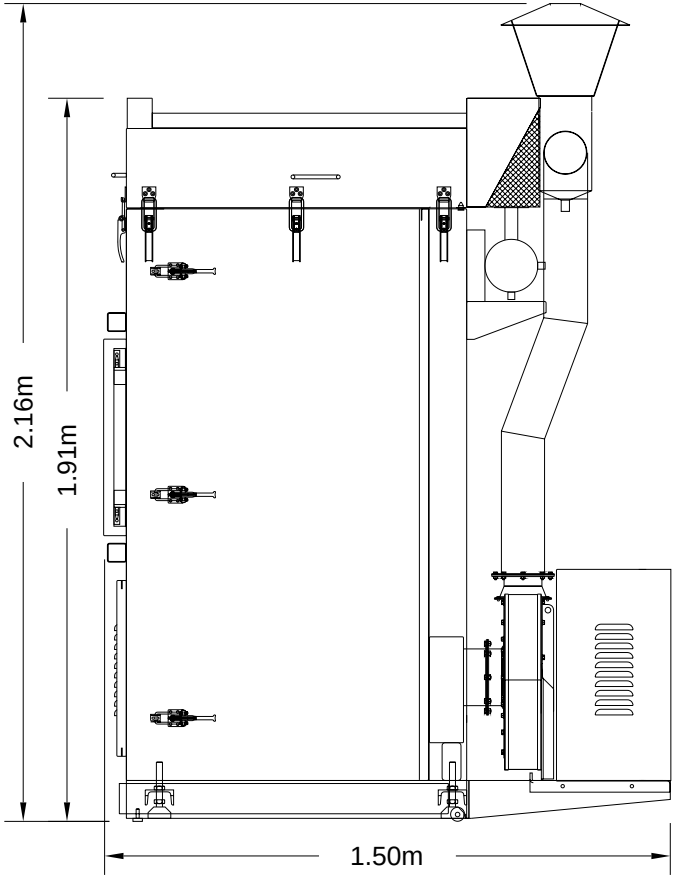
**電話 Tel:** (852) 2619-8817 | **傳真 Fax:** (852) 2481-2870 | **電郵 E-mail:** rgt@rec-eng.com | **網址 Website:** www.rec-gt.com

**地址** ：香港新界葵涌青山道585-609號嘉民葵涌物流中心15樓A-D室
**Address:** Units A-D, 15/F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, N.T., Hong Kong

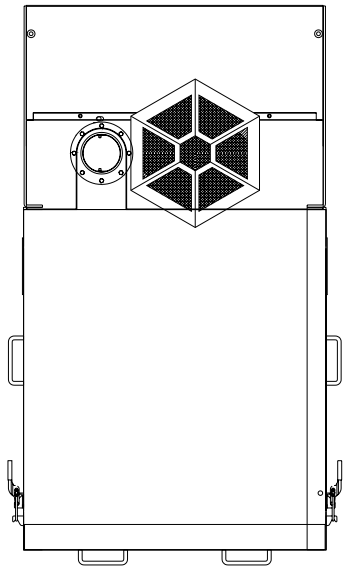

Bamako version D3 06/2016




FRONT VIEW




SIDE VIEW



TOP VIEW

# BAMAKO BURNER MODEL: FAST-D7

| | | |
|---|---|---|
| **Appendix:** | 2.1 | RAMBOLL |
| **Title:** | Design Drawings of the Joss Paper Furnace fitted with Air Pollution Control Equipment (Scale of 1:20 on A4) | Drawn by: RW<br>Checked by: KY |
| **Project:** | Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0<br>Date: Mar 2021 |

**Appendix 2.2**

**Operation Manual of Dry-Type "Bamako Burner™" (Model: FAST-D7)**

盈電環保科技有限公司
REC Green Technologies Co., Ltd.
(A wholly-owned subsidiary of Yau Lee Holdings Limited)

寶潔科　綠化寶系統™

# Dry Type Bamako Burner ™
# Remove Smoke and Ash, Heat Absorption, Full-Featured Burner System

## MODEL：FAST-D7

## User's Guide

**Contents**


1. Introduction
2. Operation
3. Technical Specifications
4. Daily Notification
5. Maintenance
6. Troubleshooting



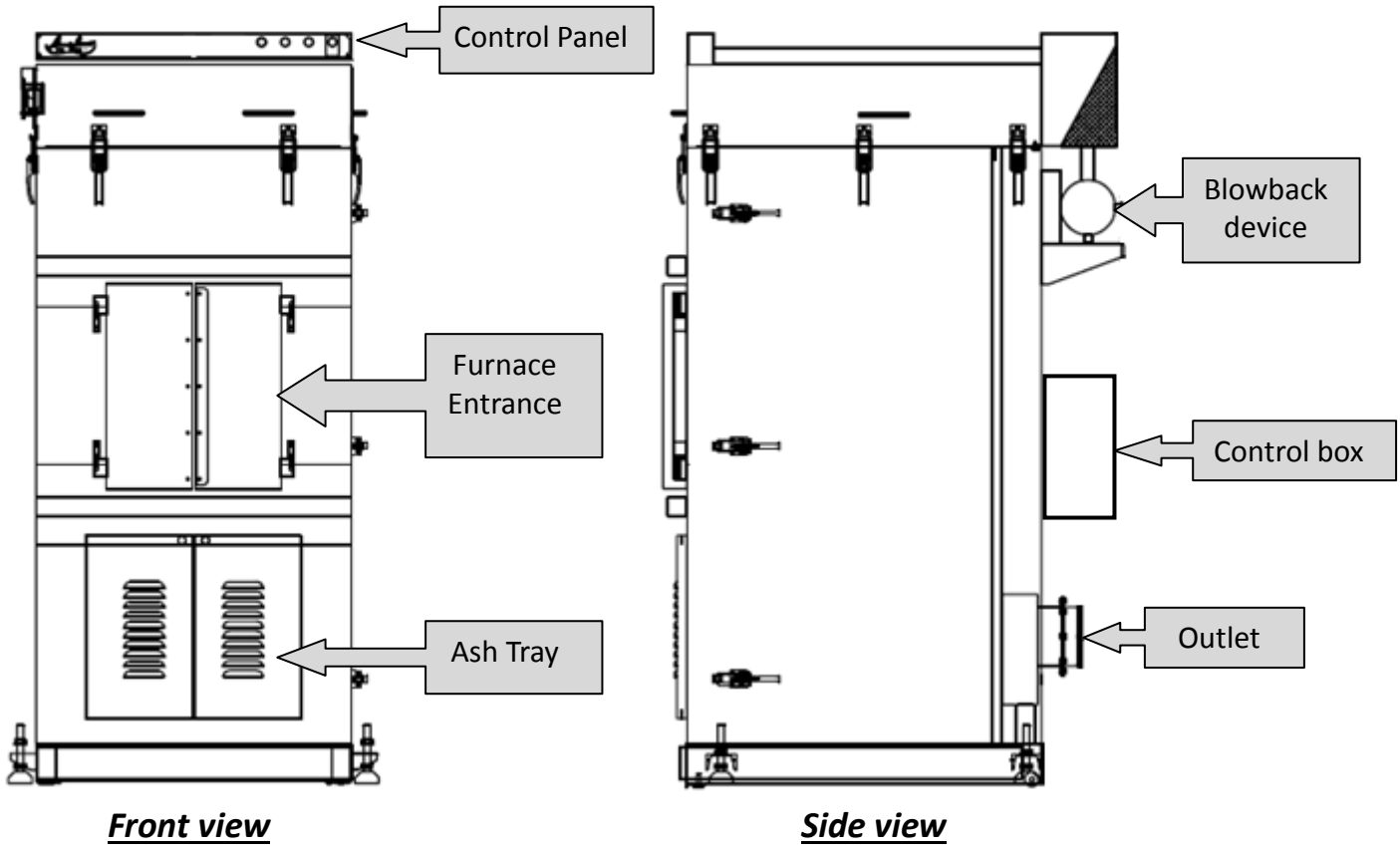
Customer Service Hotline：852-8100-8083

E-mail：rgt@rec-eng.com

Address: Units A-D, 15F, Goodman Kwai Chung Logistics Centre, 585-609 Castle Peak Road, Kwai Chung, New Territories, Hong Kong

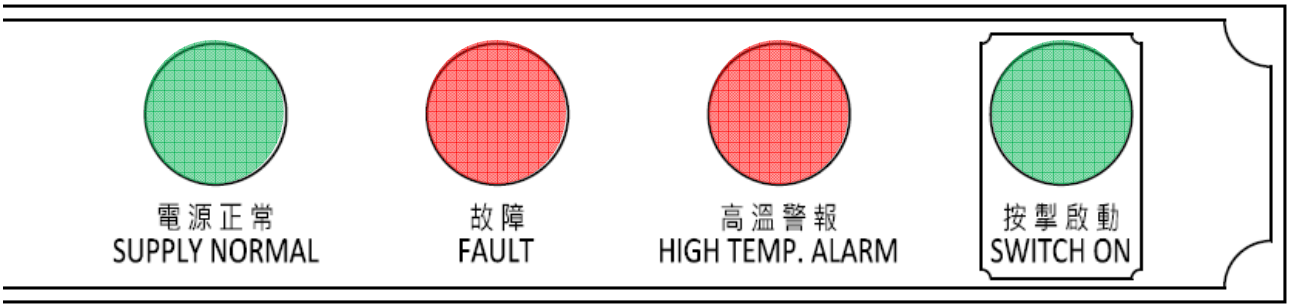
# 1. Introduction

## 1.1. Components




***Front view*** ***Side view***

## 1.2. Control Panel



## 2. Operation

2.1. Operation Instructions

- Press "start" button, system will automatically turn on.
- Open the door, light and put joss paper into the furnace.
- Press "start" button for 5 seconds, the system will be turned off.
- To restart the system, please press the "Start" button again.
- Caution: Do not burn plastic or other substances, otherwise it will block the filter.

2.2. Blowback device

During operation, the system will clean the filter automatically (4 minutes per one) until the system stops. When turn on the system, it will perform a blowback and the “start” button will flash for 4 minutes, and perform the second blowback, which is a cycle of automatic cleaning, "start" button will be non-flash, until the next blowback. Blowback which generates opposite flow will operate. This may raises a small amount of dust.

2.3. High temperature alarm

When temperature is higher than the setting value (200 °C and 300 °C) , an alarm will raise when the temperature reaches 200°C. When the temperature reaches 300°C, the "High Temperature Alarm" will light up. Alarm siren will be turned on. For turn off the alarm siren, users can press the "High Temperature Alarm" once. During high temperature alarm occurs, the system will operate continuously with alarm light. Users should not put joss paper into the furnace. When the temperature drops below the setting temperature, the high temperature alarm will turn off. After 1-2 minutes, users can use the burner again.

## 3. Technical Specifications

| Equipment | Specification | |
|---|---|---|
| System | Total size (mm) (W x D x H) | 800 x 1439 x 1825 |
| | Flow rate | 0.1$m^3$/s |
| | Weight | ~350kg |
| | Power (per unit) | 1kW |
| | Power requirements | 220V/1ph/50Hz |
| Burning Chamber | Furnace Entrance size (mm) (W x D) | 300 x 370 |
| | Furnace size (mm) (W x D x H) | 400 x 400 x 600 |
| Filter | Length | 1.25m |
| | Amount | 18 |

## 4. Daily Notification

4.1. Ashtray Cleansing

Users should clean up the ashtray regularly if this is full.

## 5. Maintenance

5.1. Purchased the Dry Type Bamako Burner™, including the first 24 months of defect liability period.

5.2. Please call our customer service hotline (Tel: 852-8100-8083) for inspection arrangements to repair.

Hotline Duration: Monday to Saturday, 0900-1700

5.3. If the defect liability period expires, please contact us to arrange an extension of maintenance or purchase product accessories.

## 6. Troubleshooting

6.1. The system cannot be turned on

- Check whether the "Supply Normal" light is on. If not, check the power supply is normal, and the power plug is inserted.
- Check the "Fault" light is on. If yes, please refer to item 6.2.

6.2. "Fault" light on

- "Fault" will light up and alarm siren will be turned on.
- Users can press the "Fault" button for turn off the alarm siren
- Disconnect the power supply and reconnect it.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

6.3. Black smoke is discharged

- Check if there is other substance in the furnace, such as plastic, wood, etc. If yes, immediately remove the substance.
- Check whether the filter has broken or not. If yes, please contact our engineering staff.

6.4. Low suction force

- Check whether the air outlet is blocked.
- Check whether blowback has been performed.
- Check the blowback pressure gauge readings (normal 4bar). If the reading is too low, please contact our engineering staff.

If the problem persists, please contact our engineering staff.
(Customer Service Hotline: 852-8100-8083)

**Appendix 3.1**

**Prediction of Fixed Noise Source Impact**

| NSR Label | Descriptions | Nature of Use | Existing/ Planned Uses | Location | | Local Ground, (mPD) | Selected Floor | Floor Level, (mPD) | Assessment Point, z, (mPD) | ASR | Noise Criteria (ANL-5 / Background), $L_{eq}$ (30 min), dB(A) | | Unmitigated Noise Impact at NSR, $L_{eq}$ (30 min), dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | x Easting | y Northing | | | | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | Daytime (0700-1900) | Evening and Night Time (1900-0700) |
| N01 | No.92 Fo Tan Village | Residential | Existing | 838269 | 828358 | 4.3 | 1/F | 7.3 | 8.5 | B | 58.8 | N.A. | 49.8 | N.A. |

| Noise Source ID | Description of Noise Sources | Sources | Source Location | | | Measured SPL, dB(A) (free-field) | Noise Measurement Location | | | Distance from Source (m) | Measured Background SPL, dB(A) (free-field) | Corrected SPL, dB(A) (free-field) | Corrected SWL, dB(A), $L_{eq}$ (30 min) | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | % on-time within 30min (Night-time Peak) | Tonality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Planned | X | Y | Z, mPD | | x Easting | y Northing | Z, mPD | | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | | | | | |
| S01 | Joss Paper Furnace cum Dry-type APCE | Existing | 838279 | 828340 | 7.3 | 66.6 | 838274 | 828343 | 6.3 | 5 | 58.8 | 65.8 | 91.2 | OFF | 1 | 1 | 100% | N.A. | 6 |

## Prediction of Fixed Noise Source Impact on Identified NSR

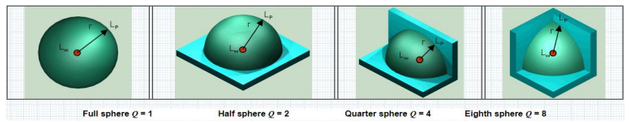
| NSR Labels | Descriptions | ASR | Noise Criteria (ANL-5 / Background), $L_{eq}$ (30 min) | | Noise Source ID | Description of Noise Sources | Unmitigated SWL, dB(A), $L_{eq}$ (30 min) | | Location | | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | Distance to NSR, d (m) | Correction for, dB(A) | | | | | | | Noise Impact at NSR, dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | X | Y | Z, mPD | | | | | Distance | No. | % on time (Daytime) | Screening by Features [1] | Enclosure/ Barrier | Tonality | Impulsive | Façade [3] | Daytime | Evening and Night Time |
| N01 | No.92 Fo Tan Village | B | 58.8 | N.A. | S01 | Joss Paper Furnace cum Dry-type APCE | 91 | OFF | 838279 | 828340 | 7.3 | 1 | 1 | 100% | 21 | -37.4 | 0 | 0 | -10 | 0 | 6 | 0 | 0 | 49.8 | N.A. |

**Notes:**

[1] Screening by structures (building/ wall) resulting in rough noise attenuation of 5 to 10 dB(A). The 10dB(A) attenuation has been claimed for situation where source- reciever are substantially blocked by a major obstacle e.g. buildings/ topography, and the 5dB(A) attenuation is claimed for case where the direct line of sight from source is barely blocked by obstable when viewed from the reciever.

[2] Directivity Factor (Q) is a correction index quantifies the deviation of the sound propagation from unifrom spherical spreading. Q=1 for spherical sound propagation; Q=2 for hemispherical sound propagation; Q=4 for quarter spherical sound propagation and Q=8 for octantspherical sound propagation.

[3] Background noise level of N01 was measured at the façade of NSR, therefore façade correction is not applied.



**Appendix 4.1**

**Estimation of Septic Tank Loading under Peak Effluent Flow**

**Evaluation of Impact on Septic Tank Capacity**

**(a) Design Criteria**

Capacity of Septic Tank = Daily Water Consumption (From ProPECC PN 3/95 & From Building (SSFPDW&L) R 65 (2)(a))

Daily Water Consumption = Daily Water Consumption by Basins + Daily Water Consumption by WC

**(b) Analysis for Peak Load**

No. of staff = 6

No. of visitors upon full niche occupancy = 1,258 (Predicted no. of visitor based on previous visitor survey data under peak season e.g. Ching Ming Festival & Chung Yeung Festival)

Peak No. of visitors = 665 person/day recorded on 5th April 2018 (Ching Ming Festival)

| | Basin | | Remarks |
|---|---|---|---|
| No. of Staff | 6 | | Information provided by the Applicant |
| Flow Rate (L/s) | 0.15 | | Reference to IoP[2] |
| Duration (s) | 10 | | Reference to BEAM Plus[3] |
| No. of Hand Wash Operations per day | 5 | | Reference to BEAM Plus[3] |
| Daily Water Consumption (L) | 45 | | |
| | | | |
| No. of Visitors per day during peak seasons | 1,258 | | Estimated[1] |
| Flow Rate (L/s) | 0.15 | | Reference to IoP[2] |
| Duration (s) | 10 | | Reference to BEAM Plus[3] |
| No. of Occurrence | 1 | | Assume the visitors will use the basin once during their short stay. |
| Daily Water Consumption (L) | 1,887 | | |
| | **WC** | | |
| | **Male** | **Female** | |
| No. of Staff | 6 | | Information provided by the Applicant |
| Capacity of Flushing Cistern (L) | 7.5 | | Waterworks Regulation[4] |
| No. of Occurrence | 5 | | Reference to BEAM Plus[3] |
| Daily Water Consumption (L) | 225 | | |
| | | | |
| No. of Person | 157 | 157 | Based on site observation, only around 10% - 20% of the visitors would use the WC during their stay. As a conservative estimate, 25% of the 1258 visitors is assumed to use the toilets. [1] |
| Capacity of Flushing Cistern (L) | 7.5 | 7.5 | Waterworks Regulation[4] |
| No. of Occurrence | 1 | 1 | Assume the visitors will use the toilet once during their short stay. |
| Daily Water Consumption (L) | 1,179 | 1,179 | |
| | 2,359 | | |
| | | | |
| Daily Water Consumption by Basin (L) | 1,932 | | |
| Daily Water Consumption by WC (L) | 2,584 | | |
| Daily Water Consumption by Urinal (L) | 0 | | No urinal on-site |
| Daily Water Consumption by Pantry Sink (L) | 0 | | No pantry sink on-site |
| Total Daily Water Consumption (L) | **4,516** | | |
| Daily Water Consumption (L) - Adjusted | **4,742** | | An allowance of 5% for uncertainty has been included |
| Daily Water Consumption ($m^3$) - Adjusted | **4.7** | | |
| | | | |
| Total Design Capacity of Septic Tank ($m^3$) | **19.7** | | |
| | **Comply** | | |

**Notes:**

[1] Estimated for peak seasons upon full niche occupancy

[2] Institution of Plumbing – Table 14 of Plumbing Engineering Services Design Guide (IOP Guide)

[3] The Hong Kong Green Building Council (HKGBC) - BEAM Plus for New Buildings v1.2

[4] HKSAR - CAP 102A Waterworks Regulation

[5] Total no. of niches = 3,499
No. of niches sold up to the day where peak no. of visitors was recorded = 1,849.

**Appendix 6.1**

**Historical Aerial Photos**

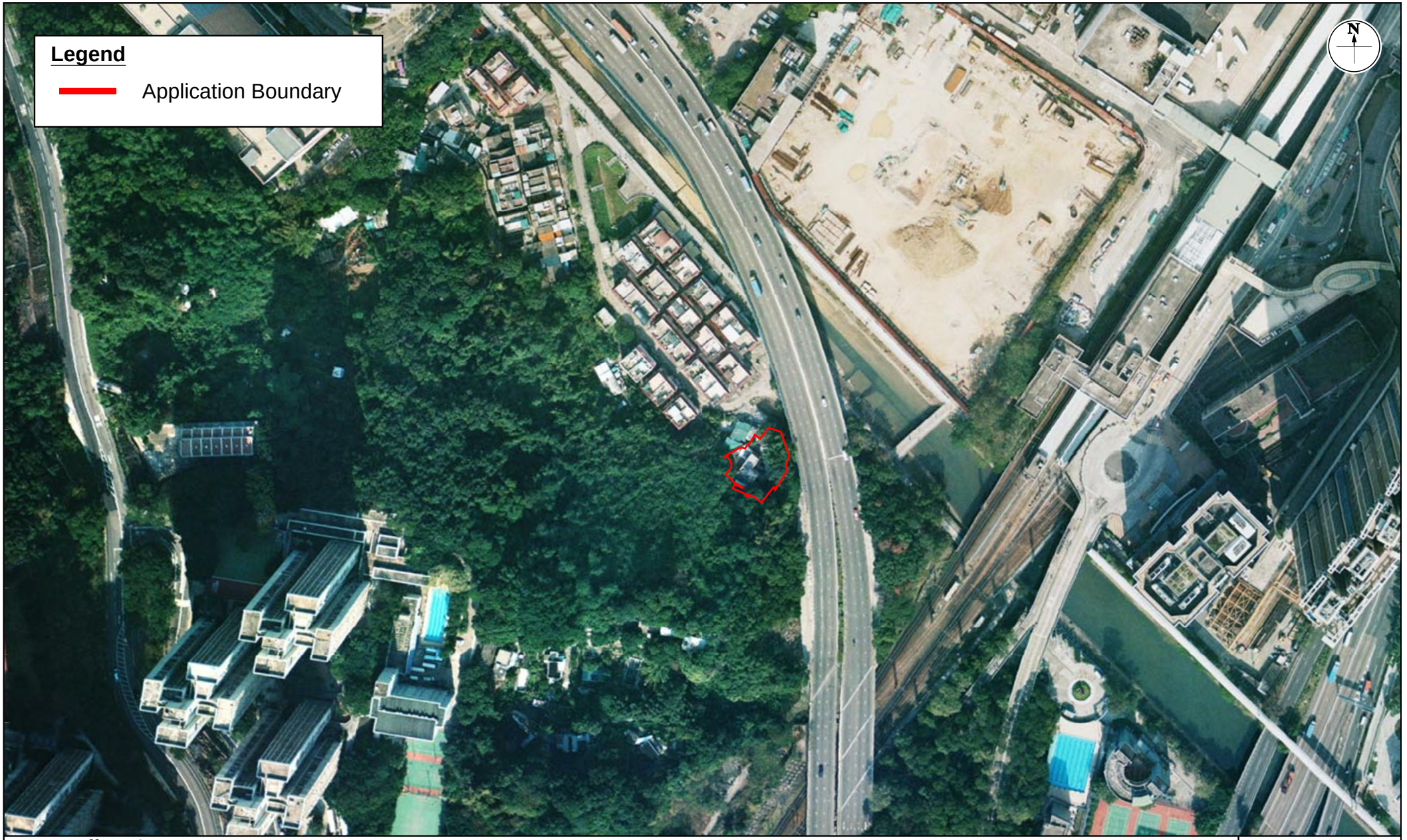
| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1945 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1963 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

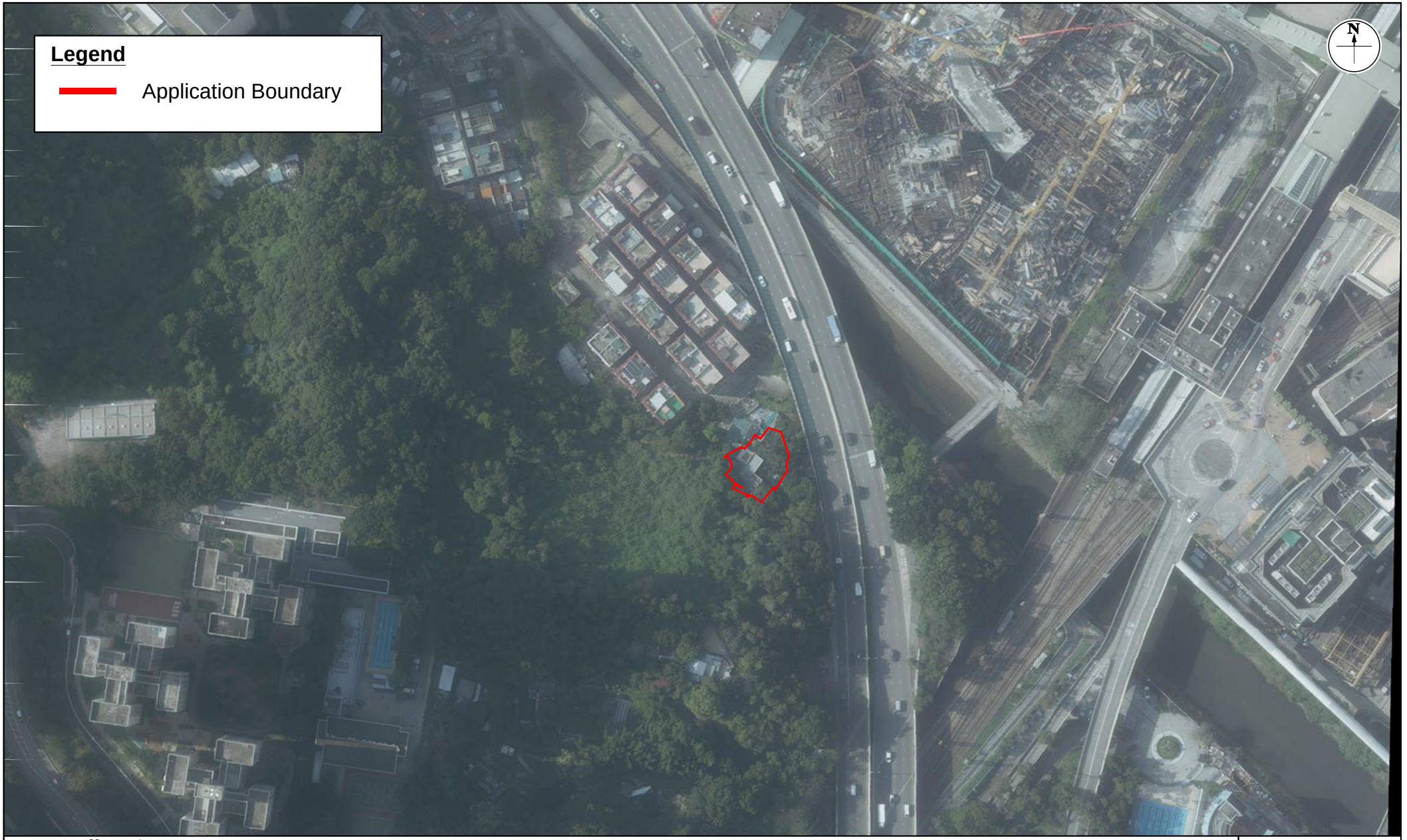
| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1978 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 1990 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 2003 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 2015 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |




| | |
|---|---|
| **Appendix:** 6.1 | RAMBOLL |
| **Title:** Aerial Photo - 2020 | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong, No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Mar 2021 |

**Appendix 6.2**

**Photo Record of the Site Visit**

# Photo Record of Site Visit on 2 March 2021

Photo 1: Entrance of the Application Site

Photo 2: Fish and turtle ponds

Photo 3: Incense furnaces for general worshipping

Photo 4: Joss paper furnace cum dry-type APCE and a fishpond

Photo 5: Columbarium building

Photo 6: Bins for general refuse

**Appendix 6.3**

**Site Walkover Checklist**

# Appendix B

## Site Walkover Checklist (2 March 2021)

### *GENERAL SITE DETAILS*

SITE OWNER/CLIENT Memorial Park Hong Kong

PROPERTY ADDRESS No.93 Fo Tan Village, Sha Tin, N.T.

**PERSON CONDUCTING THE QUESTIONNAIRE**

NAME Ms. Rachel Wong

POSITION Assistant Environmental Consultant, Ramboll Hong Kong Limited

**AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)**

NAME Ms. Bobo Fung

POSITION Executive Manager

TELEPHONE 2145 4825

### *SITE ACTIVITIES*

Briefly describe activities carried out on site, including types of products/chemicals/materials handled.

**Obtain a flow schematic if possible.**

| | | |
|---|---|---|
| Number of employees: | Full-time: | N/A |
| | Part-time: | N/A |
| | Temporary/Seasonal: | N/A |
| Maximum no. of people on site at any time: | | N/A |
| Typical hours of operation: | | N/A |
| Number of shifts: | | N/A |
| Days per week: | | N/A |
| Weeks per year: | | N/A |
| Scheduled plant shut-down: | | N/A |

Detail the main sources of energy at the site:

| | |
|---|---|
| Gas | ~~Yes~~/No |
| Electricity | ~~Yes~~/No |
| Coal | ~~Yes~~/No |
| Oil | ~~Yes~~/No |
| Other | ~~Yes~~/No |

## *SITE DESCRIPTION*

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: 520.4 $m^2$

What area of the site is covered by buildings (%): 39%

Please list all current and previous owners/occupiers if possible.

Current owner/occupier:
Memorial Park Hong Kong

Previous owner/occupier:
Hing Lung Buddhist Hall (興隆佛堂)

---

Is a site plan available? If yes, please attach. Yes/~~No~~

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Fo Tan Village

South: Hill

East: Fo Tan Nullah

West: Hill

# Appendix B – Site Walkover Checklist (Page 43)

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Flat terrain

State the size and location of the nearest residential communities.

Fo Tan Village located at the northern side of the Application Site

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

No

### *Questionnaire with Existing/Previous Site Owner or Occupier*

| Ref. | | Yes/No | Notes |
|---|---|---|---|
| 1. | What are the main activities/operations at the above address? | Columbarium use and religious activities | |
| 2. | How long have you been occupying the site? | Since 2006 | |
| 3. | Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy?) | No | |
| 4. | Prior to your occupancy, who occupied the site? | Hing Lung Buddhist Hall (興隆佛堂) | |
| 5. | What were the main activities/operations during their occupancy? | Buddhist worship hall | |
| 6. | Have there been any major changes in operations carried out at the site in the last 10 years? | No | |
| 7. | Have any polluting activities been carried out in the vicinity of the site in the past? | No | |
| 8. | To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage? | No | |
| 9. | Are there any boreholes/wells or natural springs either on the site or in the surrounding area? | No | |
| 10 | Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.) | No | |
| 11. | Are any chemicals used in your daily operations? (If yes, please provide details.) | No | |
| | • Where do you store these chemicals? | N/A | |
| 12. | Material inventory lists, including quantities and locations available?<br>(If yes, how often are these inventories updated?) | No | |
| 13. | Has the facility produced a separate hazardous substance inventory? | No | |
| 14. | Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.) | No | |

| Ref. | | Yes/No | Notes |
|---|---|---|---|
| 15. | How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)? | N/A | |
| 16. | Do you have any underground storage tanks? (If yes, please provide details.) | No | |
| | ▪ How many underground storage tanks do you have on site? | N/A | |
| | ▪ What are the tanks constructed of? | N/A | |
| | ▪ What are the contents of these tanks? | N/A | |
| | ▪ Are the pipelines above or below ground? | N/A | |
| | ▪ If the pipelines are below ground, has any leak and integrity testing been performed? | N/A | |
| | ▪ Have there been any spills associated with these tanks? | N/A | |
| 17. | Are there any disused underground storage tanks? | No | |
| 18. | Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.) | N/A | |
| 19. | How are the wastes disposed of? | N/A | |
| 20. | Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.) | No | |
| 21. | Have any spills occurred on site?<br>(If yes, please provide details.) | No | |
| | • When did the spill occur? | N/A | |
| | • What were the substances spilled? | N/A | |
| | • What was the quantity of material spilled? | N/A | |
| | • Did you notify the relevant departments of the spill? | N/A | |
| | • What were the actions taken to clean up the spill? | N/A | |
| | • What were the areas affected? | N/A | |
| 22. | Do you have any records of major renovation of your site or rearrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.) | No | |
| 23. | Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)? | No | |
| 24. | Are there any known contaminations on site? (If yes, please provide details.) | No | |
| 25. | Has the site ever been remediated?<br>(If yes, please provide details.) | No | |

### *Observations*

| Ref. | | Yes/No | Notes |
|---|---|---|---|
| 1. | Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)? | No chemical storage areas | |
| 2. | What are the conditions of the bund walls and floors? | N/A | |
| 3. | Are any surface water drains located near to drum storage and unloading areas? | No | |
| 4. | Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.) | Yes | General refuse and non-combustible residues generated from the joss paper burning activities |
| 5. | Is there a storage site for the wastes? | Yes | |
| 6. | Is there an on-site landfill? | No | |
| 7. | Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.) | No | |
| 8. | Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.) | No | |
| 9. | Are there any potential off-site sources of contamination? | No | |
| 10. | Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)? | No | |
| 11. | Are there any sumps, effluent pits, interceptors or lagoons on site? | No | |
| 12. | Any noticeable odours during site walkover? | No | |
| 13. | Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam? | No | |

**Appendix 6.4**

**Copy of Consultant's Letters and the Letters Replies from Various Departments of the Government of HKSAR**

RAMBOLL

Ref.: MPHKLPCOEA00_0_0005L.21

16 February 2021

Fire Services Department / Management Group
9/F, Fire Services Headquarters Building
1 Hong Chong Road
Tsim Sha Tsui East
Kowloon, Hong Kong

By Fax (2739 5879) & Post

Dear Sir / Madam,

**Re: Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)**
**Enquiry for Land Contamination Information**

We are conducting a Land Contamination Assessment Study for the captioned project at No.93 Fo Tan Village, Sha Tin, N.T. (the Subject Site). As required by the "Practice Guide for Investigation and Remediation of Contaminated Land" published by the Environmental Protection Department of the Government of HKSAR (EPD), information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site are required as part of the vetting process.

Of particular interests are spill and incident reports (including records of fire at the Subject Site) that we believe your Department might have record of. Furthermore, we would also like to know whether anywhere of the Subject Site had applied or possessed licence for dangerous goods storage. We enclosed herewith a site map showing the location of the Subject Site for your reference.

Due to the urgency of the project, we would be much appreciated if you could provide the requested information by **24 February 2021**.

Should you have any queries, please do not hesitate to contact our Ms. Rachel Wong at 3465 2815 or the undersigned at 3465 2832. We thank you in anticipation of your help in the matter.

Thank you for your kind attention.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Katie Yu
Senior Manager
*Encl.*

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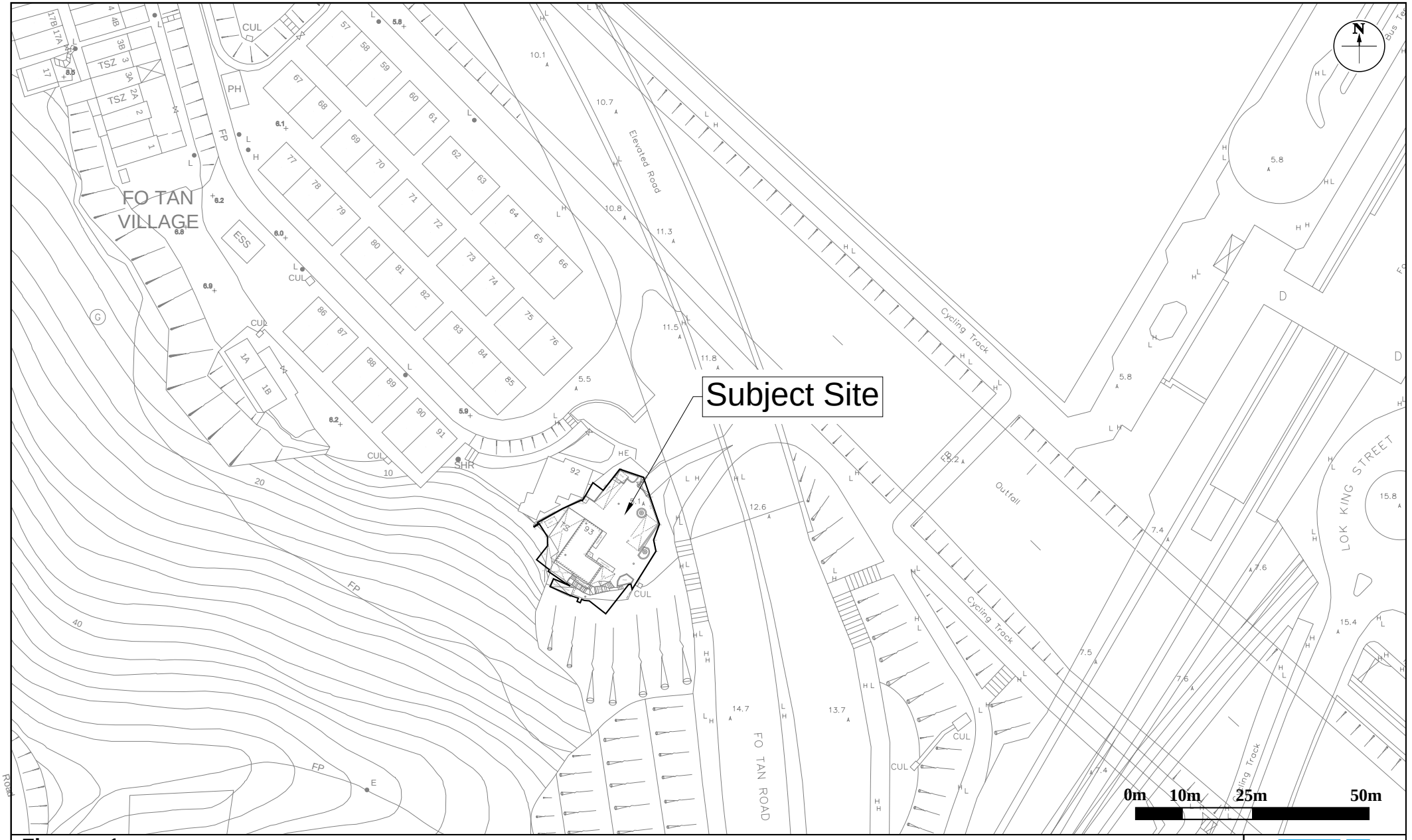
Ramboll Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
**www.ramboll.com**




| | |
|---|---|
| **Figure:** 1 | RAMBOLL |
| **Title:** Location of Subject Site | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Feb 2021 |

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (132) in FSD GR 6-5/4 R Pt.31
來函檔號 YOUR REF. : MPHKLPCOEA00_0_0005L.21
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電 話 TEL NO. : 2733 7741

17 February 2021

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wanchai, Hong Kong.
**(Attn: Ms. Katie YU, Senior Manager)**

***By fax (3465 2899) only***

Dear Ms. YU,

**Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park (孝思園) Hong Kong at No. 93 Fo Tan Village, Sha Tin, N.T.**
**Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 16.2.2021 regarding the captioned subject.

Your case is being handled, and a reply will be furnished to you as soon as possible. Please be advised that due to time lapse, this Department can only provide the following information for your requested information:

(i) Dangerous Goods Licence Record: from the year of 1990 to present moment.

(ii) Incident Record: Past three years of fire and special services incidents.

Please also submit the appointment letter from your client for record.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)
*for* Director of Fire Services

Ref. number and date should be quoted in reference to this letter
凡 提 及 本 信 時 請 引 述 編 號 及 日 期

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

RECEIVED
- 9 MAR 2021
BY:.....

本處檔號 OUR REF. : (20) in FSD GR 6-5/4 R Pt. 32
來函檔號 YOUR REF. : MPHKLPCOEA00_0_0010L.21
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電 話 TEL NO. : 2733 7741

3 March 2021

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wanchai, Hong Kong.
**(Attn: Ms. Katie YU, Senior Manager)**

Dear Ms. YU,

**Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park (孝思園) Hong Kong at No. 93 Fo Tan Village, Sha Tin, N.T.**
**Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 16.2.2021 and subsequent letter of 19.2.2021 regarding the captioned request and reply below in response to your questions:-

Please be advised that neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found in connection with the given conditions of your request at the subject location.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)
*for* Director of Fire Services

Ramboll Hong Kong Ltd.
Project: MPHKLPCOEA00/0/0014L
Maconomy no.:
Circulation: KY
Read Action

Ref. number and date should be quoted in reference to this letter
凡 提 及 本 信 時 請 引 述 編 號 及 日 期

Ref.: MPHKLPCOEA00_0_0006L.21

16 February 2021

Lands Department
District Lands Office, Sha Tin
11/F, Sha Tin Government Offices
1 Sheung Wo Che Road
Sha Tin, New Territories

By Fax (2602 4093) & Post

Dear Sir / Madam,

**Re: Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)**
**Enquiry for Land Contamination Information**

We are conducting a Land Contamination Assessment Study for the captioned project at No.93 Fo Tan Village, Sha Tin, N.T. (the Subject Site). As required by the "Practice Guide for Investigation and Remediation of Contaminated Land" published by the Environmental Protection Department of the Government of HKSAR (EPD), information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site are required as part of the vetting process.

Of particular interests are information on spillage accidents, illegal/contaminating land uses or uncontrolled dumping uses, current and historical land use information, and any information relating to land contamination issues of the Subject Site. We enclosed herewith a site map showing the location of the Subject Site for your reference.

Due to the urgency of the project, we would be much appreciated if you could provide the requested information by **24 February 2021**.

Should you have any queries, please do not hesitate to contact our Ms. Rachel Wong at 3465 2815 or the undersigned at 3465 2832. We thank you in anticipation of your help in the matter.

Thank you for your kind attention.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Katie Yu
Senior Manager
*Encl.*

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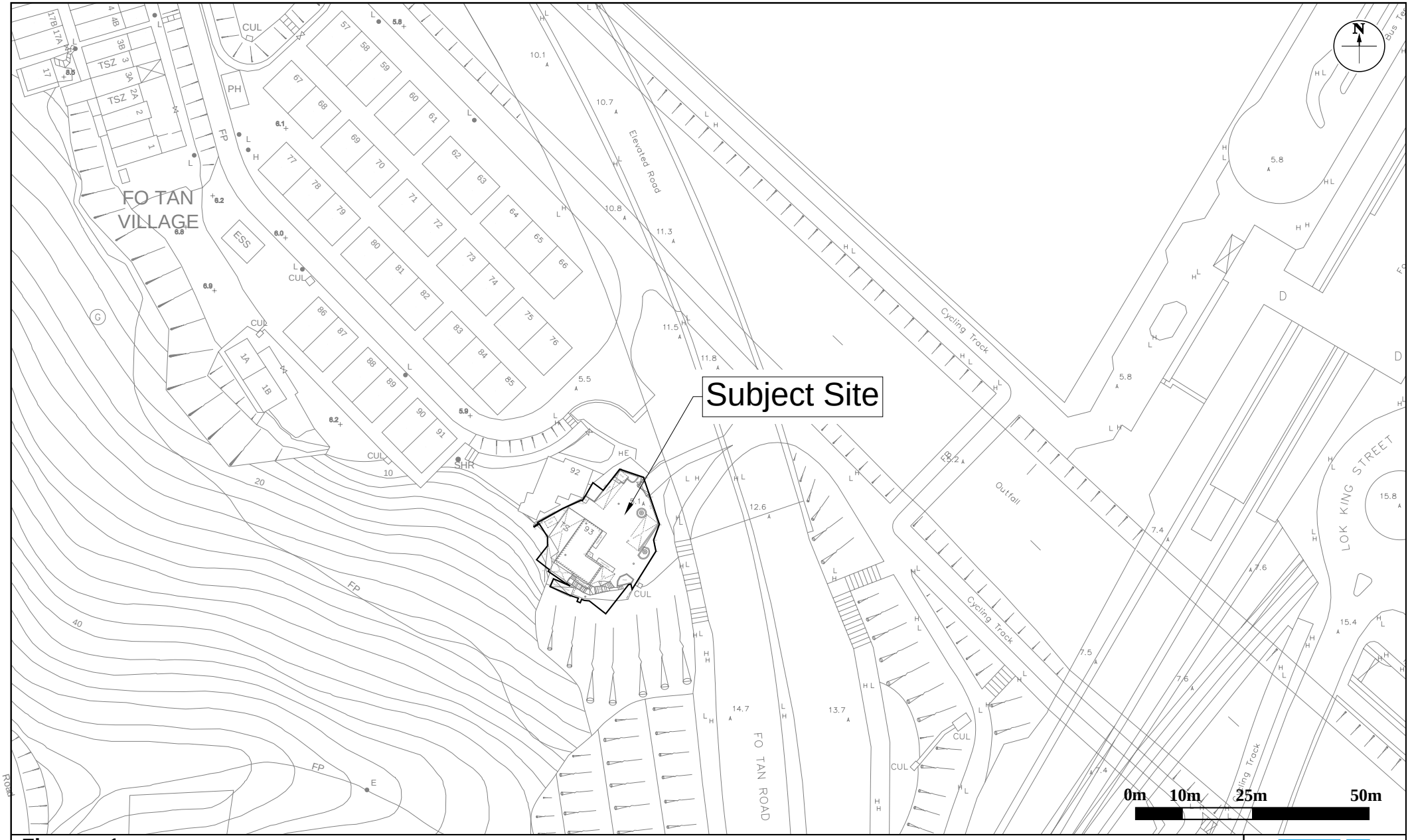
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
www.ramboll.com




| | |
|---|---|
| **Figure:** 1 | RAMBOLL |
| **Title:** Location of Subject Site | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Feb 2021 |

RECEIVED
- 3 MAR 2021
BY:

地政總署
沙田地政處
DISTRICT LANDS OFFICE/
SHA TIN
LANDS DEPARTMENT

電　　話 Tel: 2158 4755
圖文傳真 Fax: 2602 4093
電郵地址 Email:
本署檔號 Our Ref.: (27) in LD DLO/ST 373/ZLT/75 Pt.2
來函檔號 Your Ref. MPHKLPCOEA00_0_0006L.21

我們矢志努力不懈，提供盡善盡美的土地行政服務。
We strive to achieve excellence in land administration.

新界沙田上禾輋路1號沙田政府合署11樓
11/F., SHA TIN GOVERNMENT OFFICES,
1 SHEUNG WO CHE ROAD, SHA TIN, N.T.

網址 Website: www.landsd.gov.hk

By Post & By Fax
(Fax: 3465 2899)
2 March 2021

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wan Chai, Hong Kong
(Attn.: Ms. Katie Yu)

Dear Madam,

**Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T.**
**Lot Nos. 551 S.A, 551 R.P., 640, 644 S.A, 644 S.B and 644 R.P. all in D.D. 176**
**and adjoining Government Land**
**Enquiry for Land Contamination Information**

I refer to your letter of 16 February 2021.

Re Para. 2 of your letter, please be informed that the site is occupied for columbarium use. This office is not in the position to advise the other information concerned in your letter. We have referred this enquiry to Environmental Protection Department for reply.

Should you have further enquiries, please contact the undersigned or our Ms. YEUNG at 2158 4793.

Ramboll Hong Kong Ltd.
Project: MPHKLPCOEA00_0_0013L.21
Memorandum no.:
Circulation: KY
Read Action

Yours faithfully,

( Rex LUI )
for District Lands Officer/Sha Tin

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Ref.: MPHKLPCOEA00_0_0008L.21

16 February 2021

Hong Kong Police Force
Explosive Ordinance Disposal Bureau
EOD Mount Butler Depot
150 Mount Butler Road
Jardine's Lookout
Hong Kong

By Fax (2203 4273) & Post

Dear Sir / Madam,

**Re: Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. (Lot Nos. 551 S.A, RP, 640 and 644 S.A, S.B & RP in D.D.176 and adjoining government land)**
**Enquiry for Land Contamination Information**

We are conducting a Land Contamination Assessment Study for the captioned project at No.93 Fo Tan Village, Sha Tin, N.T. (the Subject Site). As required by the "Practice Guide for Investigation and Remediation of Contaminated Land" published by the Environmental Protection Department of the Government of HKSAR (EPD), information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site are required as part of the vetting process.

Of particular interests are current and historical explosive storage locations and records at the Subject Site, and any explosive spillage and incident reports that we believe your Department might have record of. We enclosed herewith a site map showing the location of the Subject Site for your reference.

Due to the urgency of the project, we would be much appreciated if you could provide the requested information by **24 February 2021**.

Should you have any queries, please do not hesitate to contact our Ms. Rachel Wong at 3465 2815 or the undersigned at 3465 2832. We thank you in anticipation of your help in the matter.

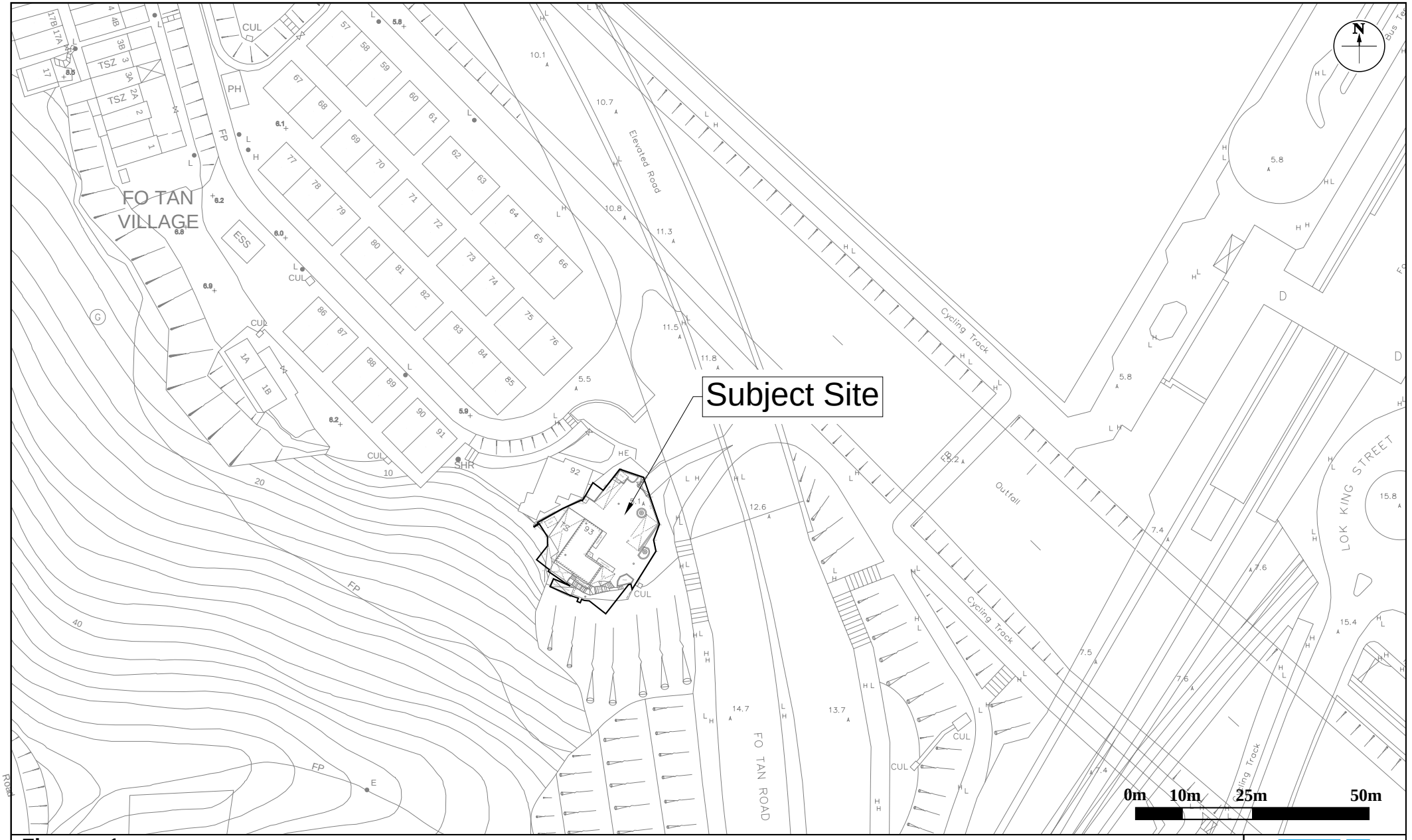
Thank you for your kind attention.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Katie Yu
Senior Manager
*Encl.*



Ramboll Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
**www.ramboll.com**




| | |
|---|---|
| **Figure:** 1 | RAMBOLL |
| **Title:** Location of Subject Site | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application under the Private Columbaria Ordinance for Memorial Park Hong Kong (孝思園) at No. 93 Fo Tan Village, Sha Tin, N.T. | Rev.: 1.0 |
| | Date: Feb 2021 |

*Our Ref:* (16) in CP OPS EOD 6-20/1 Pt.5
*Telefax No.* : +852 2203 4273
*Telephone No.* : +852 2203 4294
*Date* : 2021-02-22

**Explosive Ordnance Disposal Bureau**
**Hong Kong Police**
EOD Depot,
150 Mount Butler Road,
Jardine's Lookout,
Hong Kong.

## FACSIMILE TRANSMISSION

To : Ramboll HK Ltd (Attn: Katie Yu)
Addressee's Telefax No.: +852 3465 2899
Thro' ( SBDO/9 22/~ )
Your Ref.: MPHKLPCOEA00_0_0008L.21
Total Number of Pages Transmitted: 1 (including this page)
Dated: 2021-02-16
Please notify Ms. TSE, General Registry, EOD (2203 4325) if the message is incomplete

Dear Sir/Madam,

**Re: Enquiry for Land Contamination Information**

Your letter was received.

There was no explosive incident in our database on either "Memorial Park Hong Kong" or "No. 93 Fo Tan Village".

We do not hold record and location of explosive storage, as well as explosive spillage reports for the mentioned site,. You may wish to approach the Mines Division of the Civil Engineering and Development Department for further advice.

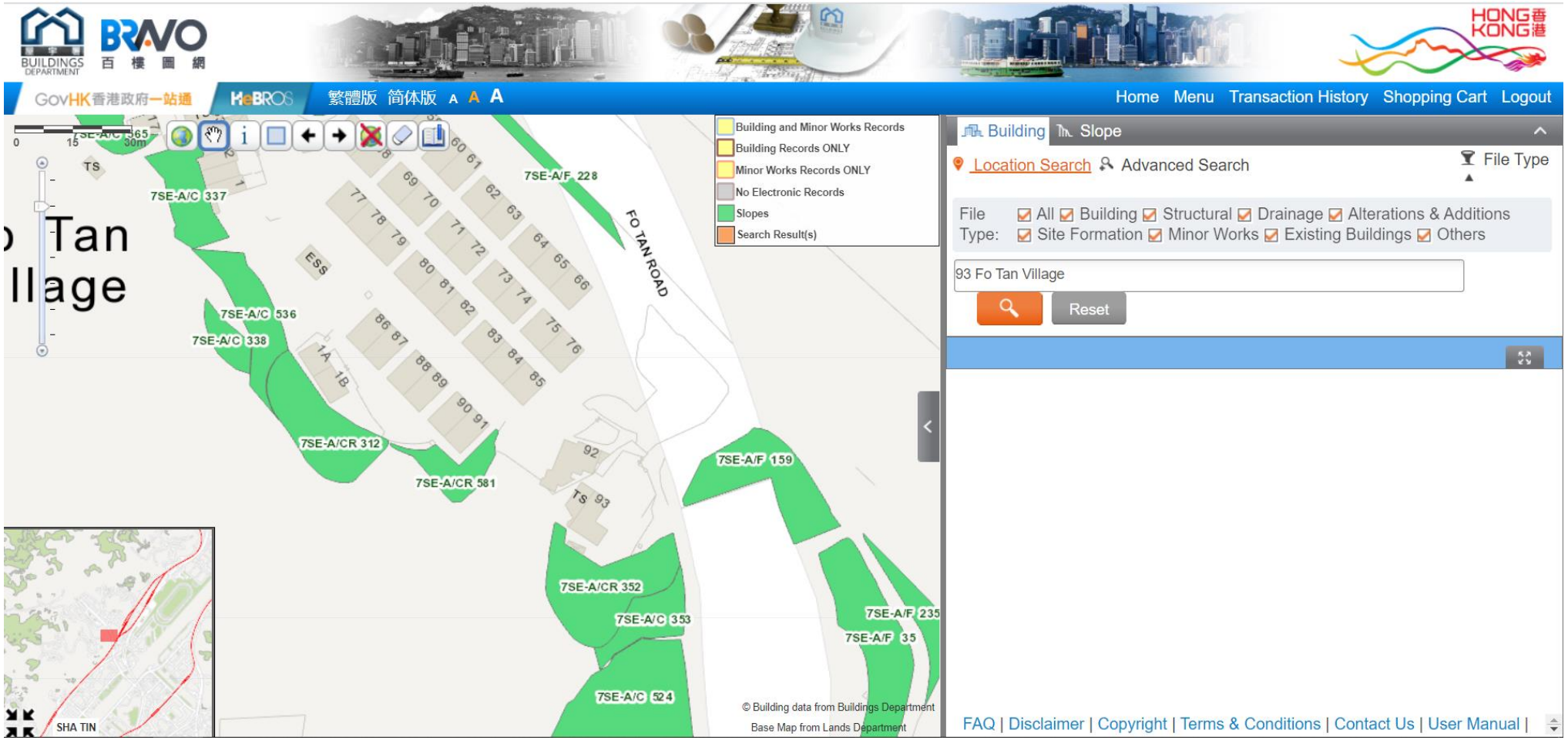
Should you require further information, please contact our Inspector, Mr. Tommy LEUNG at 2203 4297.

Yours faithfully,

Nestor Lai
Bomb Disposal Officer
Explosive Ordnance Disposal Bureau
Hong Kong Police Force

**Appendix 6.5**

**Screen Capture of BRAVO**




| | |
|---|---|
| **Appendix:** 6.5 | RAMBOLL |
| **Title:** Screen Capture of BRAVO | Drawn by: RW |
| | Checked by: KY |
| **Project:** Section 12A Rezoning Application for Existing Columbarium at Memorial Park Hong Kong | Rev.: 1.0 |
| | Date: Mar 2021 |

# Attachment IV

# Revised Management Plan

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information June 2021

# 私營骨灰安置所 -《孝思園》管理方案

## (1) 骨灰安置所基本資料

骨灰安置所名稱 ：孝思園

骨灰安置所地址 ：新界沙田火炭火炭村 93 號 (丈量約份第 176 約地段第 551 號餘段 (部分)、第 640 號 (部分)、第 644 號 B 分段 (部分), 第 644 號餘段 (部分) 及 毗連的政府土地 (部分) )

根據第 12A 條申請修訂圖則場地界線:
新界沙田火炭火炭村 93 號(丈量約份第 176 約地段第 551 號 A 段及餘段、第 640 號及第 644 號 A 分段、B 分段及餘段及毗連的政府土地)

開始營辦年份 ：2008 年

營辦者名稱 ：香港孝思園有限公司

營辦者身分 ：土地擁有人

骨灰安置所所屬宗教 ：佛教及道教 (部份使用者信奉天主教及基督教)

## (2) 場地資料及樓宇排列

骨灰安置所佔地約 85.529 平方米，總樓面面積約 158.605 平方米，共有：
1 座骨灰安置所大樓; 及 2 個戶外龕牆
1 個戶外環保冥鏹爐

**其他支援骨灰安置所運作的必要配套設施建築物**
1 個廁所 (2 個廁格)

**其他支援骨灰安置所運作的必要配套設施**
不適用

**龕位總數 /安放灰位總數 #牌照申請編號**
1849 / 2095　#001 [只包括 2017 年 6 月 30 日前已售出的龕位]
1650 / 1853　#038 [只包括 2017 年 6 月 30 日仍未售出的龕位]

**(3)** 可容納的客量及入場管制

開放時間：
日常開放時間：週一至週日，上午 9 點至下午 6 點
清明節及重陽節期間的開放時間(節日的前後兩星期，週一至週日)：上午 9 點至下午 6 點
農曆年開放時間(中國農曆年廿九至年初四)：上午 10 點至下午 2 點

骨灰安置所可容納的訪客流量：每半小時 75 人

為確保進場訪客人數不會超出上述可容納訪客量：
為達到人潮分流，每逢清明節及重陽節期間，訪客需要經電話預約、網上或手機的應用程式 APPS 預約。訪客須按照預定時間到達本園，方可進入本園拜祭先人。

**(4)** 交通及公共運輸安排

本園鄰近各主要公共交通設施

港鐵：東鐵線火炭站，於該站 B 出口步行 3 分鐘便可抵達本園

專營巴士：火炭村站，沿石階而下 1 分鐘便可抵達本園，相關巴士線如下
73A　沙田愉翠苑 至 上水彩園
80M　九龍塘至 穗禾苑
81K　沙田新田圍 至 穗禾苑
85　九龍城碼頭 至 火炭山尾街
88X　駿洋邨 至 平田 (循環)
285　駿洋邨 至 沙田新城市廣場 (循環)
48P　駿洋邨 至 青龍頭
280X　穗禾苑 至 尖沙咀東
798　駿洋邨 至 調景嶺
989　駿洋邨 至 西灣河（太安街）

專線小巴：火炭村站，沿石階而下 1 分鐘便可抵達本園，相關小巴線如下

60K　沙田站至 火炭平房區
60P　駿洋邨 至 沙田站
60S　旺角 至 火炭
62K　沙田站 至 沙田山莊
65K　火炭站 至 黃泥頭
481　荃灣街市街 至 山尾街 (城門隧道 特快線)

本園鼓勵訪客乘搭以上公共交通工具往來，從而減少訪客乘坐私家車或的士前來本園，以助降低區內行車道路之負荷。

本園區內外均沒有泊車設施。訪客如有須要，區內亦有時租停車場可供其自行使用。

## (5) 人流管理

在掃墓高峰日子*或期間，本園就場內之人流管理所訂的人手調配計劃
*高峰日子為清明節及重陽節的前後兩星期的六、日及公眾假期。

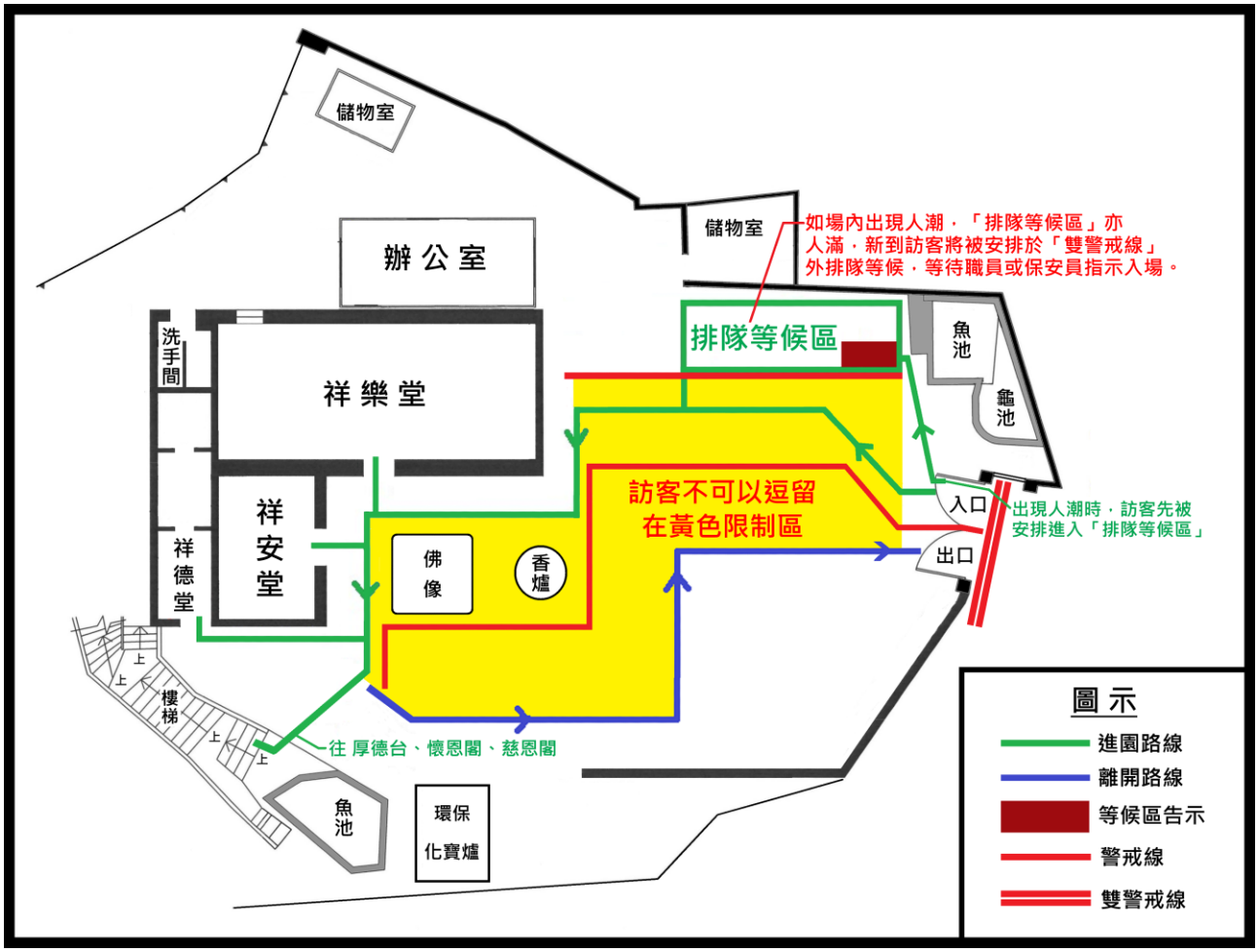
### i. 於高峰日子派員管理及協助訪客人流數目

員工數目: 8 人
一樓堂閣 2 名，負責堂閣內人流管理及協助客人。
地下堂閣 2 名，負責堂閣內人流管理及協助客人。
花園 2 名，負責進入堂閣人流管理及排隊等候區秩序。
大門前 1 名，安排已預約人士按時入園。
大門口後 1 名，負責控制及點算進園人數。

### ii. 定期向警方通報場內情況

每小時與警方聯絡，匯報場內情況，包括現場訪客人數等資料。**此措施自本園 2008 年營運以來實施至今持之有效，期間從未發生任何意外事故。**

### iii. 本園範圍之佈局與人流方向特別安排



**iv. 急救當值服務**

本園駐有一位受急救訓練合格的職員，隨時提供急救當值服務;在清明節及重陽節前後兩星期期間，本園會額外僱用合資格的臨時急救員於本園當值。

**v. 預約訪園的安排及具體執行**

**適用時間: 清明節及重陽節的前後兩星期內的週六、週日及公眾假期**

客人需要經本園的電話預約、網上或手機的應用程式 APPS 預約進入本園。於高峰日子時段，只有已預約的客人於已預約的時間才可以進場拜祭，位於大門的職員會安排已預約的客人先進入本園，而沒有預約的客人不能進入本園。

電話：2145 4825
網址：http://memorialpark.hk/
手機應用程式 APPS：
iOS:
https://apps.apple.com/hk/app/%E5%AD%9D%E6%80%9D%E5%9C%92-memorial-park/id1478614161
Andriod:
https://play.google.com/store/apps/details?id=io.framework7.memorialparkapphkapp

**當管理方案和牌照獲得批准後，本園將會須書面通知所有"已出售龕位的買方"本園將會實行以上的訪客注意事項及排。**

## (6) 保安管理

本園設有閉路電視 CCTV24 小時運作及錄影場內各龕堂及主要通道，以便職員監察場內具體狀況，包括訪客進出流量等，有需要時去調節入園客量。

為確保園內安全，亦有 1 位全職保安員負責按時在園內巡邏及在大門站崗提供管理服務。

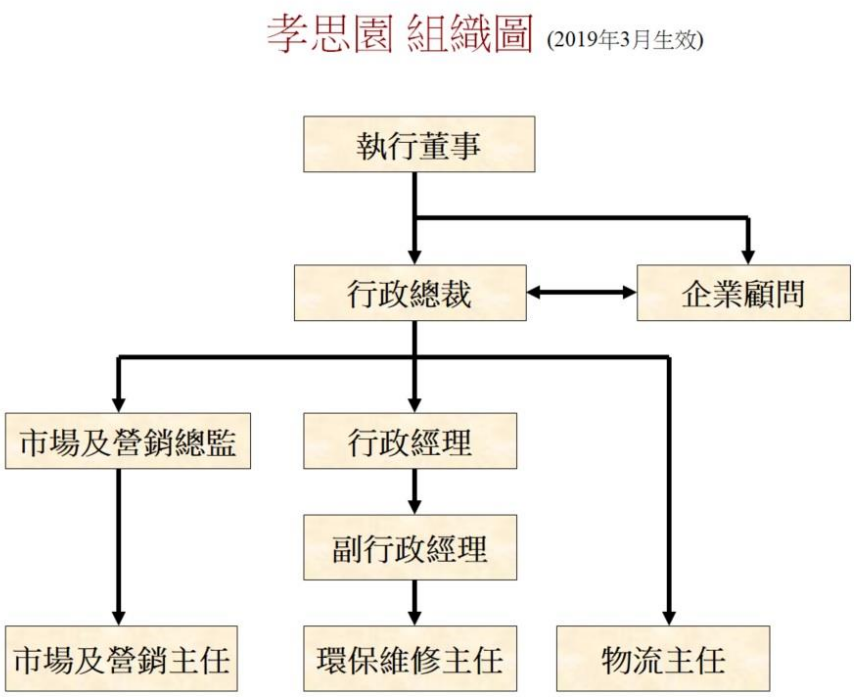
在掃墓高峰日子，職員巡視各龕堂及主要通道，以了解實際情況和保障公眾安全。遇有緊急問題，即與警方聯絡。

在掃墓高峰日子，調配足夠專業保安員及僱用臨時場地員工，以便在掃墓高鋒時段以應付突然增多之掃墓人潮。並嚴格執行預約訪園安排，確保掃墓客量不超越可容納客量。

## (7) 人手調配

i. 組織架構

本園在執行董事以下共僱用 8 名員工，以下為本園的組織圖:




ii. 員工訓練

本園會有 2 名員工負責每月定期檢查消防安全及急救用品的數量，本園的辦公室設有急救用品箱，以備訪客使用。本園另外有 2 名員工負責日常事務，包括基本維修保養，並會安排在掃墓高峰日子(清明節及重陽節)前完成適當的維修保養及檢查。

iii. 掃墓高峰日子的特別人手安排

根據以往多年經驗，本園於清明節及重陽節期間會額外加派 3 名臨時員工，以滿足高峰掃墓期間的額外人手要求。

iv. 掃墓高峰日子就維修保養的特別人手安排

如本園的拜祭設備(例如: 環保化寶爐或冷氣等)於高峰日子出現問題，本園會立即安排相關的承辦商盡快前來維修，直到該設備完成維修才可以繼續供訪客使用。本園與環保化寶爐供應商簽訂一年長的檢查及維修合約，確保化寶爐保持正常運作。

v. 管理模式

本園會按照上面的組織圖，下對上的直接負責。

(1) 園內管理

本園的行政經理主要負責向董事局匯報及執行董事局之決議，屬下有一名副行政經理負責管理園內日常運作，處理突發工作等。

(2) 物流管理

本園的物流主任主要負責本園的物資流動，直接向行政總裁負責，另外需要與負責園內管理的行政經理作出適當的協調。

(3) 銷售團隊

本園的市場及營銷總監及其屬下主要負責本園的銷售安排及相關策略，直接向行政總裁負責，於銷售安排上需要與負責園內管理的行政經理作出適當的協調。

(4) 每月例會

本園每月最後一個星期五舉行例行會議，由一位執行董事主持會議。會議討論內容包括：本園管理；園區保養；清明、盂蘭及重陽節增聘臨時員工及場地工作指引；訪園預約及人流管理；舉行佛學講座及慈善活動安排；刊印定期刊物分發客戶；及派發應節食品或防疫用品給長者等事項。

# 重要人士和管理人員資料

## 執行董事 (3 名)

姓名：趙鎮龍，梁錦濠，郭卓彥
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 趙氏和梁氏於本園逾 12 年工作經驗。
- 孝思園由執行董事掌管。
- 負責監督本園日常運作，因應社會和市場變遷，以及客戶訴求和期望而提供優質服務，包括售後服務。
- 其下有 1 名企業顧問，1 名行政總裁，1 名行政經理，1 名副行政經理，1 名市場及營銷總監，1 名市場及營銷主任，1 名環保維修主任和 1 名物流主任。

## 企業顧問

姓名：樊容昌
電話 : (852) 2760 1088
傳真：(852) 2760 1078

- 接受執行董事委託，向公司主管級和以上之管理團隊提供專業諮詢服務。
- 就本園申請牌照程序上提供專業意見。
- 就特別事項，與行政總裁共同策劃及處理事務。

## 行政總裁

姓名：朱建諾
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有 10 年工作經驗。
- 統籌本園申請牌照事宜，致力優化園內設施和管理以符合相關牌照要求。
- 制定及推行行政管理與規範。
- 制定本園之銷售產品和服務範疇。
- 為本園銷售團隊定下銷售方針和目標。
- 致力開拓與長者市場相關之服務，公益活動，推動生命教育。
- 與中外同業協會聯繫，致力提升香港殯葬業專業技術和服務水平。
- 負責本園人事任免。
- 其下有 1 名行政經理， 1 名副行政經理，1 名市場及營銷總監，1 名市場及營銷主任，1 名環保維修主任和 1 名物流主任。

## 行政經理

姓名：馮寶琪
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有 11 年工作經驗
- 確保園內設施符合食環署私營骨灰安置所之牌照要求，包括維修保養，消防安全，急救裝備齊全，環保和衛生範疇等。
- 負責策劃、監督和實施本園日常管理工作。
- 在”春秋二祭”等拜祭高峰期時確保園內訪客安全，並與有關政府部門，包括警方等緊密聯繫。
- 提供客戶服務，包括銷售和售後服務。
- 農曆每月初一和十五於園內舉辦佛道講座，參加者多為長者，屬區內居民和客戶。會後向善信免費派發米包等禮品，目的為促進社區和諧和關愛長者。
- 其下有 1 名副行政經理及 1 名環保維修主任。

## 副行政經理

姓名：林金煇
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有 10 年工作經驗。
- 確保園內設施符合食環署私營骨灰安置所之牌照要求，包括維修保養，消防安全，急救裝備齊全等。
- 輔助行政經理策劃、監督和實施本園日常管理工作，包括環保和衛生範疇。
- 在”春秋二祭”等拜祭高峰期時確保園內訪客安全，並與有關政府部門，包括警方等緊密聯繫。
- 提供客戶服務，包括銷售和售後服務。
- 農曆每月初一和十五於園內舉辦佛道講座，參加者多為長者，屬區內居民和客戶。會後向善信免費派發米包等禮品，目的為促進社區和諧和關愛長者。
- 其下有 1 名環保維修主任。

## 市場及營銷總監

姓名： 暫時空缺 (申牌期間營銷已停止)
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 就申請牌照，向行政總裁提供文書處理和對外聯絡等支援。
- 市場及營銷總監策劃、監督和實施市場宣傳、營銷業務和品牌形象。
- 制定本園之銷售產品和服務。
- 為其下銷售團隊提供相關銷售訓練。
- 提供客戶服務，包括銷售和售後服務。
- 負責籌劃，推動社區、慈善公益活動。策劃如何實踐企業社會責任（CSR, Corporate Social Responsibility）精神（ 詳見附件 ）。
- 負責特別工程或項目。
- 其下有 1 名市場及營銷主任。

## 市場及營銷主任

姓名： 暫時空缺 (申牌期間營銷已停止)
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 輔助市場及營銷總監策劃、監督和實施市場宣傳、營銷業務和品牌形象。
- 為其下銷售團隊提供相關銷售訓練。
- 提供客戶服務，包括銷售和售後服務。
- 負責推行社區、慈善公益活動
- 與香港知名之慈善或教育機構，包括善寧會，香港賽馬會善寧之家，沙田婦女會，香港公開進修大學等緊密聯繫，與前者們一起宣傳公益服務。
- 在香港推動生命教育、善終服務和社區義工服務等，體現企業社會責任（CSR, Corporate Social Responsibility）精神。

## 環保維修主任

姓名：譚小燕
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 於本園擁有約 2 年工作經驗。
- 主任為受訓合資格急救員。

- 負責園內空氣、噪音、廢物和水質處理等各設施之運作和保養。
- 對上述設施作不定期評估，必要時向副行政經理提交改善建議。
- 負責園內衛生，綠化和動植物護理。

## 物流主任

姓名：呂志偉
電話 : (852) 2145 4825
傳真：(852) 2145 4826

- 負責執行董事車輛的日常駕駛任務，嚴格遵守交通法規。
- 如時間許可，負責行政總裁和企業顧問之開會，客戶接待以及辦理公務的駕駛任務。
- 服從公司調配，定期匯報車輛的運行情況，以保證車輛在安全情況下使用
- 安排運送物資及補給到本園，確保有足夠資源去維持本園暢順地運作。

**(8) 應對火警或其他緊急情況的應變方案**

消防安全主任
由部門主管委任，負責協調及統籌單位內有關消防安全事宜

#防火設備
在園內指定地點設置滅火筒及滅火毯。
相關設備由合資格之消防顧問作年檢，並簽發證書。

#走火路線
在主要通道設有緊急逃生指示牌，並在當眼處，張貼走火路線圖 (以下為參考圖)

#火警演習
每年進行至少 2 次火警演習，走火路線及安全集合地點如下:

火警演習 – 程序指引
由消防安全主任擬定可能發生火警的地方及火勢。

通知各相關人士、服務對象及單位等，有關火警演習的日子，時間及安排。

演習當日，消防安全主任指導有關人士儘快依照走火路線圖離開現場，並前往安全地點集合。

待所有人士到達集合地點後，替各人點名並登記時間。

演習完成後，於內部會議中報告演習結果，並提出檢討事項。

填寫「火警演習記錄表」記下演習日子和時間，演習結果，包括所需時間，檢討事項等。

#附註：有關詳情請參閱：

**Guidelines on "Fire Safety Plan" for Memorial Park Hong Kong ( MPHK )**

<孝思園>「消防安全計劃」指引

## (9) 遵從發牌委員會訂明的發牌條件、指引及業務守則

**為確保本園的管理人員及前線人員熟知委員會的發牌條件、指引及實務守則(下稱"該條文")，當委員會發牌後將本會採取以下的措施:**

1.) 本園的所有管理人員需要熟讀及清楚了解該條文。如果管理人員對該條文上有不理解的地方，需立即請教私營骨灰安置所事務辦事處的相關職員，以確保所有管理人員都清楚理解條文的內容。

2.) 本園的管理人員將會負責指導前線員工去了解該條文，當指導期完結後，管理人員會定立一些測試或考核，以確保每位前線員工都了解該條文。並於日常營運時候，管理人員會定期監察及記錄每位前線員工有否依照該條文去工作。

3.) 如果有前線員工持續違反該條文的要求，管理人員將會記錄該前線員工的違反事項，然後向本園的管理層提交報告。

以下為本園之部份業務守則，包括福位、場內設施使用方法、製造碑石及上位規則。有關守則張貼在辦公室，接待顧客之當眼處，務求便利前線工作人員及顧客去遵從守則內容，以符合發牌條件。

福位及場內設施使用規則

i. 每個福位只可安放已安排之先人遺物，不得隨意變更，也不可以阻礙他人之福位。先人遺物包括：先人之靈灰或其他紀念品（不包括違禁品及爆炸品）。

ii. 單人福位只可存放 1 位先人之遺物，雙人福位及側式福位最多可放 2 位先人之遺物。

iii. 所有碑石必須經由本園司負責安裝，照片尺寸和刻字式樣及字數必須依照本園之統一規定。

iv. 訪客須遵守消防條例，所有寶帛、衣紙、冥嫌、紙扎祭品，必須在指定設置之環保化寶爐內焚化，嚴禁焚燒真衣。

v. 請保持各靈堂整潔，福位外壁及碑面，不得裝置各類貢物和易燃物品，以免引致火警發生。

vi. 龕堂內禁點香燭，已燃點香燭必須插在花園的戶外香爐，以策安全。

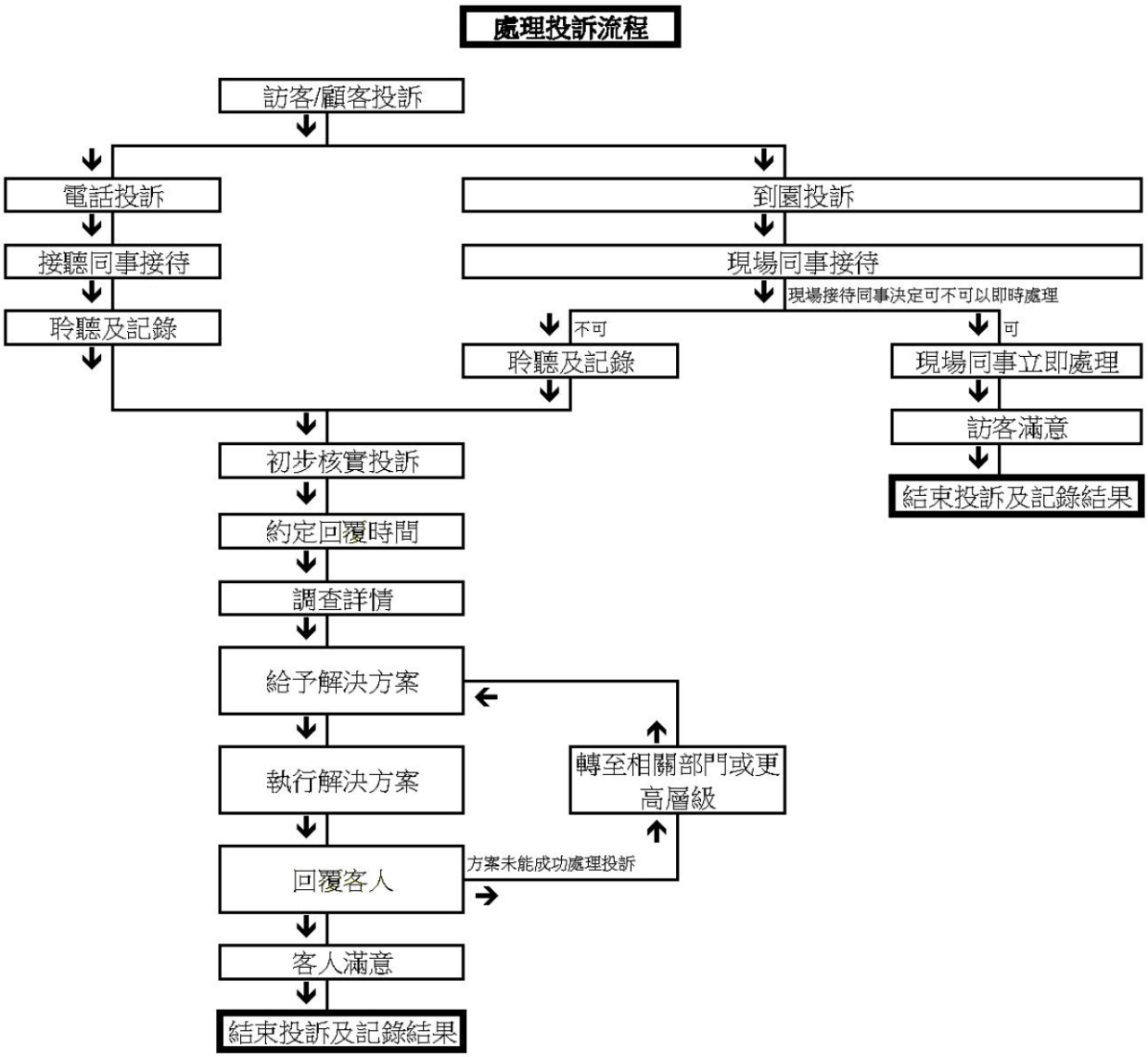
## (10) 投訴處理

本園會致力達到所訂下的服務承諾和目標，但有時或受本園控制能力以外之因素影響，而未能達標。

在此情況下，申訴人可透過以下聯絡方法，與本園當值之負責人了解詳情

香港沙田火炭村 93 號
電話：(852) 2145 4825 (辦公時間)
電郵：info@memorialpark.hk

## 處理投訴流程:



## (11) 管理方案的執行人及批准人

執行管理方案的負責人
姓名：馮寶琪
職位: 行政經理
聯絡電話號碼 ：(852) 2145 4825
電郵地址：bobof09@yahoo.com.hk

批准管理方案的負責人
姓名：趙鎮龍
職位: 執行董事
聯絡電話號碼 ：(852) 2145 4825
電郵地址：lungchiu2005@yahoo.com.hk

代表上述骨灰安置所提交本管理方案的人員資料
姓名：趙鎮龍
職位：執行董事
聯絡電話號碼 ：(852) 2145 4825
電郵地址：lungchiu2005@yahoo.com.hk

簽署：_____
日期：2021 年 月 日

[Rev 10.07.2021]

# Attachment V

# Revised Traffic Impact Assessment

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information June 2021

# Section 12A Application for Rezoning from "Village Type Development" and "Green Belt" to "Other Specified Uses" annotated "Columbarium (1)" at Memorial Park Hong Kong 93 Fo Tan Village, Fo Tan, Sha Tin, New Territories

Traffic Impact Assessment
Final Report
11 June 2021

Prepared by: CKM Asia Limited

Prepared for: Memorial Park Hong Kong Limited

# Section 12A Application for Rezoning from "Village Type Development" and "Green Belt" to "Other Specified Uses" annotated "Columbarium (1)" at Memorial Park Hong Kong 93 Fo Tan Village, Fo Tan, Sha Tin, New Territories

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# Section 12A Application for Rezoning from "Village Type Development" and "Green Belt" to "Other Specified Uses" annotated "Columbarium (1)" at Memorial Park Hong Kong 93 Fo Tan Village, Fo Tan, Sha Tin, New Territories

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# Section 12A Application for Rezoning from "Village Type Development" and "Green Belt" to "Other Specified Uses" annotated "Columbarium (1)" at Memorial Park Hong Kong 93 Fo Tan Village, Fo Tan, Sha Tin, New Territories

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# Section 12A Application for Rezoning from "Village Type Development" and "Green Belt" to "Other Specified Uses" annotated "Columbarium (1)" at Memorial Park Hong Kong 93 Fo Tan Village, Fo Tan, Sha Tin, New Territories

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# Section 12A Application for
# Rezoning from "Village Type Development" and "Green Belt"
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# 1.0 INTRODUCTION

## Background

1.1 The Proposed Columbarium, namely Memorial Park Hong Kong ("MPHK"), is located at 93, Fo Tan Village, Fo Tan, Shatin, New Territories, i.e. Lot Nos. 551 S.A, 551 RP, 640 and 644 S.A, 644 S.B & 644 RP in D.D.176, and Adjoining Government Land (hereinafter the "Subject Site"). Figure 1.1 shows the location of the Subject Site.

1.2 An existing building within MPHK has been used as a columbarium for a period of time. At present, MPHK provides a total of 3,499 niches for storage of cremated human bodies, of which 1,849 niches were sold before 30 June 2017, i.e. before the enactment of the Private Columbaria Ordinance (Cap. 630), and the remaining 1,650 niches are not yet sold.

1.3 According to the Sha Tin Outline Zoning Plan No. S/ST/34, the Subject Site is zoned "Village Type Development" ("V") and "Greenbelt ("GB"). The Applicant proposes to rezone the Subject Site to "Other Specific Uses" annotated "Columbarium (1)".

1.4 Against this background, CKM Asia Limited, a traffic and transportation planning consultancy firm, was commissioned to carry out a Traffic Impact Assessment ("TIA") for the Proposed Columbarium in connection with the planning application. This TIA has been prepared to incorporate the comments provided by Transport Department in February 2021, with latest traffic surveys conducted during the 2021 Ching Ming Festival Period.

## Scope of Study

1.5 The main objectives of this study are as follows:

- To present existing traffic information associated with MPHK including the status of niches, visitor generation, mode of transport used by visitors etc.;
- To review the traffic conditions in the vicinity of MPHK at the columbarium peak hour on Ching Ming Festival Day and Ching Ming Festival Shadow Period;
- To present the special traffic and pedestrian arrangement for the Ching Ming and Chung Yeung Festival periods;
- To quantify the traffic and pedestrian generated by the Proposed Columbarium when it is fully occupied during the columbarium peak hour on Ching Ming Festival Day and Ching Ming Festival Shadow Period;
- To examine the traffic and pedestrian impact on the local road and footpath, as well as the public transport networks at the columbarium peak hour on Ching Ming Festival Day and Ching Ming Festival Shadow Period; and
- To identify deficiencies, if any, in the road and transport network in accommodating the traffic and pedestrian impact associated with the Proposed Columbarium when fully occupied.

## Contents of the Report

1.6 After this introduction, the remaining chapters contain the following:

| | | |
|---|---|---|
| Chapter Two | - | Describes the existing condition and surveys, |
| Chapter Three | - | Outlines the Proposed Columbarium and the special traffic and pedestrian arrangement during festive periods, |
| Chapter Four | - | Presents the traffic, pedestrian, and public transport impact analyses, and |
| Chapter Five | - | Summarises the overall conclusion. |

# 2.0 THE EXISTING SITUATION

## The Subject Site

2.1 MPHK is located in Fo Tan Village and it is bounded by the Fo Tan Road Flyover to the east, Fo Tan Village to the north and west, and area zoned as Green Belt to the south. It has no vehicular access, and the pedestrian access is through Fo Tan Village. Figure 2.1 shows the existing layout of MPHK.

## The Road Network

2.2 Fo Tan Village, including the Subject Site, is not accessible by motor vehicles, and the roads located closest to the Subject Site are Shan Mei Street and Fo Tan Road.

2.3 Shan Mei Street is a single carriageway 2-way local road connecting Fo Tan Road to the south, and Kwei Tei Street to the north. The Shan Mei Street Children's Playground Metered Open Car Park is located to the immediate north of Fo Tan Village.

2.4 Fo Tan Road is of a dual 3 / 4 carriageway Primary Distributor connecting Fo Tan with Sha Tin and beyond. To the immediate south, an interchange is provided between Fo Tan Road and Tai Po Road – Shatin providing regional access to/from the Fo Tan Area.

## Niches at MPHK

2.5 Table 2.1 summarises the niche status within MPHK.

TABLE 2.1 NUMBERS OF NICHES AT MPHK

| Status | | Number of Niches (Percentage) |
|---|---|---|
| Occupied | Sold and occupied [a] | 801 (23%) |
| Vacant | Sold but vacant [b] | 1,048 (30%) |
| | Unsold (and vacant) [c] | 1,650 (47%) |
| | *Subtotal [b] + [c]* | *2,698 (77%)* |
| | **TOTAL [a]+[b]+[c]** | **3,499 (100%)** |

## Visit-by-Appointment Arrangement

2.6 Since October 2019, i.e. 2019 Chung Yeung Festival Period, MPHK has launched a Visit-by-Appointment arrangement for the Ching Ming and Chung Yeung Festival period; all visitors are requested to register with the Applicant prior to visiting.

2.7 The registration can be conducted via smartphone application, MPHK webpage, or by phone. Visitors are required to provide the Applicant with the number of people visiting in their group, and the intended visiting time and date. The registration is regarded as successful after the Applicant has confirmed the visiting details with the visitor.

## Visitor Count Surveys

2.8 Visitor count surveys were conducted at MPHK during the 2021 Ching Ming Festival Period, which included 2 weekends (Saturday and Sunday) before the Festival Day, the Ching Ming Festival Day, 2 weekends (Saturday and Sunday) after the Festival Day, and all public holidays in between. Table 2.2 summarises the date of surveys.

TABLE 2.2 DATE OF THE SURVEYS DURING 2021 CHING MING FESTIVAL PERIOD

| | Description | Date |
|---|---|---|
| 1. | 2nd Saturday **BEFORE** Ching Ming Festival Day | Saturday, 20th March 2021 |
| 2. | 2nd Sunday **BEFORE** Ching Ming Festival Day | Sunday, 21st March 2021 |
| 3. | 1st Saturday **BEFORE** Ching Ming Festival Day | Saturday, 27th March 2021 |
| 4. | 1st Sunday **BEFORE** Ching Ming Festival Day | Sunday, 28th March 2021 |
| 5. | Immediate Public Holiday **BEFORE** Ching Ming Festival Day | Friday, 2nd April 2021 |
| 6. | Immediate Public Holiday **BEFORE** Ching Ming Festival Day | Saturday, 3rd April 2021 |
| **7.** | **Ching Ming Festival Day** | Sunday, 4th April 2021 |
| 8. | Immediate Public Holiday **AFTER** Ching Ming Festival Day | Monday, 5th April 2021 |
| 9. | Immediate Public Holiday **AFTER** Ching Ming Festival Day | Tuesday, 6th April 2021 |
| 10. | 1st Saturday **AFTER** Ching Ming Festival Day | Saturday, 10th April 2021 |
| 11. | 1st Sunday **AFTER** Ching Ming Festival Day | Sunday, 11th April 2021 |
| 12. | 2nd Saturday **BEFORE** Ching Ming Festival Day | Saturday, 17th April 2021 |
| 13. | 2nd Sunday **BEFORE** Ching Ming Festival Day | Sunday, 18th April 2021 |

2.9 Table 2.3 presents the results of the visitor survey for the 2021 Ching Ming Festival Period.

TABLE 2.3 RESULTS OF VISITOR COUNTS DURING THE 2021 CHING MING FESTIVAL PERIOD

| Hours | Hourly Number of Visitors on Date of Survey | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sat, 20th Mar 2021 | Sun, 21st Mar 2021 | Sat, 27th Mar 2021 | Sun, 28th Mar 2021 | Fri, 2nd Apr 2021 (Public Holiday) | Sat, 3rd Apr 2021 (Public Holiday) | Sun, 4th Apr 2021 (Ching Ming Festival) | Mon, 5th Apr 2021 (Public Holiday) | Tue, 6th Apr 2021 (Public Holiday) | Sat., 10th Apr 2021 | Sun, 11th Apr 2021 | Sat, 17th Apr 2021 | Sun, 18th Apr 2021 | TOTAL | *Percentage* |
| 0900–1000 | 11 | 55 | 17 | 38 | 31 | 15 | 20 | 12 | 9 | 0 | 8 | 6 | 2 | **224** | *10%* |
| 1000–1100 | 56 | 12 | 12 | 63 | 33 | 33 | 66 | 46 | 27 | 7 | 50 | 5 | 31 | **441** | *19%* |
| 1100–1200 | 34 | 6 | 11 | **91** | 50 | 10 | **139** | 49 | 51 | 13 | 27 | 5 | 46 | **532** | *23%* |
| 1200–1300 | 9 | 23 | 23 | 64 | 38 | 29 | 95 | 45 | 22 | 14 | 58 | 3 | 17 | **440** | *19%* |
| 1300–1400 | 4 | 25 | 2 | 33 | 23 | 56 | 73 | 26 | 20 | 6 | 21 | 0 | 4 | **293** | *13%* |
| 1400–1500 | 1 | 5 | 9 | 24 | 23 | 19 | 17 | 11 | 10 | 17 | 36 | 14 | 9 | **195** | *8%* |
| 1500–1600 | 4 | 6 | 2 | 14 | 9 | 4 | 34 | 7 | 14 | 10 | 13 | 6 | 9 | **132** | *6%* |
| 1600 - 1700 | 3 | 0 | 2 | 6 | 3 | 6 | 17 | 10 | 0 | 0 | 3 | 6 | 7 | **63** | ***3%*** |
| TOTAL | **122** | **132** | **78** | **333** | **210** | **172** | **461** | **206** | **153** | **67** | **216** | **45** | **125** | **2,320** | ***100%*** |
| *Percentage* | *5%* | *6%* | *3%* | *14%* | *9%* | *7%* | *20%* | *9%* | *7%* | *3%* | *9%* | *2%* | *5%* | ***100%*** | – |

2.10 Table 2.3 shows that a total of 2,320 visitors visited the MPHK during the 2021 Ching Ming Festival Period. It should be noted that MPHK has 801 occupied niches during this period.

2.11 The busiest day was on Ching Ming Festival Day, i.e. Sunday, 4th April 2021, with 461 visitors, which accounted for 20% of the total visitors. Whereas, the 2nd busiest day during the Ching Ming Festival Period was the shadow period Sunday before the Ching Ming Festival Day, i.e. 28th March 2021, with 333 visitors, which accounted for is 14% of the total visitors.

2.12 The busiest peak hour, i.e. columbarium peak hour, also occurred on Ching Ming Festival Day between 1100 and 1200 hours and there were 139 visitors. Whereas, the columbarium peak hour for the shadow period also occurred between 1100 and 1200 hours on 28th March 2021 and a total of 91 visitors were recorded.

2.13 In view of the above, the analyses conducted in this TIA will focus and base on the following:

- Columbarium peak hour on Ching Ming Festival Day, and
- Columbarium peak hour on Festival Shadow Period, i.e. 1st Sunday before Ching Ming Festival Day.

## Comprehensive Transport Survey

2.14 Table 2.4 summarises the various types of transport surveys conducted on the following date:

Festival Day: Sunday, 4th April 2021 (Ching Ming Festival Day)
Festival Shadow Period: Sunday, 28th March 2021

TABLE 2.4 DETAILS OF OTHER SURVEYS UNDERTAKEN

| Type of Survey | Description |
|---|---|
| Transport Mode Survey | Interview survey to determine the transport modes used by the visitors of MPHK. |
| Occupancy Survey of Taxi and Private Car | Interview survey to determine the number of passengers of taxi and private cars associated with the visitors of MPHK. |
| Car Park Utilisation Survey | Survey at car park located near MPHK to determine the utilisation rate. |
| Traffic Counts at Junctions | Manual classified traffic counts at junctions to assess their operational performance in the columbarium peak hour. |
| Pedestrian Counts at Pedestrian Facilities | Pedestrian counts at key sections of pedestrian facilities to assess the operation condition in the columbarium peak hour. |
| Public Transport Utilisation Survey | Survey at Fo Tan Station and bus stops located near MPHK to determine the utilisation rate of public transport. |

2.15 Details of the above mentioned surveys and the results are summarised in below paragraphs.

## Transport Mode Survey

2.16 Transport mode surveys were conducted at MPHK by interview and the results are summarised in Table 2.5.

TABLE 2.5 MODE OF TRANSPORT USED BY SURVEYED VISITORS

| Mode of Transport by Surveyed Visitors and Percentage | | | | |
|---|---|---|---|---|
| MTR | Franchised Bus + GMB | Taxi | Private Car | TOTAL |
| On Festival Day (Sunday, 4th April 2021) | | | | |
| 237 | 65 | 30 | 60 | 392 |
| (60%) | (17%) | (8%) | (15%) | (100%) |
| On Festival Shadow Period (Sunday, 28th March 2021) | | | | |
| 185 | 49 | 21 | 50 | 305 |
| (61%) | (16%) | (7%) | (16%) | (100%) |

Note: GMB – Green Minibus

2.17 Table 2.5 shows 77% of the visitors access MPHK by public transport (MTR, Franchised Bus and GMB), some 7% to 8% by taxis, and the remaining 15% to 16% are by private car, during the Festival Day and the Festival Shadow Period, respectively.

## Occupancy Survey of Taxi and Private Car

2.18 Occupancy survey of taxi and private cars associated with MPHK was conducted by interview, and the results are summarised in Table 2.6.

TABLE 2.6 OCCUPANCY OF TAXI AND PRIVATE CAR BY SURVEYED VISITORS

| Taxi | | | Private Car | | |
|---|---|---|---|---|---|
| Number of Visitors [a] | Number of Vehicles [b] | Average Occupancy (persons) [a]/[b] | Number of Visitors [a] | Number of Vehicles [b] | Average Occupancy (persons) [a]/[b] |
| On Festival Day (Sunday, 4th April 2021) | | | | | |
| 30 | 8 | **3.8** | 60 | 17 | **3.5** |
| On Festival Shadow Period (Sunday, 28th March 2021) | | | | | |
| 21 | 6 | **3.5** | 50 | 14 | **3.6** |

2.19 Tables 2.6 that the average occupancies of taxi are 3.8 and 3.5 during the Festival Day and Festival Shadow Period respectively. Whilst, for private car, the corresponding occupancies are 3.5 and 3.6.

## Car Park Utilisation Survey

2.20 Utilisation survey was conducted at the closest off-street car park, i.e. the Shatin Galleria, located at 18 – 24 Shan Mei Street, which is about 420m from MPHK. Figure 2.2 shows the location and routing of the surveyed car park, and Table 2.7 presents the survey results.

TABLE 2.7 UTILIZATION OF THE SHATIN GALLERIA CAR PARK

| Car Park | Number of Car Parking Spaces (Approx.) | Morning (1100 hours) | | Noon (1300 hours) | | Afternoon (1500 hours) | |
|---|---|---|---|---|---|---|---|
| | | Vacant Spaces | % Vacancy | Vacant Spaces | % Vacancy | Vacant Spaces | % Vacancy |
| Festival Day (Sunday, 4th April 2021) | | | | | | | |
| Shatin Galleria | 255 | 102 | 40% | 107 | 42% | 112 | 44% |
| Festival Shadow Period (Sunday, 28th March 2021) | | | | | | | |
| Shatin Galleria | 255 | 89 | 35% | 80 | 31% | 94 | 37% |

2.21 Table 2.7 shows that the Shatin Galleria has no less than 31% vacancy during the survey period, i.e. with the availability of no less than 80 car parking spaces.

## Traffic Counts at Junctions

2.22 Manual classified traffic counts were conducted by surveyors at the junctions summarised in Table 2.8. Figure 2.3 shows the locations of the above junctions, and Figures 2.4 to 2.13 show the existing junction layouts.

TABLE 2.8 SUMMARIES OF SURVEYED JUNCTIONS

| Junction | | Type of Junction | Figures |
|---|---|---|---|
| J01 | Junction of Fo Tan Road / Tsung Tau Ha Road | Signal | 2.4 |
| J02 | Junction of Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | 2.5 |
| J03 | Junction of Au Pui Wan Street / Tsung Tau Ha Road | Priority | 2.6 |
| J04 | Junction of Au Pui Wan Street / Min Fong Street | Priority | 2.7 |
| J05 | Junction of Au Pui Wan Street / Wo Liu Hang Road | Priority | 2.8 |
| J06 | Junction of Au Pui Wan Street / Wo Heung Street | Free Flow Junction | 2.9 |
| J07 | Junction of Fo Tan Road / Tai Po Road / Lok King Street | Signal | 2.10 |
| J08 | Junction of Fo Tan Road / Tai Po Road | Signal | 2.11 |
| J09 | Junction of Fo Tan Road / Yuen Wo Road | Signal | 2.12 |
| J10 | Junction of Fo Tan Road / Tai Chung Kiu Road | Signal | 2.13 |

2.23 The traffic counts were classified by vehicle types to enable traffic flows in passenger car unit ("pcu") to be calculated. Figure 2.14 shows the columbarium peak hour traffic flow on Festival Day and Festival Shadow Period.

## Operational Performance at Surveyed Junctions

2.24 The existing operational performance of the surveyed junctions is calculated based on the columbarium peak hour traffic flows and the analysis method found in Volume 2 of the Transport Planning and Design Manual ("TPDM"). The analysis results are summarised in Table 2.9 and detailed calculations are found in Appendix A.

TABLE 2.9 EXISTING JUNCTION OPERATIONAL PERFORMANCE

| Junction | | Type of Junction | Indicator | RC / RFC |
|---|---|---|---|---|
| **Columbarium Peak Hour on Festival Day** | | | | |
| J01 | Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% |
| J02 | Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | >100% |
| J03 | Au Pui Wan Street / Tsung Tau Ha Road | Priority | RFC | 0.210 |
| J04 | Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.347 |
| J05 | Au Pui Wan Street / Wo Liu Hang Road | Priority | RFC | 0.125 |
| J06 | Au Pui Wan Street / Wo Heung Street | Free Flow Junction | | |
| J07 | Fo Tan Road / Tai Po Road / Lok King Street | Signal | RC | >100% |
| J08 | Fo Tan Road / Tai Po Road | Signal | RC | >100% |
| J09 | Fo Tan Road / Yuen Wo Road | Signal | RC | >100% |
| J10 | Fo Tan Road / Tai Chung Kiu Road | Signal | RC | 61% |
| **Columbarium Peak Hour on Festival Shadow Period** | | | | |
| J01 | Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% |
| J02 | Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | >100% |
| J03 | Au Pui Wan Street / Tsung Tau Ha Road | Priority | RFC | 0.252 |
| J04 | Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.331 |
| J05 | Au Pui Wan Street / Wo Liu Hang Road | Priority | RFC | 0.171 |
| J06 | Au Pui Wan Street / Wo Heung Street | Free Flow Junction | | |
| J07 | Fo Tan Road / Tai Po Road / Lok King Street | Signal | RC | >100% |
| J08 | Fo Tan Road / Tai Po Road | Signal | RC | >100% |
| J09 | Fo Tan Road / Yuen Wo Road | Signal | RC | >100% |
| J10 | Fo Tan Road / Tai Chung Kiu Road | Signal | RC | 77% |

2.25 The results in Table 2.9 show that the surveyed junctions currently operate with capacities during the columbarium peak hour on Festival Day, and on Festival Shadow Period.

## Pedestrian Counts at Key Footpath Sections

2.26 Pedestrian counts were conducted by surveyors manually at footpaths between MPHK and nearby primary transport hub, i.e. Fo Tab Station, Fo Tan Road bus stops, and Shatin Galleria car park. Table 2.10 and Figure 2.15 summarise the surveyed locations.

TABLE 2.10 DETAILS OF THE SURVEYED FOOTPATHS

| Ref. | Footpath |
|---|---|
| FP01 | Footpath along Fo Tan Village adjacent to Nullah |
| FP02 | Footpath between Fo Tan Station and Nullah |
| FP03 | Footbridge across Nullah |
| FP04 | Footpath outside the Subject Site |
| FP05 | Footpath between Subject Site and Footbridge |
| FP06 | Stair to/from Fo Tan Village Bus Stop (Shatin bound) |
| FP07 | Stair to/from Fo Tan Village Bus Stop (Fo Tan bound) |

2.27 Based on the columbarium peak hour pedestrian flows shown in Figure 2.15, Levels of Service ("LOS") analysis was conducted. A 0.5m 'dead area' is assumed along fencing, line of railings, or building frontages when calculating the "Effective Width". The LOS grading is as per TPDM Vol 6, Section 10.4, and LOS 'C' is generally considered as desirable at streets with dominant 'living' pedestrian activities. Table 2.11 summarizes the analysis results.

TABLE 2.11 EXISTING FOOTPATH OPERATIONAL PERFORMANCE

| Pedestrian Facilities | | Measured Width (m) | Effective Width (m) | 2-way Pedestrian Flow (ped/hour) | Flow Rates [LOS] (ped/m/min) |
|---|---|---|---|---|---|
| Columbarium Peak Hour on Festival Day | | | | | |
| FP01 | Footpath along Fo Tan Village adjacent to Nullah | 4.5 | 3.5 | 320 | 1.5 [A] |
| FP02 | Footpath between Fo Tan Station and Nullah | 6.2 | 4.2 | 745 | 3.0 [A] |
| FP03 | Footbridge across Nullah | 2.7 | 1.7 | 847 | 8.3 [A] |
| FP04 | Footpath outside the Subject Site | 3.1 | 2.1 | 255 | 2.0 [A] |
| FP05 | Footpath between Subject Site and Footbridge | 4.0 | 3.0 | 767 | 4.3 [A] |
| FP06 | Stair to/from Fo Tan Road Southbound (Towards Shatin) | 3.5 | 2.5 | 52 | 0.4 [A] |
| FP07 | Stair to/from Fo Tan Road Northbound (Towards Fo Tan) | 3.5 | 2.5 | 77 | 0.5 [A] |
| Columbarium Peak Hour on Festival Shadow Period | | | | | |
| FP01 | Footpath along Fo Tan Village adjacent to Nullah | 4.5 | 3.5 | 218 | 1.0 [A] |
| FP02 | Footpath between Fo Tan Station and Nullah | 6.2 | 4.2 | 782 | 3.1 [A] |
| FP03 | Footbridge across Nullah | 2.7 | 1.7 | 581 | 5.7 [A] |
| FP04 | Footpath outside the Subject Site | 3.1 | 2.1 | 178 | 1.4 [A] |
| FP05 | Footpath between Subject Site and Footbridge | 4.0 | 3.0 | 421 | 2.3 [A] |
| FP06 | Stair to/from Fo Tan Road Southbound (Towards Shatin) | 3.5 | 2.5 | 32 | 0.2 [A] |
| FP07 | Stair to/from Fo Tan Road Northbound (Towards Fo Tan) | 3.5 | 2.5 | 73 | 0.5 [A] |

2.28 Table 2.11 shows that the pedestrian facilities assessed currently operate satisfactorily with capacity, i.e. LOS "A", during the columbarium peak hour on Festival Day and Festival Shadow Period.

## Public Transport Services

2.29 Numebrs of public transport services operate in the vicinity of MPHK, including the MTR Fo Tan Station which is located about 150m or 5 minutes' walk away. Figure 2.16 shows the location of the public transport service stops, and details of these services are summarised in Table 2.12.

TABLE 2.12 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR MPHK

| Route | Routing | Frequency (min) | Nearest Stop |
|---|---|---|---|
| CTB 989 | Munsang College, Tai On Street → Fo Tan Chun Yeung Estate | 4 per days(1) | A |
| | Fo Tan Chun Yeung Estate → Munsang College, Tai On Street | 4 per days(1) | B |
| KMB 48P | Tsing Lung Tau → Fo Tan Chun Yeung Estate | 2 per days | A |
| | Fo Tan Chun Yeung Estate → Tsing Lung Tau | 2 per days | B |
| KMB 73A | Wah Ming Estate → Yu Chui Court | 30 – 35 | A |
| | Yu Chui Court → Wah Ming Estate | 20 – 30 | B |
| KMB 80M | Kowloon Tong Railway Station → Sui Wo Court | 25 – 30 | A |
| | Sui Wo Court → Kowloon Tong Railway Station | 25 – 30 | B |
| KMB 81K | Sun Tin Wai Estate → Sui Wo Court | 7 – 15 | A |
| | Sui Wo Court → Sun Tin Wai Estate | 7 – 15 | B |
| KMB 85 | Kowloon City Ferry Pier → Shan Mei Street | 13 – 25 | A |
| | Shan Mei Street → Kowloon City Ferry Pier | 15 – 20 | B |
| KMB 88K | Hin Keng → Royal Ascot | 12 – 20 | D |
| | Royal Ascot → Hin Keng | 12 – 20 | E |
| KMB 88X | Ping Tin → Fo Tan Chun Yeung Estate | 20 – 30 | A |
| | Fo Tan Chun Yeung Estate→ Ping Tin | 20 – 30 | B |
| KMB 280X | Tsim Sha Tsui East (Mody Road) → Sui Wo Court | 15 – 25 | A |
| | Sui Wo Court → Tsim Sha Tsui East (Mody Road) | 15 – 30 | B |
| KMB 285 | Sha Tin Central → Fo Tan Chun Yeung Estate | 20 – 30 | A |
| | Fo Tan Chun Yeung Estate → Sha Tin Central (to Sha Tin) | 20 – 30 | B |
| KMB 285A | Fo Tan Chun Yeung Estate → Fo Tan Station Bus Terminus (Circular) | 3 per days(2) | C |
| NWFB 798 | Tiu Keng Leng Station → Fo Tan (Chun Yeung Estate) | 12 – 30 | A |
| | Fo Tan (Chun Yeung Estate) → Tiu Keng Leng Station | 10 – 20 | B |
| GMB 28K | Shatin (Pak Hok Ting Street)→ Tai Po Market Station | 6 – 9 | D |
| | Tai Po Market Station → Shatin (Pak Hok Ting Street) | 6 – 9 | E |
| GMB 28S | Sha Tin (Pak Hok Ting Street) → Pak Shek Kok (Providence Bay) | 30 – 45 | D |
| | Pak Shek Kok (Providence Bay) → Sha Tin (Pak Hok Ting Street) | 30 – 45 | E |
| GMB 60K | Sha Tin Station → Kwei Tei New Village | 6 – 8 | A |
| | Kwei Tei New Village → Sha Tin Station | 6 – 8 | B |
| GMB 60P | Sha Tin Station → Chun Yeung Estate | 3 – 5(2) | A |
| | Chun Yeung Estate → Sha Tin Station | 3 – 5(2) | B |
| GMB 61S | Mong Kok Station → Fo Tan | 5 – 15(3) | A |
| GMB 62K | Sha Tin Station → Shatin Lodge | 8 – 15 | A |
| | Shatin Lodge → Sha Tin Station | 8 – 15 | B |
| GMB 65K | Wong Nai Tau → Fo Tan Station | 10 – 15 | A |
| | Fo Tan Station → Wong Nai Tau (to Wong Nai Tau) | 10 – 15 | B |
| GMB 69K | Sha Tin Station (Pai Tau Street) → Ville De Jardin / Greenwood Terrace | 4 – 10 | A |
| | Ville De Jardin / Greenwood Terrace → Sha Tin Station (Pai Tau Street) | 4 – 10 | B |
| GMB 481 | Tsuen Wan Central → Fo Tan (Shan Mei Street) | 4 – 20 | A |
| | Fo Tan (Shan Mei Street) → Tsuen Wan Central | 4 – 20 | B |
| GMB 811 | Yu Chui Court → Sui Wo Court | 5 – 8 | D |
| | Sui Wo Court → Yu Chui Court | 5 – 8 | E |

TABLE 2.12 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR MPHK (CONT'D)

| Route | Routing | Frequency (min) | Nearest Stop |
|---|---|---|---|
| GMB 811A | Bella Vista → Greenwood Terrace | 20 – 25 | D |
| | Greenwood Terrace → Bella Vista | 20 – 25 | E |
| GMB 811B | Yiu On → Fo Tan (Cheung Lek Mei Street) | 10 – 20 | D |
| | Fo Tan (Cheung Lek Mei Street)→ Yiu On | 10 – 20 | E |
| GMB 811P | City One → Royal Ascot | 5 – 6 | D |
| | Royal Ascot → City One | 5 – 6 | E |
| GMB 811S | Yiu On Estate → Sui Wo Court | 20 | D |
| | Sui Wo Court → Yiu On Estate | 20 | E |
| GMB 814 | Sha Tin (Pak Hok Ting Street) → Lai Ping Road | 15 | D |
| | Lai Ping Road → Sha Tin (Pak Hok Ting Street) | 15 | E |

Note: (1) No services on Saturdays, Sundays and Public Holidays
(2) No services on Sundays and Public Holidays
(3) Overnight service.

KMB – Kowloon Motor Bus NWFB – New World First Bus GMB – Green Minibus

| Nearest Stop | Locaiton of Stop | Approx. Distance (m) | Approx. Walking Time (min) |
|---|---|---|---|
| A | Fo Tan Village (Fo Tan bound) | 125m | 1.5 min |
| B | Fo Tan Village (Shatin bound) | 125m | 1.5min |
| C | Fo Tan Station Bus Terminus | 250m | 3.0 min |
| D | Fo Tan Station (Northbound) | 400m | 4.5 min |
| E | Fo Tan Station (Southbound) | 450m | 5.0 min |

## Occupancy of Existing Public Transport Services

2.30 To determine the utilisation of existing public transport services listed in Table 2.16, public transport surveys were conducted at the nearest bus stops from the Subject Site at Fo Tan Road, and Lok King Street, i.e. Fo Tan MTR Station

*(i) Occupancy of Franchised Bus and Green Minibus*

2.31 Tables 2.13 and 2.4 summarise the results of the occupancy survey during the columbarium peak hour on Ching Ming Festival Day and Ching Ming Festival Shadow Period respectively.

TABLE 2.13 RESULTS OF THE OCCUPANCY SURVEY 2021 CHING MING FESTIVAL DAY

| Route | Average Headway Observed (min) | Number of Passenger Observed (passenger/hour) | Total Hourly Capacity (passenger/hour) | Observed Occupancy | Surplus Capacity |
|---|---|---|---|---|---|
| Inbound towards Fo Tan | | | | | |
| KMB 73A | 15 | 53 | 512 | 10% | 459 |
| KMB 80M | 30 | 46 | 256 | 18% | 210 |
| KMB 81K | 20 | 162 | 384 | 42% | 222 |
| KMB 85 | 20 | 30 | 384 | 8% | 354 |
| KMB 88K | 20 | 56 | 384 | 15% | 328 |
| KMB 88X | 30 | 56 | 256 | 22% | 200 |
| KMB 280X | 30 | 33 | 256 | 13% | 223 |
| KMB 285 | 20 | 90 | 384 | 23% | 294 |
| NWFB 798 | 15 | 40 | 512 | 8% | 472 |
| GMB 60K | 4.6 | 146 | 208 | 70% | 62 |
| GMB 62K | 15 | 19 | 64 | 30% | 45 |
| GMB 65K | 20 | 21 | 48 | 44% | 27 |
| GMB 69K | 8.6 | 49 | 112 | 44% | 63 |
| GMB 481 | 7.5 | 53 | 128 | 41% | 75 |
| GMB 811 | 4.6 | 84 | 208 | 40% | 124 |
| GMB 811A | 20 | 11 | 48 | 23% | 37 |
| GMB 814 | 20 | 8 | 48 | 17% | 40 |
| **TOTAL** | - | **957** | **4,192** | **23%** | **3,235** |

TABLE 2.13 RESULTS OF THE OCCUPANCY SURVEY ON 2021 CHING MING FESTIVAL DAY (CONT'D)

| Route | Average Headway Observed (min) | Number of Passenger Observed (passenger/hour) | Total Hourly Capacity (passenger/hour) | Observed Occupancy | Surplus Capacity |
|---|---|---|---|---|---|
| Outbound leaving Fo Tan | | | | | |
| KMB 73A | 15 | 83 | 400 | 21% | 317 |
| KMB 80M | 30 | 43 | 256 | 17% | 213 |
| KMB 81K | 20 | 99 | 384 | 26% | 285 |
| KMB 85 | 20 | 50 | 384 | 13% | 334 |
| KMB 88K | 20 | 43 | 384 | 11% | 341 |
| KMB 88X | 30 | 20 | 256 | 8% | 236 |
| KMB 280X | 20 | 89 | 384 | 23% | 295 |
| KMB 285 | 30 | 66 | 256 | 26% | 190 |
| NWFB 798 | 20 | 40 | 384 | 10% | 344 |
| GMB 60K | 4.6 | 178 | 208 | 86% | 30 |
| GMB 62K | 10 | 72 | 96 | 75% | 24 |
| GMB 65K | 20 | 22 | 48 | 46% | 26 |
| GMB 69K | 12 | 43 | 80 | 54% | 37 |
| GMB 481 | 10 | 57 | 96 | 59% | 39 |
| GMB 811 | 5.5 | 100 | 176 | 57% | 76 |
| GMB 811A | 30 | 18 | 32 | 56% | 14 |
| GMB 814 | 15 | 28 | 64 | 44% | 36 |
| **TOTAL** | **-** | **1,051** | **3,888** | **27%** | **2,837** |

(1) According to the Annual Transport Digest 2020 published by Transport Department, the capacity of a double-decker bus is 128 passenger; and the capacity of a GMB is taken as 16-seat only.

TABLE 2.14 RESULTS OF THE OCCUPANCY SURVEY ON 2021 CHING MING FESTIVAL SHADOW PERIOD

| Route | Average Headway Observed (min) | Number of Passenger Observed (passenger/hour) | Total Hourly Capacity (passenger/hour) | Observed Occupancy | Surplus Capacity |
|---|---|---|---|---|---|
| Inbound towards Fo Tan | | | | | |
| KMB 73A | 15 | 109 | 512 | 21% | 403 |
| KMB 80M | 30 | 43 | 256 | 17% | 213 |
| KMB 81K | 15 | 132 | 512 | 26% | 380 |
| KMB 85 | 15 | 79 | 512 | 15% | 433 |
| KMB 88K | 20 | 80 | 272 | 29% | 192 |
| KMB 88X | 30 | 46 | 256 | 18% | 210 |
| KMB 280X | 20 | 96 | 384 | 25% | 288 |
| KMB 285 | 20 | 96 | 384 | 25% | 288 |
| NWFB 798 | 15 | 53 | 512 | 10% | 459 |
| GMB 60K | 4.6 | 146 | 208 | 70% | 62 |
| GMB 62K | 10 | 63 | 96 | 66% | 33 |
| GMB 65K | 30 | 18 | 32 | 56% | 14 |
| GMB 69K | 10 | 66 | 96 | 69% | 30 |
| GMB 481 | 10 | 78 | 96 | 81% | 18 |
| GMB 811 | 6 | 107 | 160 | 67% | 53 |
| GMB 811A | 30 | 20 | 32 | 63% | 12 |
| GMB 814 | 30 | 10 | 32 | 31% | 22 |
| **TOTAL** | **-** | **1,242** | **4,352** | **29%** | **3,110** |

TABLE 2.14 RESULTS OF THE OCCUPANCY SURVEY ON 2021 CHING MING FESTIVAL SHADOW PERIOD

| Route | Average Headway Observed (min) | Number of Passenger Observed (passenger/hour) | Total Hourly Capacity (passenger/hour) | Observed Occupancy | Surplus Capacity |
|---|---|---|---|---|---|
| **Outbound leaving Fo Tan** | | | | | |
| KMB 73A | 15 | 163 | 512 | 32% | 349 |
| KMB 80M | 30 | 56 | 256 | 22% | 200 |
| KMB 81K | 15 | 63 | 512 | 12% | 449 |
| KMB 85 | 20 | 30 | 384 | 8% | 354 |
| KMB 88K | 15 | 53 | 400 | 13% | 347 |
| KMB 88X | 30 | 20 | 256 | 8% | 236 |
| KMB 280X | 20 | 66 | 384 | 17% | 318 |
| KMB 285 | 20 | 40 | 384 | 10% | 344 |
| NWFB 798 | 12 | 103 | 640 | 16% | 537 |
| GMB 60K | 7.5 | 72 | 128 | 56% | 56 |
| GMB 62K | 12 | 14 | 80 | 18% | 66 |
| GMB 65K | 30 | 8 | 32 | 25% | 24 |
| GMB 69K | 8.6 | 41 | 112 | 37% | 71 |
| GMB 481 | 6 | 86 | 160 | 54% | 74 |
| GMB 811 | 6.7 | 67 | 144 | 47% | 77 |
| GMB 811A | 15 | 39 | 64 | 61% | 25 |
| GMB 814 | 20 | 11 | 48 | 23% | 37 |
| **TOTAL** | **-** | **932** | **4,496** | **21%** | **3,564** |

(1) According to the Annual Transport Digest 2020 published by Transport Department, the capacity of a double-decker bus is 128 passenger; and the capacity of a GMB is taken as 16-seat only.

*(ii) Observed Capacity of the MTR East Rail Line*

2.32 Observations were made at the MTR Fo Tan Station and the results are presented in Table 2.15.

TABLE 2.15 OBSERVED FREQUENCIES AND ESTIMATED CAPACITY OF MTR EAST RAIL LINE DURING THE COLUMBARIUM PEAK HOUR

| Direction | Number of Trains Observed | Average Headway (min) | Total Capacity (1) (passenger / hour) |
|---|---|---|---|
| **Columbarium Peak Hour on Festival Day** | | | |
| Northbound (Towards Sheung Shui) | 10x 12-car train | 6 | 37,500 |
| Southbound (Towards Hung Hom) | 10x 12-car train | 6 | 37,500 |
| **Columbarium Peak Hour on Festival Shadow Period** | | | |
| Northbound (Towards Sheung Shui) | 10x 12-car train | 6 | 37,500 |
| Southbound (Towards Hung Hom) | 10x 12-car train | 6 | 37,500 |

(1) According to Annual Transport Digest 2020 published by Transport Department, the capacity of a 12-car East Rail Train is 3,750 passengers.

2.33 It is also observed that the trains were not fully occupied with rooms for additional standees.

2.34 According to the MTR website, the East Rail Line could operate as frequent as every 3-minute during the weekday peak hour, i.e. 20 trains per hour per direction, with a total capacity of 75,000 passenger / hour / direction. Hence, the observed capacity on was only 50% of the maximum capacity *[Calculation: (37,000 ÷ 75,000) x 100% = 50%]*.

# 3.0 THE PROPOSED COLUMBARIUM

## Layout of the Proposed Columbarium

3.1 The layout of the Proposed Columbarium remains the same as the present which is shown in Figure 2.1.

## Internal Transport Facilities

3.2 In view the Subject Site is not accessible by motor vehicles, at present no internal transport facilities are provided. Hence internal transport facilities are also not provided for the Proposed Columbarium due to the following reasons:

(i) MPHK is small and not accessible by motor vehicles;

(ii) Numbers of public transport services are available in the vicinity including the MTR East Rail Line at Fo Tan Station. Similar to the present festival periods, the majority of the visitors are expected and also encouraged to use public transport services; and

(iii) Car parks with hourly parking spaces are available in the vicinity and these car parks have spare capacity during the festival periods.

## Pedestrian Access to/from the Proposed Columbarium

3.3 Pedestrian access to the Proposed Columbarium will be maintained via the existing pedestrian facilities along and across the nullah and under the Fo Tan Road Flyover. The key pedestrian routes between the MPHK and the primary major transport hub are shown in Figure 2.16.

## Special Traffic and Pedestrian Arrangement during Ching Ming and Chung Yeung Festival Periods

3.4 Special traffic and pedestrian arrangements are proposed in association with the Proposed Columbarium to manage and minimise the potential traffic impact. Figure 3.1 summarises the proposed arrangement and details are described in below paragraphs.

### *(i) Implementation Period*

3.5 The special traffic arrangements will be implemented during the Ching Ming and Chung Yeung Festival Periods and details are as follows:

(i) 2nd Saturday before Ching Ming and Chung Yeung Festival Day,
(ii) 2nd Sunday before Ching Ming and Chung Yeung Festival Day,
(iii) 1st Saturday before Ching Ming and Chung Yeung Festival Day,
(iv) 1st Sunday before Ching Ming and Chung Yeung Festival Day,
(v) Ching Ming / Chung Yeung Festival Day,
(vi) 1st Saturday after Ching Ming and Chung Yeung Festival,
(vii) 1st Sunday after Ching Ming and Chung Yeung Festival,
(viii) 2nd Saturday after Ching Ming and Chung Yeung Festival Day,
(ix) 2nd Sunday after Ching Ming and Chung Yeung Festival Day, and
(x) Any other public holidays within (i) and (ix)

3.6 The above implementation period is proposed based on the existing operation of MPHK. Further review will be conducted by the Applicant to evaluate if the implementation period shall be extended to include more weekends before and after the Ching Mind / Chung Yeung Festival Day upon obtaining the Town Planning Approval and the Private Columbarium License.

*(ii) Visit-by-Appointment Arrangement*

3.7 The Applicant will continue to require all visitors to the MPHK to follow the visit-by-appointment arrangement during each Ching Ming and Chuny Yeung Festival Period prior to visiting the Subject Site. Hence, the number of visitors to the MPHK can be regulated.

3.8 Based on the maximum 139 visitors observed during the columbarium peak hour throughout the 2021 Ching Ming Festival period, the Applicant will impose an hourly visiting capacity of 150 persons, and there will be two 30-minute worship sessions with a maximum 75 persons per session.

3.9 Hence, the maximum number of visitors to the MPHK will be 75 persons per 30-minute, or 150 persons per hour. A check-in counter will be set up at the main entrance of the MPHK, and only visitors with valid registration at the specific time and date will be allowed to enter.

*(iii) Waiting Area*

3.10 As shown in Figure 3.1, a waiting area of approximately 40m$^2$ can be provided within the MPHK. Assuming a standing capacity of 4 persons per square metre with a usable floor area of 75%, the total queueing area of 30m$^2$ could accommodate 120 visitors at any one time *[Calculation: 40 x 75% x 4 = 120].*

3.11 In view the visiting capacity for the MPHK will be 75 persons per 30-minutes, and the waiting area that can hold 120 persons will be sufficient to accommodate the number of arriving visitors at the beginning of each grave sweeping session, and therefore, no visitors are expected to queue outside the MPHK on public footpath.

*(iv) Promotion to Use Public Transport Services*

3.12 Similar to present festival periods, prior to the each Ching Ming and Chung Yeung festival period, the Applicant will remind and encourage all niche owners to use public transport services, i.e. MTR, franchised bus and GMB, excluding taxis, to access MPHK.

*(v) Discourage the Use of Private Car and Taxi*

3.13 The Applicant will also emphasise that car parking spaces are not available at MPHK, and will strongly discourage the use of private cars or taxis in order to minimise the associated traffic impact.

*(vi) Stationing of In-House Staff*

3.14 In-house trained staff will be stationed within MPHK to ensure smooth pedestrian flow and safety of visitors.

*(vii) Pedestrian Circulation*

3.15 As shown in Figure 3.1, a one-way pedestrian circulation will be implemented within the Subject Site to separate the arriving and departing visitors during the Festival Periods.

*(viii) Data Collection and Review of the Special Traffic Arrangement*

3.16 The Applicant will maintain records on number of visitors, number of niches occupied, and observed operation condition etc., for every Ching Ming and Chung Yeung Festival Period after obtaining the Town Planning Approval and the Private Columbarium License. This information can used to review and evaluate the operation efficiency of the special traffic arrangement periodically.

3.17 Thereafter, revised special traffic arrangements can be submitted to the Transport Department and the Hong Kong Police Force for follow-up review and to suit the future operation condition of MPHK with a goal to minimise the traffic impact to the general public.

## Visitor and Traffic Generation of the Proposed Columbarium

3.18 With the proposed Visit-by-Appointment implemented, pedestrian generation associated with the MPHK will be limited to 150 persons per hour. The estimated mode of transport by visitors, and the associated traffic generation is summarised in Table 3.1.

TABLE 3.1 MODE OF TRANSPORT USED BY VISITORS AND ASSOCIATED TRAFFIC GENERATION

| Mode of Transport | Percentage | Peak Hour Visitor Generation (persons) | Average Occupancy | Traffic Generation (vehicles/hour) |
|---|---|---|---|---|
| **Columbarium Peak Hour on Festival Day** | | | | |
| MTR | 60% | 90 | -- | -- |
| Franchised Bus + GMB | 17% | 26 | -- | -- |
| Taxi | 8% | 12 | 3.8 | 4 |
| Private Car | 15% | 22 | 3.5 | 7 |
| **TOTAL** | **100.0%** | **150** | -- | **11** |
| **Columbarium Peak Hour on Festival Shadow Period** | | | | |
| MTR | 61% | 92 | -- | -- |
| Franchised Bus + GMB | 16% | 24 | -- | -- |
| Taxi | 7% | 11 | 3.5 | 4 |
| Private Car | 16% | 23 | 3.6 | 7 |
| **TOTAL** | **100.0%** | **150** | -- | **11** |

3.19 Table 3.1 shows that, the Proposed Columbarium is expected to generate some 11 vehicles per hour (1-way), i.e. 4 taxis and 7 private cars, during the Festival Day and Festival Shadow Period.

# 4.0 TRAFFIC AND PEDESTRIAN IMPACT

## Design Year

4.1 Reference is made to the TPDM which states "*the planning horizon for traffic forecast... should be set at the time when the development is completed or preferably at a design year within 5 years of the completion.*" In view the Proposed Columbarium is an existing building which has been completed; the design year is set to be 5 years from Year 2021, i.e. Year 2026.

4.2 Two design scenarios were assessed including (i) Year 2026 Festival Days without the Proposed Columbarium, and (ii) Year 2026 Festival Days with the Proposed Columbarium. In addition, the analysis also assumed a worst case scenario which all niches of the Proposed Columbarium being occupied by Year 2026.

## Historic Traffic Flow

4.3 The 2009 to 2019 historic annual average daily traffic ("AADT") of roads located in the vicinity of MPHK are obtained from the Annual Traffic Census ("ATC") which is published by Transport Department, is presented in Table 4.2.

TABLE 4.1 AADT OF ATC STATIONS LOCATED IN THE VICINITY

| ATC Station No. | 5415 | 6611 | 6010 | 5210 | Overall |
|---|---|---|---|---|---|
| Road | Fo Tan Road | Kwei Tei Street | Fo Tan Road | Fo Tan Road Flyover | |
| Road Type | Primary Distributor | Local Distributor | Primary Distributor | Primary Distributor | |
| From | Lok King Street | Wong Chuk Yeung Street | Tai Po Road - Shatin | Lok King Street | |
| To | Sui Wo Road | Tsung Tau Ha Road | Yuen Wo Road | Slip Road to Tai Po Rd | |
| Year | Annual Average Daily Traffic (vehicles / day) | | | | |
| 2009 | 18,340 | 8,060 | 44,710* | 43,550 | 114,660 |
| 2010 | 20,400 | 8,190 | 46,670* | 45,460* | 120,720 |
| 2011 | 20,890* | 8,220 | 47,800* | 46,560* | 123,470 |
| 2012 | 21,070* | 8,180 | 41,440 | 46,960* | 117,650 |
| 2013 | 21,520* | 8,150 | 42,810 | 46,700 | 119,180 |
| 2014 | 22,970 | 6,690 | 43,030* | 44,230 | 116,920 |
| 2015 | 25,680 | 7,760 | 44,020* | 45,250* | 122,710 |
| 2016 | 26,070* | 7,950 | 44,680* | 45,930* | 124,630 |
| 2017 | 26,140* | 8,400 | 41,960 | 46,050* | 122,550 |
| 2018 | 26,240* | 8,380 | 39,630 | 47,040 | 121,290 |
| 2019 | 28,900 | 8,680 | 39,590* | 51,370 | 128,540 |
| **Average Annual Growth** | **4.0%** | **0.7%** | **-1.8%** | **1.4%** | **0.7%** |

Note: * AADT estimated by growth factor.

4.4 Table 4.1 shows that the overall average annual growth in AADT is 0.7% between 2009 and 2019, which is modest.

## Population Projection

4.5 Reference is made to the "*Projections of Population Distribution*" for Shatin, published by the Planning Department and is presented in Table 4.1

TABLE 4.2 PROJECTED POPULATION FOR SHATIN

| Year | Population in District of Shatin |
|---|---|
| 2016[#] | 659,800 |
| 2018 | 683,700 |
| 2026 | 708,600 |
| Average Annual Growth (2016 to 2026) | 0.7% |

Note: [#]Base year population as published.

4.6 Table 4.2 shows that population in the Shatin District is projected to increase by 0.7% per annum between 2016 and 2026.

## Traffic and Pedestrian Generation by Other Planned / Approved Major Developments

4.7 The traffic and pedestrian generation of the other planned / approved major developments located in the vicinity of MPHK have been incorporated in the analysis. The details of these developments are summarised in Table 4.3

TABLE 4.3 OTHER PLANNED / APPROVED MAJOR DEVELOPMENTS IN THE VICINITY OF MPHK

| Development | Address | Development Schedule | Status |
|---|---|---|---|
| Proposed Home Ownership Scheme Development (Choi Wo Court) | Wo Sheung Tun Street, Fo Tan, | Subsidised Sales Housing: 887 flats | Population intake in 2021 |
| Comprehensive Development with Government, Institution or Community Facilities and Public Transport Interchange (TPB A/ST/927) | East Rail Fo Tan Station and its Adjoining Area at Au Pui Wan Street and Lok King Street, Sha Tin | Residential: 2,443 flats<br>Retail: 17,497 $m^2$<br>Primary School: 30 classrooms<br>Kindergarten: 6 classrooms | Phase 1 under construction with population intake in 2022 / 2023<br><br>Phase 2 is under planning |
| Proposed Industrial Development with Public Vehicle Park | Tsung Tau Ha Road / Kwei Tei Street, Sha Tin (STTL 613) | Total GFA: 87,191 $m^2$, and a Public Vehicle Park with -205 car parking spaces and 100 commercial vehicle spaces | Completion by 2026 |

## Traffic and Pedestrian Forecast

4.8 The 2026 traffic flows are estimated based on the historic traffic flow from 2010 to 2019 which is also 0.7% per annum (Table 4.1 refers), and the estimated population growth from 2016 to 2026, which is 0.7% per annum (Table 4.2 refers). To be conservative, a growth rate of 1.0% per annum is adopted to derive the 2026 traffic flows.

4.9 Hence, the year 2026 columbarium peak hour traffic and pedestrian flows on the Festival Days are derived as follows:

*2026 Traffic and Pedestrian Flows Without the Proposed Columbarium [A]* = *Existing Traffic and Pedestrian Flows + Estimated Traffic and Pedestrian Growth from 2021 to 2026 + Traffic and Pedestrian Generated by Other Known Developments*

*2026 Traffic and Pedestrian Flows With the Proposed Columbarium* = *[A] + Traffic and Pedestrian Generation associated with the Proposed Columbarium*

4.10 Figures 4.1 and 4.2 show the Year 2026 peak hour traffic flows without and with the Proposed Columbarium respectively. Figures 4.3 and 4.4 show the Year 2026 peak hour pedestrian flows without and with the Proposed Columbarium respectively.

## Proposed Traffic and Pedestrian Improvements by Others

*Junction of Au Pui Wan Street / Wo Heung Street*

4.11 According to the Traffic Impact Assessment associated with the approved planning application (Town Planning Board Ref: A/ST/927) for *"Comprehensive Development with Government, Institution or Community Facilities and Public Transport Interchange,"* located at Fo Tan Station and its adjoining area at Au Pui Wan Street and Lok King Street, the Junction of Au Pui Wan Street / Wo Heung Street will be signalised (J05), and has been incorporated in the traffic analyses presented below.

*Escalator Link System between Sui Wo Court and Fo Tan Station*

4.12 An escalator link system between Sui Wo Court and Fo Tan Station will be implemented by the Government, which will supplement the existing pedestrian linkage shown in Figure 4.3.

4.13 The new escalator link system is expected to increase the pedestrian flow in the vicinity of MPHK, i.e. sharing the same footpaths and footbridge outside Fo Tan Station and across the nullah. This increase in pedestrian flow is assumed to be due to residents and visitors of Sui Wo Court switching transport modes from existing franchised bus and GMB services at Sui Wo Court Bus Terminus to ride the MTR at Fo Tan Station via the new escalator link system.

4.14 Hence, to estimate the increase in pedestrian flow in the vicinity of MPHK, a public transport patronage survey was conducted at the Sui Wo Court Bus Terminus on 2021 Ching Ming Festival Day (i.e. Sunday, 4th April 2021) and the 2021 Ching Ming Shadow Period (i.e. Sunday, 28th March 2021) to determine the existing patronage of public transport at Sui Wo Court. The results are summarised in Table 4.4.

TABLE 4.4 RESULTS OF PATRONAGE SURVEY AT SUI WO COURT

| Item | Boarding (Departure from Sui Wo Court) | Alighting (Arrival at Sui Wo Court) | TOTAL (2-way) |
|---|---|---|---|
| Peak Hour on Ching Ming Festival Day (Sunday, 4th April 2021) | | | |
| Observed Patronage (persons) | 254 | 144 | 398 |
| Peak Hour on Ching Ming Festival Shadow Period (Sunday, 28th March 2021) | | | |
| Observed Patronage (persons) | 256 | 207 | 463 |

4.15 Based on the survey results presented in Table 4.4, an addition 2-way pedestrian flow of 398 persons and 463 persons are added to the 2026 pedestrian forecast (as shown in Figure 4.4 and 4.5) during the columbarium peak hour on Ching Ming Festival Day and on Ching Ming Festival Shadow Period to include the increase in pedestrian flow due to implementation of the escalator link system between Sui Wo Court and Fo Tan Station by the Government.

## Year 2026 Junction Capacity Analysis

4.16 Year 2026 peak hour junction capacity analyses are summarised in Table 4.5 and detailed calculations are presented in Appendix A.

TABLE 4.5 YEAR 2026 JUNCTION OPERATIONAL PERFORMANCE

| Junction | | Type of Junction | Indicator | Without the Proposed Columbarium | With the Proposed Columbarium |
|---|---|---|---|---|---|
| **Peak Hour on Ching Ming Festival Day** | | | | | |
| J01 | Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% | >100% |
| J02 | Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | >100% | >100% |
| J03 | Au Pui Wan Street / Tsung Tau Ha Road | Priority | RFC | 0.351 | 0.352 |
| J04 | Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.525 | 0.525 |
| J05 | Au Pui Wan Street / Wo Heung Street | Signal | RC | >100% | >100% |
| J06 | Au Pui Wan Street / Wo Liu Hang Road | Free Flow Junction | | | |
| J07 | Fo Tan Road / Tai Po Road / Lok King Street | Signal | RC | >100% | >100% |
| J08 | Fo Tan Road / Tai Po Road | Signal | RC | >100% | >100% |
| J09 | Fo Tan Road / Yuen Wo Road | Signal | RC | 74% | 72% |
| J10 | Fo Tan Road / Tai Chung Kiu Road | Signal | RC | 47% | 47% |
| **Peak Hour on Festival Shadow Period** | | | | | |
| J01 | Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% | >100% |
| J02 | Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | >100% | >100% |
| J03 | Au Pui Wan Street / Tsung Tau Ha Road | Priority | RFC | 0.395 | 0.395 |
| J04 | Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.509 | 0.509 |
| J05 | Au Pui Wan Street / Wo Heung Street | Signal | RC | >100% | >100% |
| J06 | Au Pui Wan Street / Wo Liu Hang Road | Free Flow Junction | | | |
| J07 | Fo Tan Road / Tai Po Road / Lok King Street | Signal | RC | >100% | >100% |
| J08 | Fo Tan Road / Tai Po Road | Signal | RC | >100% | >100% |
| J09 | Fo Tan Road / Yuen Wo Road | Signal | RC | 94% | 93% |
| J10 | Fo Tan Road / Tai Chung Kiu Road | Signal | RC | 60% | 60% |

Note: RC – Reserved Capacity RFC – Ratio-of-Flow to Capacity

4.17 The results in Table 4.5 show that the surveyed junctions are expected to operate with capacities during the columbarium peak hour of Festival Shadow Period and on Festival Day. Hence, traffic associated with the Proposed Columbarium has no significant adverse traffic impact.

## Placement of Cremated Ashes on Non-Festival Day

4.18 At present and also in future, the placing of cremated ashes into niches is by appointment and within the opening hours of between 9am and 6pm, and only 1 placement of ashes is conducted at any one time. This ceremony is attended by immediate family members, i.e. parents, spouse, and children.

4.19 Hence, the number of visitors is typically no more than 6 - 8 persons and the traffic generation associated with this ceremony is no more than 2 – 3 pcu / group, which is negligible and would occur outside the AM and PM peak hours. The placing cremated ashes into niches have negligible traffic impact to the public roads.

4.20 In addition, it should be noted that placing of cremated ash is not conducted on Ching Ming and Chung Yeung Festival Day, and their shadow periods Saturdays, Sundays and public holidays.

## Additional Parking Demand

4.21 Table 3.1 shows that the Proposed Columbarium is expected to generate no more than an additional 7 private car trips during the columbarium peak hour on Festival Day and Festival Shadow Period.

4.22 The car park utilisation survey in Table 2.7 shows that there are some 80 or more car parking spaces available throughout the day at the Shatin Galleria, which is located within walking distance from MPHK.

4.23 In addition, the Approved Proposed Comprehensive Development located across the nullah at Au Pui Wan Street immediately north of the Fo Tan MTR Station (TPB A/ST/927) will provide some 745 car parking spaces, of which 89 spaces for retail could be used by the public.

4.24 Hence, the surplus spaces in the Shatin Galleria, and the additional spaces provided within the Approved Proposed Comprehensive Development are more than sufficient to meet the additional parking demand associated with the Proposed Columbarium.

## Year 2026 Pedestrian Footpath Operation Performance

4.25 Year 2026 peak hour footpath operational performances are calculated and summarised in Table 4.6.

TABLE 4.6 YEAR 2026 FOOTPATH OPERATIONAL PERFORMANCE

| Pedestrian Facilities | Actual Width (m) | Effective Width (m) | Without the Proposed Columbarium | | With the Proposed Columbarium | |
|---|---|---|---|---|---|---|
| | | | Peak Hour 2-way Pedestrian Flow (ped/hour) | Flow Rates [LOS] (ped/m/min) | Peak Hour 2-way Pedestrian Flow (ped/hour) | Flow Rates [LOS] (ped/m/min) |
| Columbarium Peak Hour on Festival Day | | | | | | |
| FP01 | 4.5m | 3.5m | 336 | 1.6 [A] | 382 | 1.8 [A] |
| FP02 | 6.2m | 4.2m | 1,180 | 4.7 [A] | 1,384 | 5.5 [A] |
| FP03 | 2.7m | 1.7m | 1,287 | 12.6 [A] | 1,491 | 14.6 [A] |
| FP04 | 3.1m | 2.1m | 268 | 2.1 [A] | 568 | 4.5 [A] |
| FP05 | 4.0m | 3.0m | 805 | 4.5 [A] | 1,034 | 5.7 [A] |
| FP06 | 3.5m | 2.5m | 55 | 0.4 [A] | 80 | 0.5 [A] |
| FP07 | 3.5m | 2.5m | 81 | 0.5 [A] | 106 | 0.7 [A] |
| Columbarium Peak Hour on Festival Shadow Period | | | | | | |
| FP01 | 4.5m | 3.5m | 229 | 1.1 [A] | 278 | 1.3 [A] |
| FP02 | 6.2m | 4.2m | 1,284 | 5.1 [A] | 1,487 | 5.9 [A] |
| FP03 | 2.7m | 1.7m | 1,073 | 10.5 [A] | 1,276 | 12.5 [A] |
| FP04 | 3.1m | 2.1m | 187 | 1.5 [A] | 487 | 3.9 [A] |
| FP05 | 4.0m | 3.0m | 442 | 2.5 [A] | 669 | 3.7 [A] |
| FP06 | 3.5m | 2.5m | 34 | 0.2 [A] | 58 | 0.4 [A] |
| FP07 | 3.5m | 2.5m | 77 | 0.5 [A] | 101 | 0.7 [A] |

4.26 The above results indicate that footpath assessed will operate with capacities during the columbarium peak hour on Festival Day and Festival Shadow Period. Hence, the Proposed Columbarium will have no significant impact to the surrounding pedestrian network.

## Assessment on Public Transport

4.27 Refer to Table 3.1, the number of visitors visiting the Proposed Columbarium by MTR is approximately 90 - 92 persons, and is approximately 24 - 26 persons by franchised bus / GMB.

### *(i) Planned Change in Services of the MTR East Rail Line*

4.28 By 2022, the existing East Rail Line is expected to extend from Hung Hom to Admiralty, and the number of cars per train will reduce from 12 to 9. Although the change in train configuration would reduce the passenger capacity by some 25% per train, but according to the MTR website, the frequency of train service can be adjusted to maintain the operation capacity in response to the passenger demand. In addition, the upgrading of signalling system can also reduce the minimum headway from 3-minute at present to 2-minute in the future, i.e. 30 trains per hour per direction.

4.29 To be conservative, Table 4.7 summarises the future hourly capacity of the East Rail Line with 9-car train based on the existing observed headway.

TABLE 4.7 ESTIMATED FUTURE HOURLY CAPACITY OF THE EAST RAIL LINE DURING THE COLUMBARIUM PEAK HOUR

| Item | Calculation |
|---|---|
| Passenger Capacity of 12-car train [a] | 3,750 pax/train |
| Reduction factor due to use of 9-car trains [b] | 9 ÷ 12 = 0.75 |
| Passenger Capacity of 9-car train [c] = [a] x [b] | 3,750 x 0.75 = 2,812 pax/train |
| Number of train per hour [d] | 10 trains at 6-minute headway |
| Future Hourly Capacity with Existing Headway [e] = [c] x [d] | 10 x 2,812 = 28,120 pax/hour/direction |

### *(ii) Impact on the MTR East Rail Line*

4.30 The percentages of additional passenger demand on the MTR East Rail Line over the expected future hourly capacity during the columbarium peak hour are calculated and shown in Table 4.8.

TABLE 4.8 ADDITIONAL PASSENGER DEMAND ON THE MTR EAST RAIL LINE DURING THE COLUMBARIUM PEAK HOUR

| Item | Calculation | |
|---|---|---|
| | Festival Day | Festival Shadow Period |
| Future Hourly Capacity with Existing Headway (From Table 4.7) [a] | 28,120 pax/hr/direction | |
| Passenger Demand in association with the Proposed Columbarium during the columbarium peak hour (From Table 3.1) [b] | 90 | 92 |
| Percentage of Additional Passenger Demand over the Hourly Capacity [c] = [b] ÷[a] x 100% | 0.3% | 0.3% |
| Number of Trains per hour [d] | 10 trains per hour | |
| Additional Passengers per Train in Average [e] = [b] ÷ [d] | 9 | 10 |

4.31 Table 4.8 shows that the maximum increase in passenger demand on Festival Day and on Festival Shadow Period would only 0.3% of the future hourly capacity, or an average of 9 to 10 passengers per train, which is negligible.

4.32 Hence, the additional passenger demand on the MTR East Rail Line associated with the Proposed Columbarium during the columbarium peak hour is very low, and will not result in adverse impact.

*Impact on the Franchised Bus and GMB Services*

4.33 The impact of the Proposed Columbarium to the franchised bus and GMB services during the columbarium peak hour is calculated and presented in Table 4.9.

TABLE 4.9 IMPACT OF THE PROPOSED COLUMBARIUM ON FRANCHISED BUS AND GMB LINE DURING THE COLUMBARIUM PEAK HOUR

| Item | | Calculation | |
|---|---|---|---|
| | | Festival Day | Festival Shadow Period |
| Capacity with Franchised Bus and GMB (From Table 2.14) [a] (pax/hr) | Inbound: | 4,192 | 4,352 |
| | Outbound: | 3,888 | 4,496 |
| Additional Passenger Demand in association with the Proposed Columbarium during the columbarium peak hour (From Table 3.1) [b] | | 26 | 24 |
| Percentage of Additional Passenger Demand over the Capacity [c] = [b] ÷[a] x 100% | Inbound: | 0.6% | 0.6% |
| | Outbound: | 0.6% | 0.5% |

Note: Inbound – Towards Fo Tan Outbound – Leaving Fo Tan

4.34 Table 4.9 shows that the Proposed Columbarium will result in increase of 0.5% to 0.6% in demand on the franchised bus and GMB services during the columbarium peak hour on the Festival Day and on Festival Shadow Period, which is negligible.

# 5.0 SUMMARY

5.1 MPHK is located at 93, Fo Tan Village, Fo Tan, Shatin, New Territories, i.e. Lot Nos. 551 S.A, 551 RP, 640 and 644 S.A, 644 S.B & 644 RP in D.D.176, and Adjoining Government Land. It is proposed to regularise the existing columbarium with 3,499 niches, of which 801 niches are now sold and occupied.

5.2 At present, MPHK has no internal transport facilities at present and no internal transport facilities will be provided in future due to the following reasons:

(i) MPHK is small and irregularly shaped, and it is inaccessible by motor vehicles;

(ii) Numbers of public transport services are available in the vicinity including the MTR East Rail Fo Tan Station, which is within short walking distance. Similar to the present festival day and its shadow period, most visitors are expected also to use public transport services; and

(iii) Car park with hourly parking spaces, i.e. Shatin Galleria, is some 420m from MPHK and has spare capacity during the festival periods. Additional parking spaces will be available in the future upon completion of other nearby developments.

5.3 Visitor count surveys were conducted during the 2021 Ching Ming Festival Period, which included the 2 weekends (Saturdays and Sundays) before the Festival Day, the immediate public holidays before and after the festival days, on the Festival Day, and the 2 weekends after the Festival Day.

5.4 Based on the results of the visitor count surveys, traffic analysis conducted included the following:

(i) Columbarium peak hour on Ching Ming Festival Day (2021), and

(ii) Columbarium peak hour on shadow period, i.e. Sunday before Ching Ming Festival Day (2021).

5.5 Since October 2019, the Applicant has implemented a Visit-by-Appointment arrangement to manage and control the number of visitors of MPHK. All visitors are required to register with the Applicant prior to visiting. As part to the management plan, a visiting capacity is proposed to be 75 persons per 30-minute visiting session, i.e. 150 persons per hour.

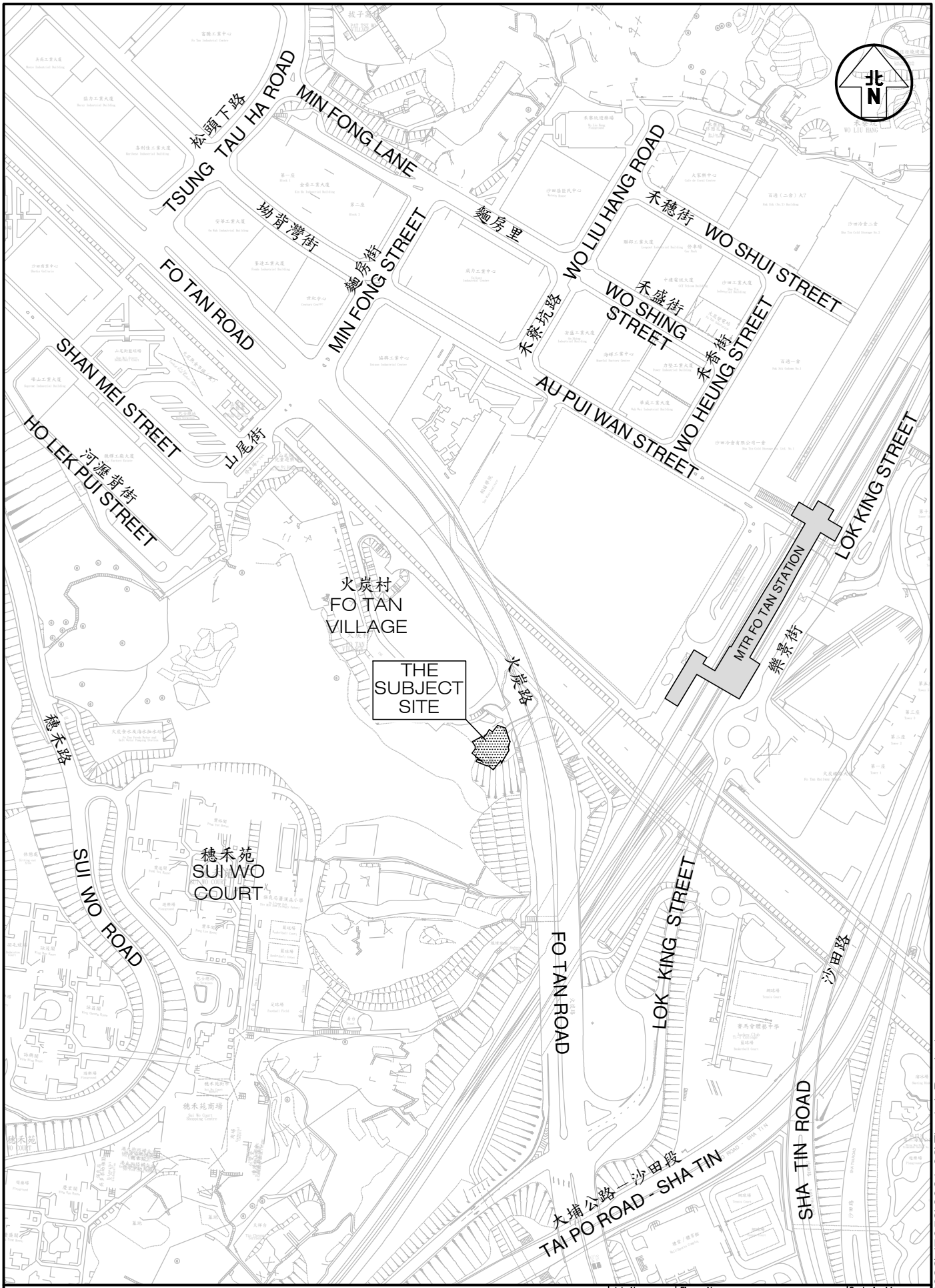
5.6 The mode of transport used by visitors was determined to estimate the traffic generation associated with the Proposed Columbarium for the columbarium peak hour on Festival Day, and Festival Shadow Period.

5.7 Manual traffic and pedestrian counts were conducted at nearby road junctions and footpaths. The observed traffic and pedestrian flows are used as basis to estimate the 2026 traffic and pedestrian flows for analyses without and with the Proposed Columbarium.

5.8 The year 2026 junction and footpath capacity analyses concluded that, the junction and footpath analysed have sufficient capacity to accommodate the expected traffic and pedestrian growth and the additional demand generated by the Proposed Columbarium. Nevertheless, special traffic and pedestrian traffic arrangement is proposed to be implemented during the Ching Ming and Chung Yeung Festival periods to minimise the potential traffic impact.

5.9 It can be concluded that the Proposed Columbarium will result in no adverse traffic and pedestrian impact to the road and pedestrian. From traffic engineering aspect, the Proposed Columbarium is acceptable.

# Figures

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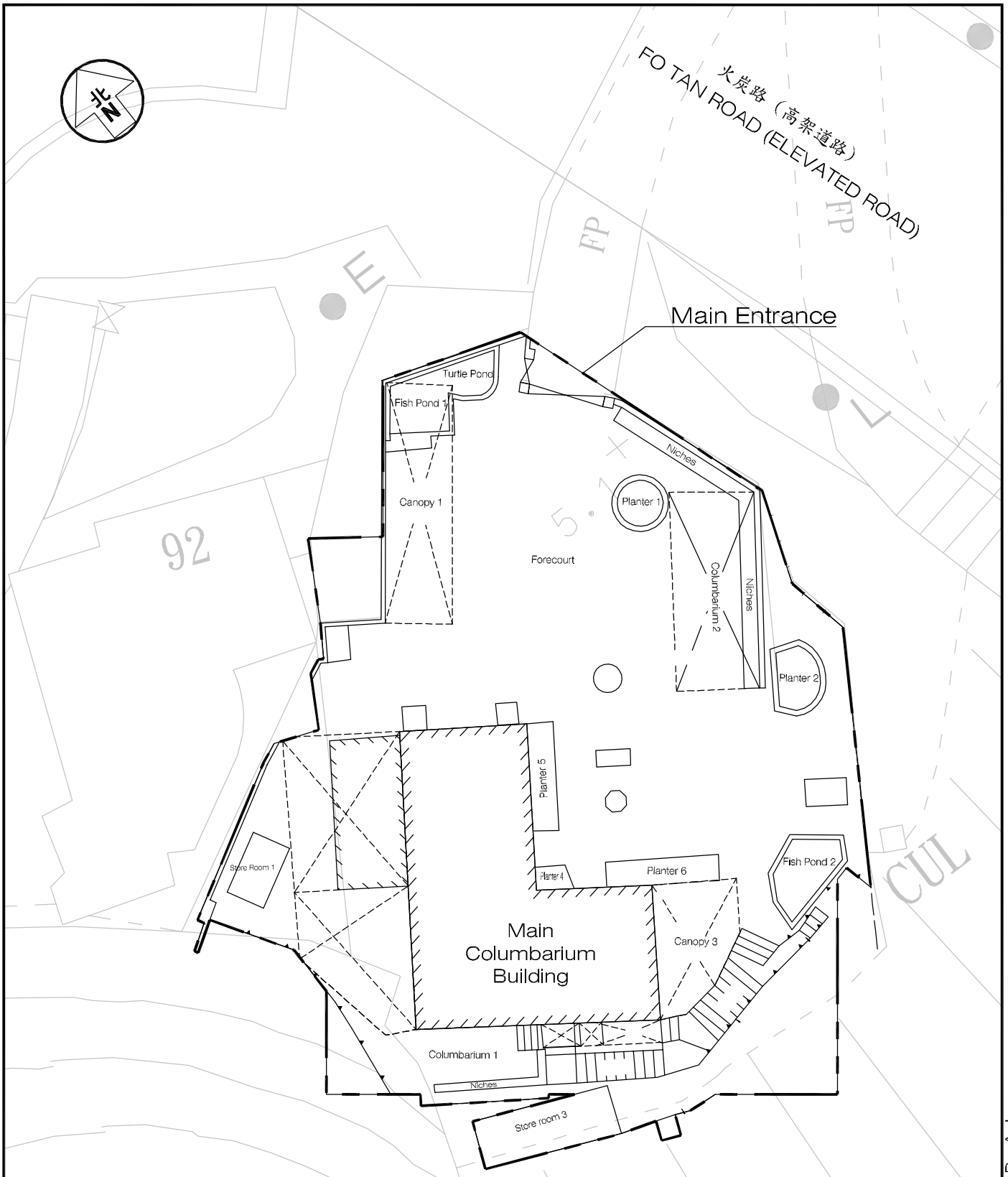
|---|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 1.1 | | | Scale in A4 1 : 3,500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: LOCATION OF THE SUBJECT SITE | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

T:\JOB\J7050-J7099\J7059\2021 06\Fig 1.1 RevA.dwg

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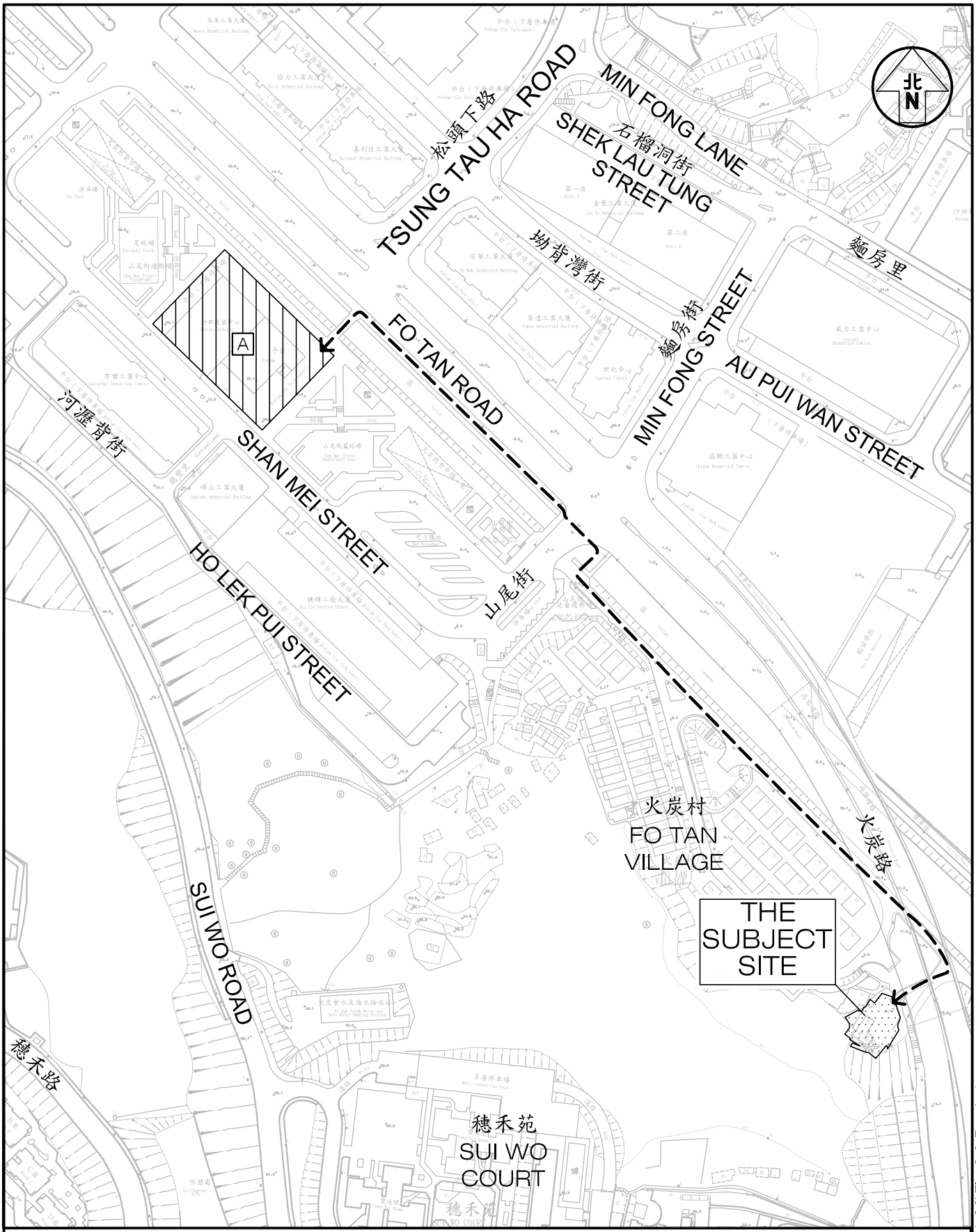
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.1 | | | Scale in A4 1 : 200 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING SITE LAYOUT OF MPHK | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

T:\JOBs\J7050-J7099\J7059\2021 06\Fig 2.1 RevA.dwg

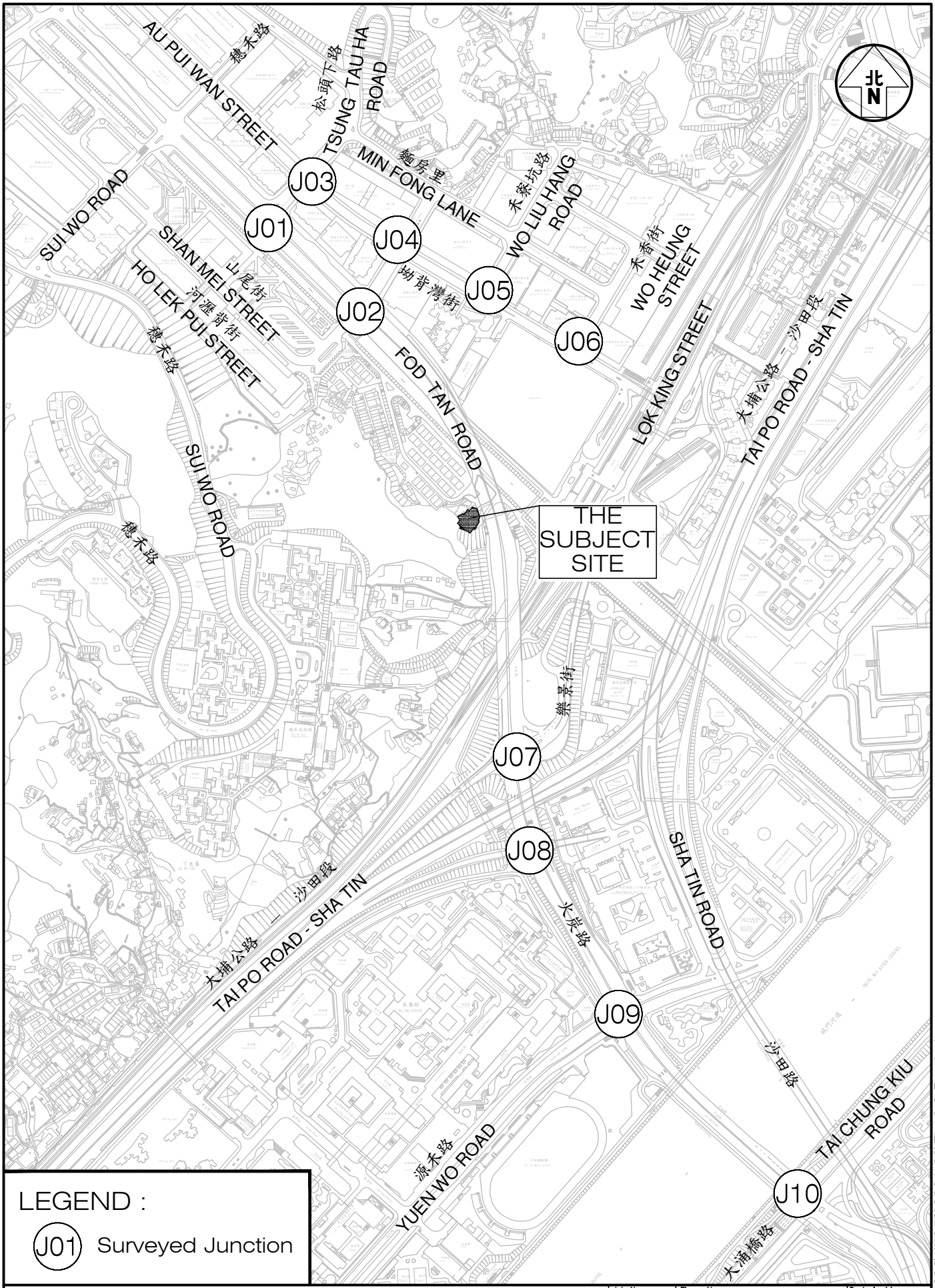



LEGEND :

| | | Approx. Distance (m) | Approx. Walking Time (min) |
|---|---|---|---|
| ←—→ | Pedestrian Route | | |
| A | Shatin Galleria Car Park | 420 | 4.5 |

| | | | | | |
|---|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.2 | | | Scale in A4 1 : 2,500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: LOCATION OF EXISTING CAR PARK WITH HOURLY PARKING IN THE VICINITY | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

T:\JOBs\J7050-J7099\J7059\2021 06\Fig 2.2 RevA.dwg




LEGEND :

J01 Surveyed Junction

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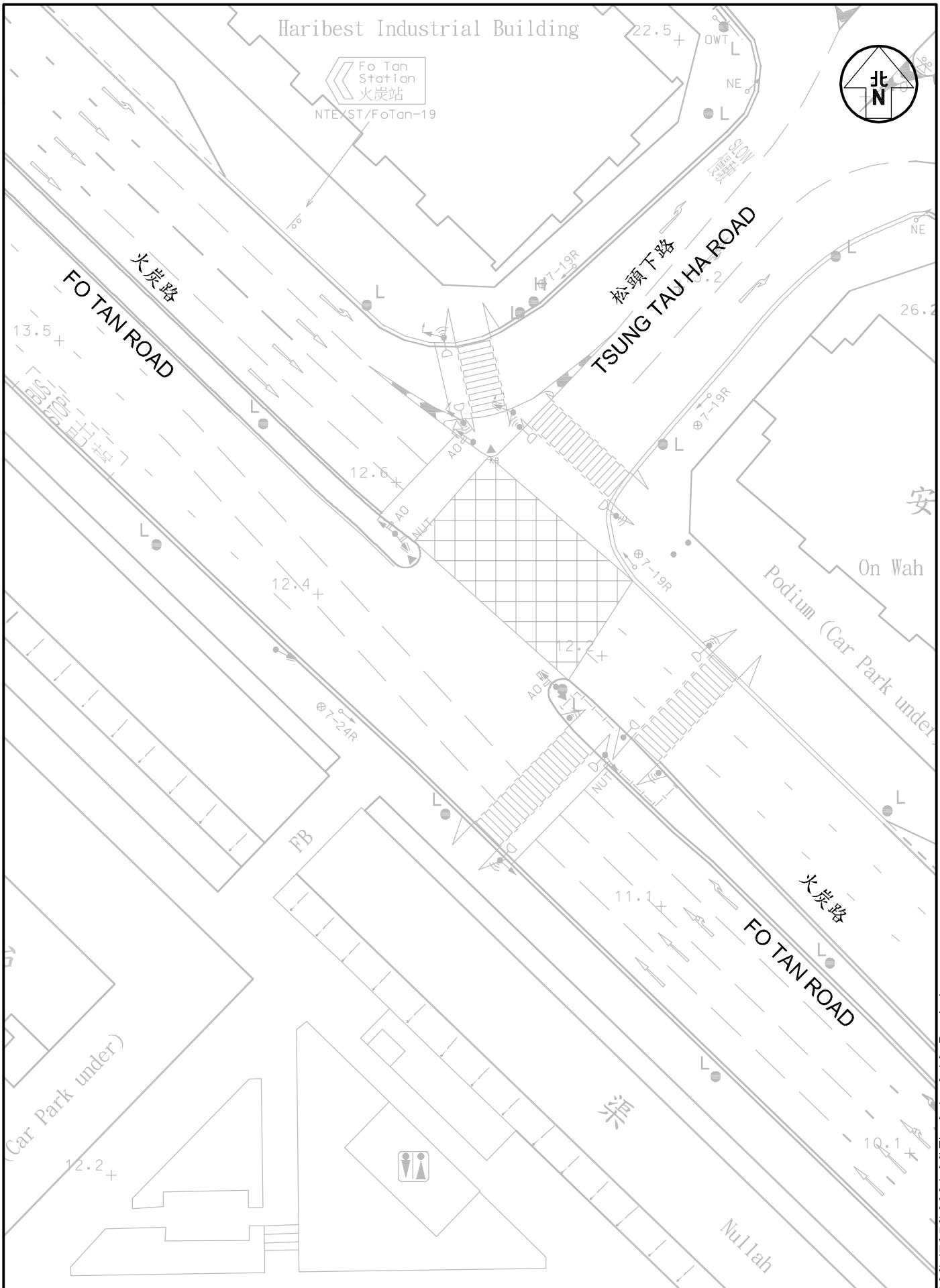
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.3 | | | Scale in A4 1 : 6,000 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING ROAD NETWORK AND SURVEYED JUNCTIONS | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

T:\JOB\J7050-J7099\J7059\2021 06\Fig 2.3 RevA.dwg

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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.4 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF FO TAN ROAD / TSUNG TAU HA ROAD (J01) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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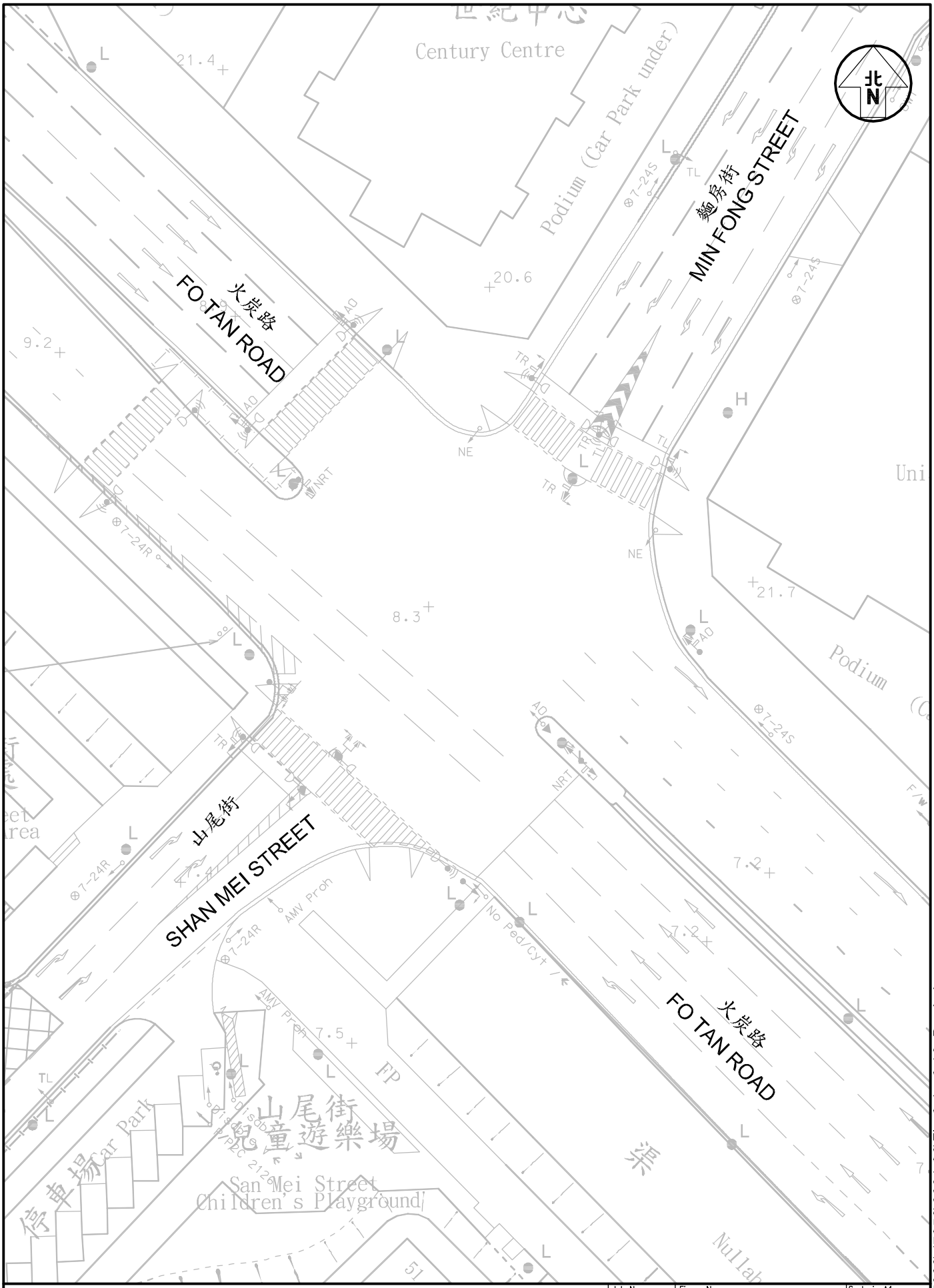


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.5 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF FO TAN ROAD / SHAN MEI STREET / MIN FONG STREET (J02) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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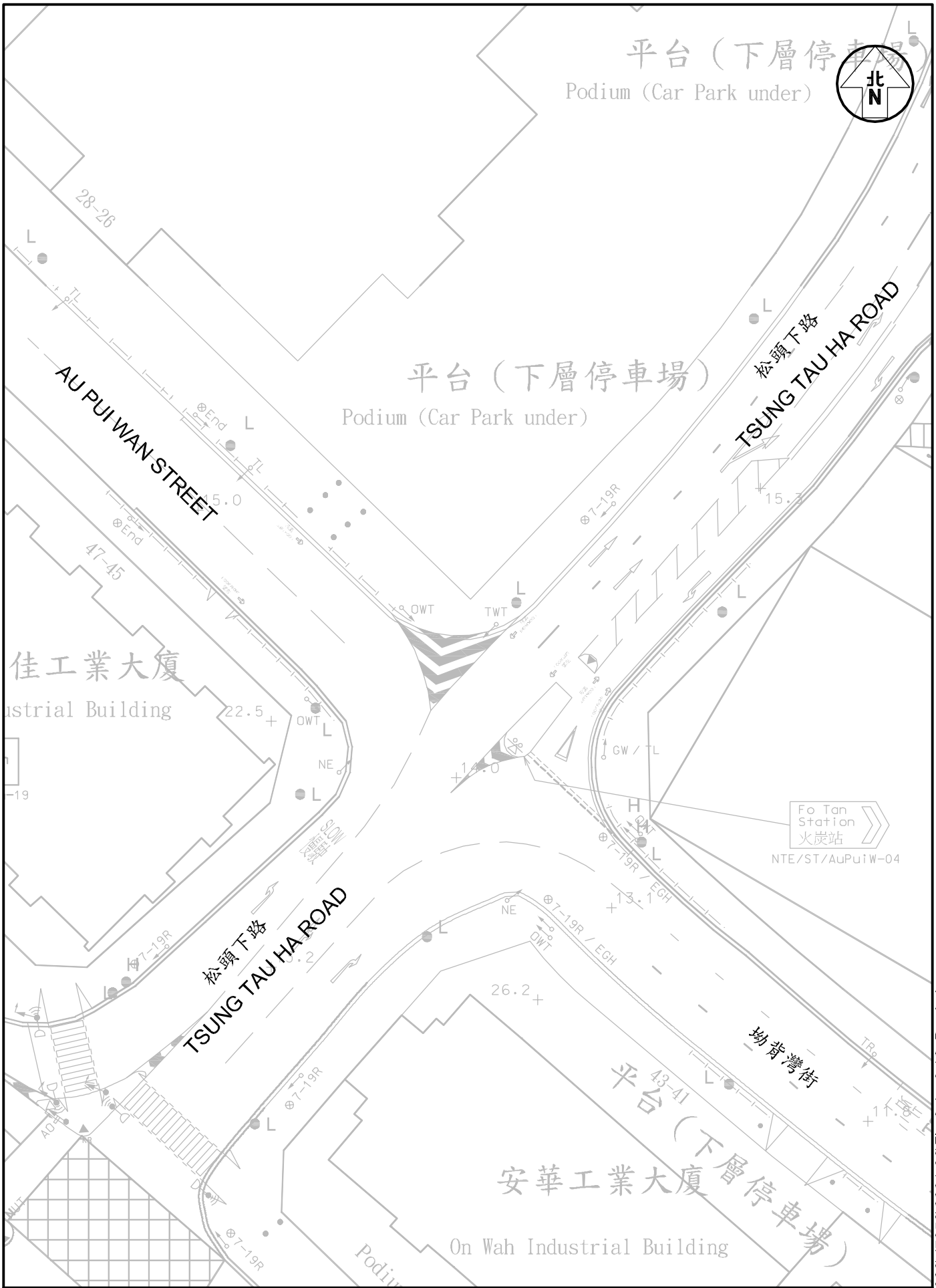


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.6 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF AU PUI WAN STREET / TSUNG TAU HA ROAD (J03) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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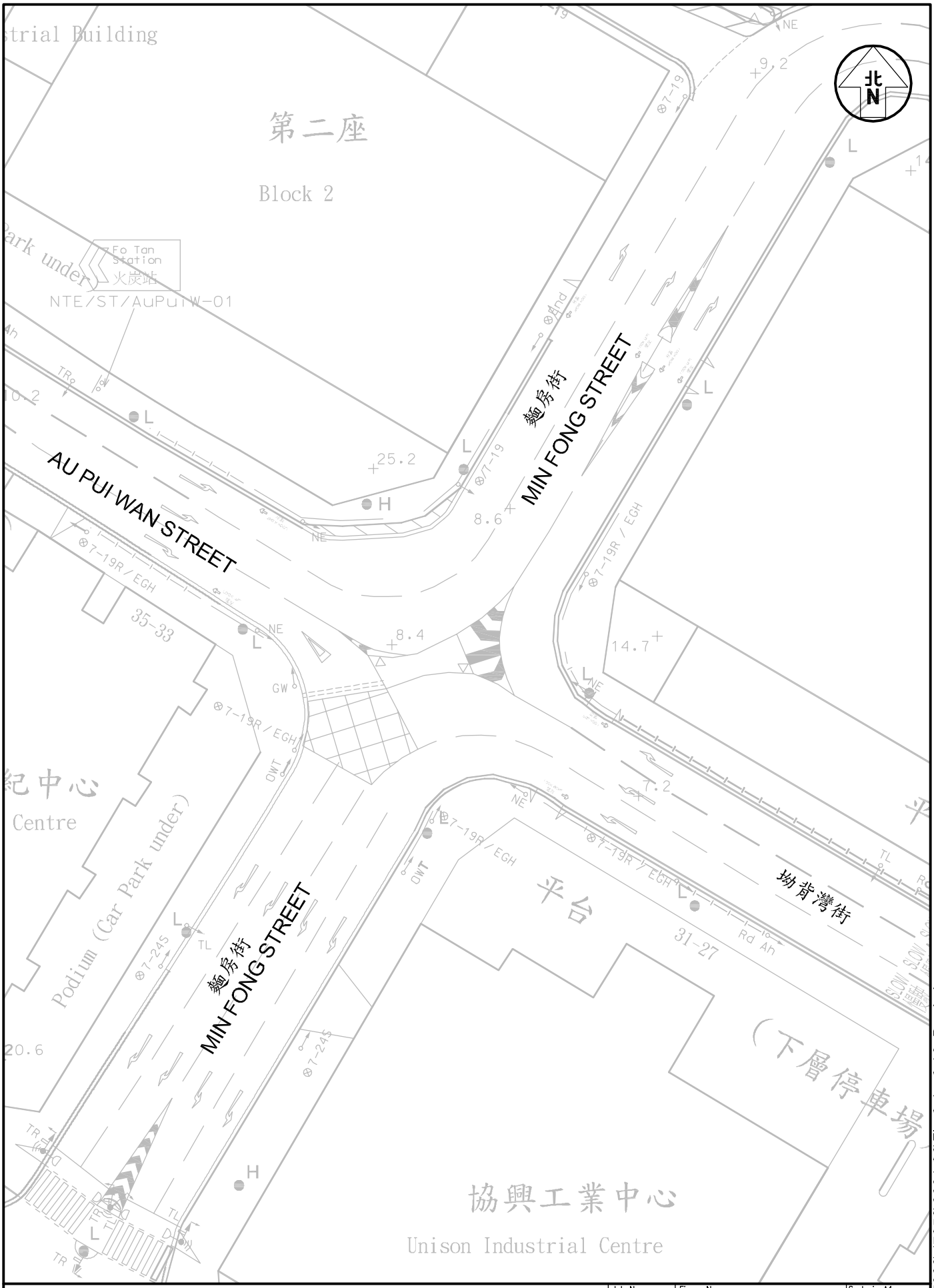


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.7 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF AU PUI WAN STREET / MIN FONG STREET (J04) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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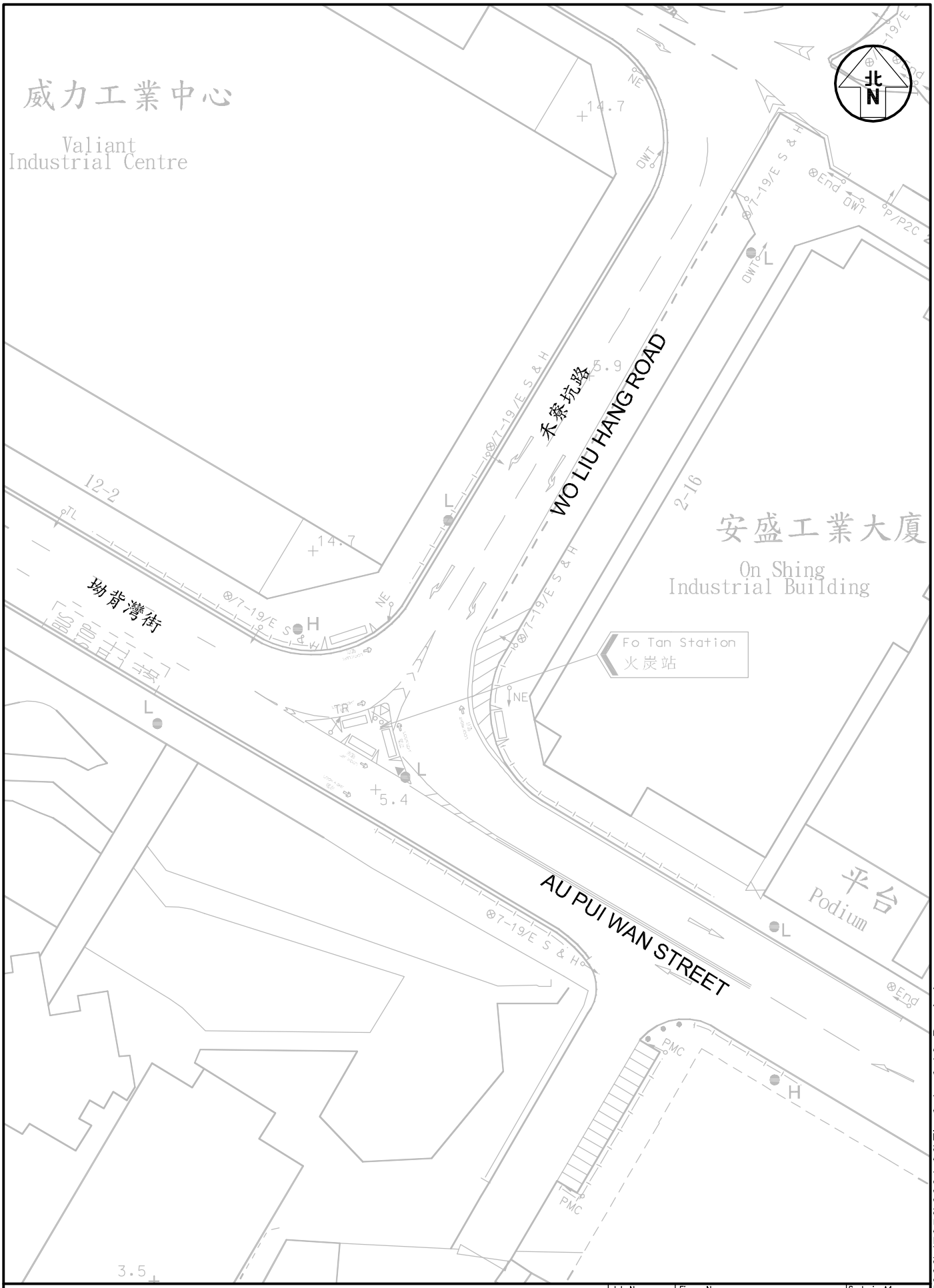


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.8 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF AU PUI WAN STREET / WO LIU HANG ROAD (J05) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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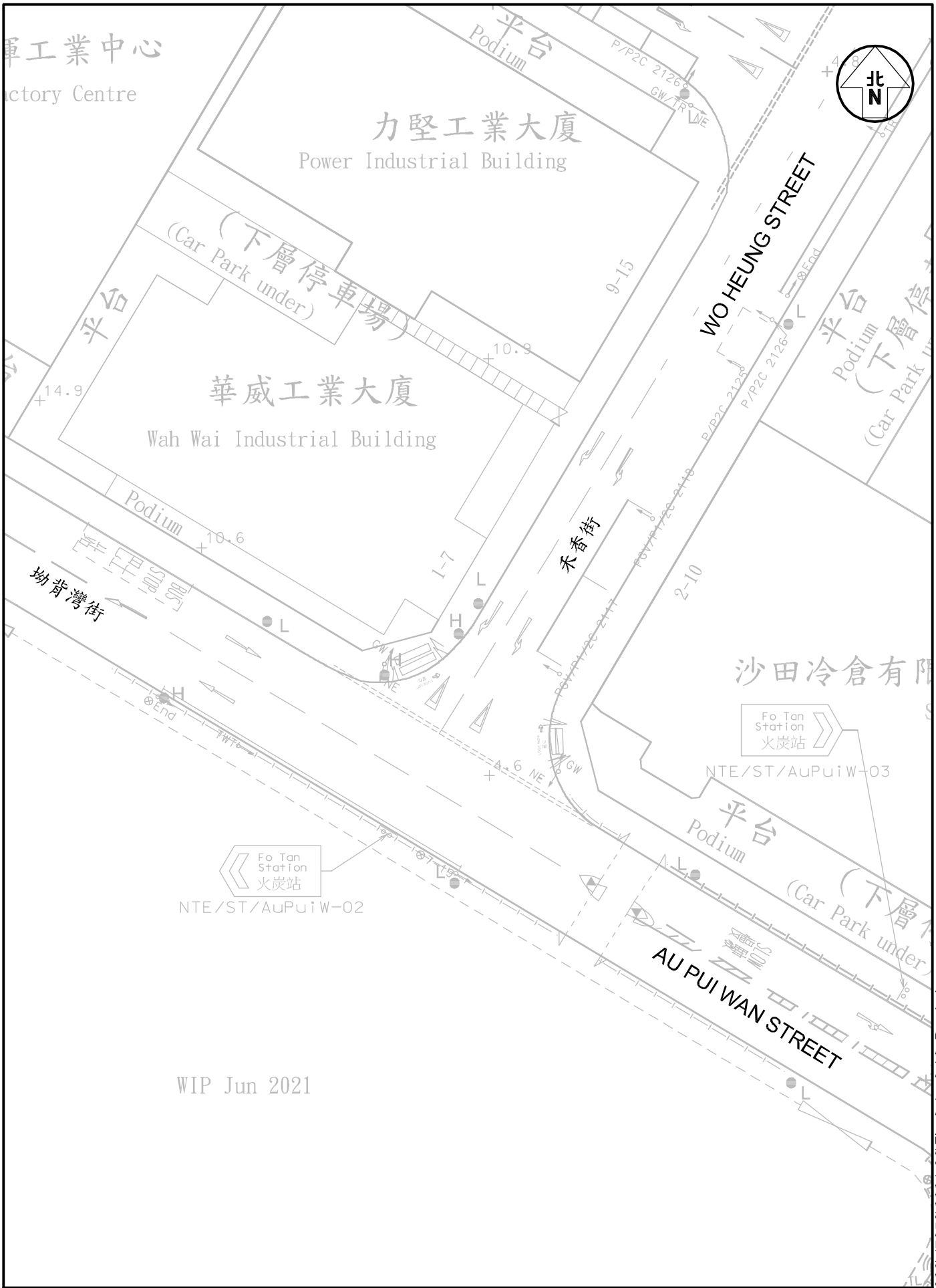


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.9 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF AU PUI WAN STREET / WO HEUNG STREET (J06) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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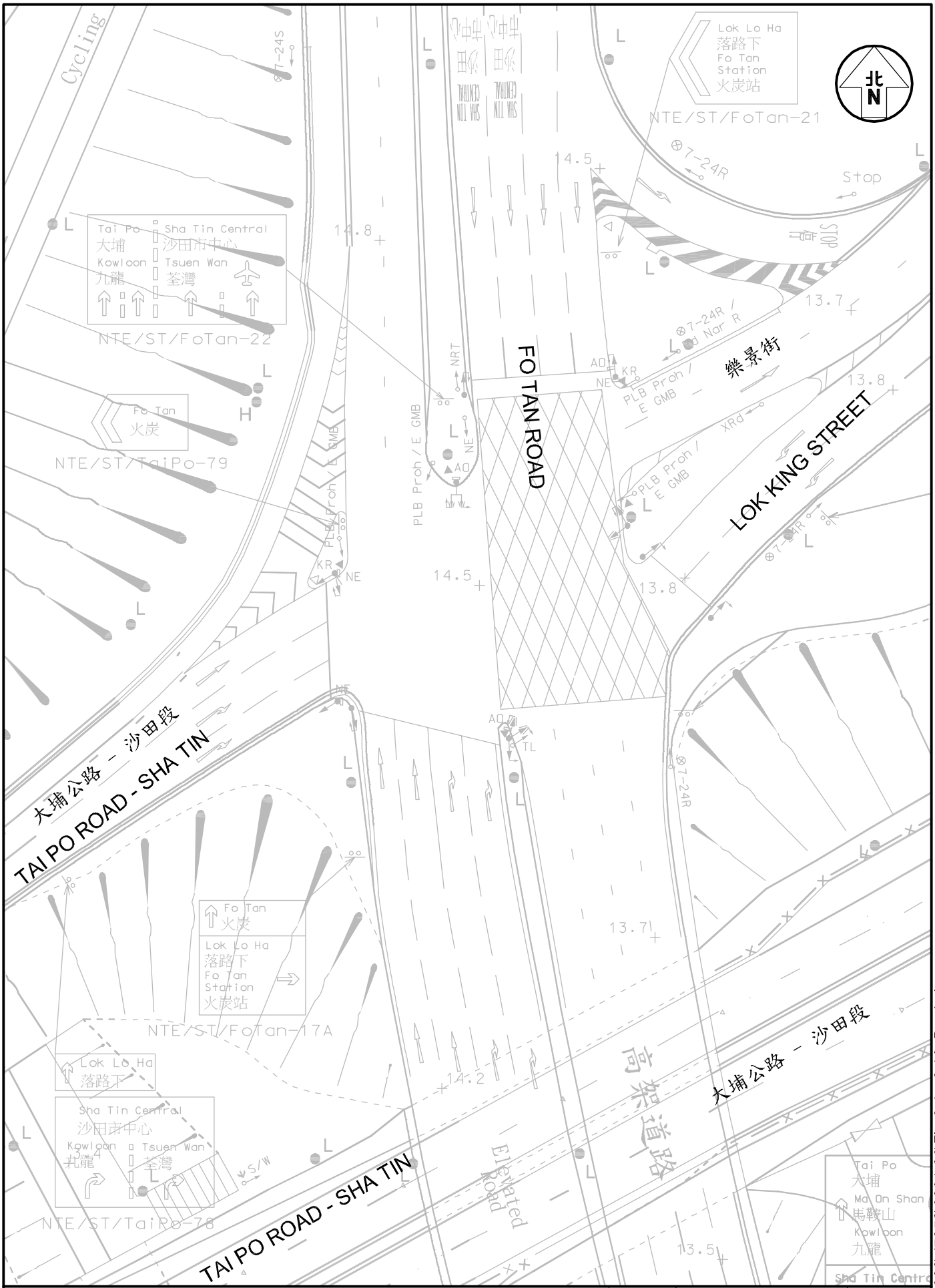


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.10 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF FO TAN ROAD / TAI PO ROAD / LOK KING STREET (J07) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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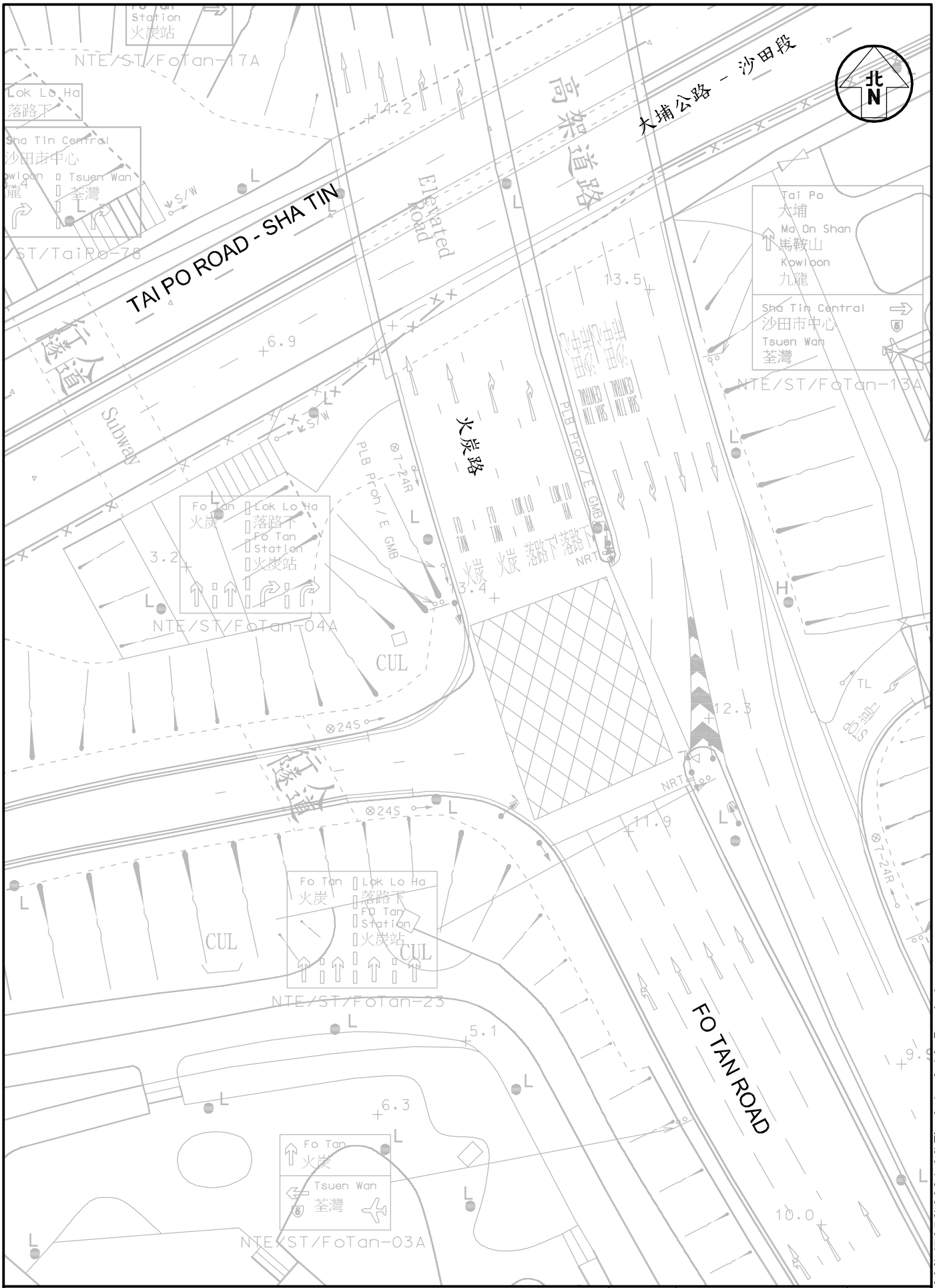


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.11 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF FO TAN ROAD / TAI PO ROAD (J08) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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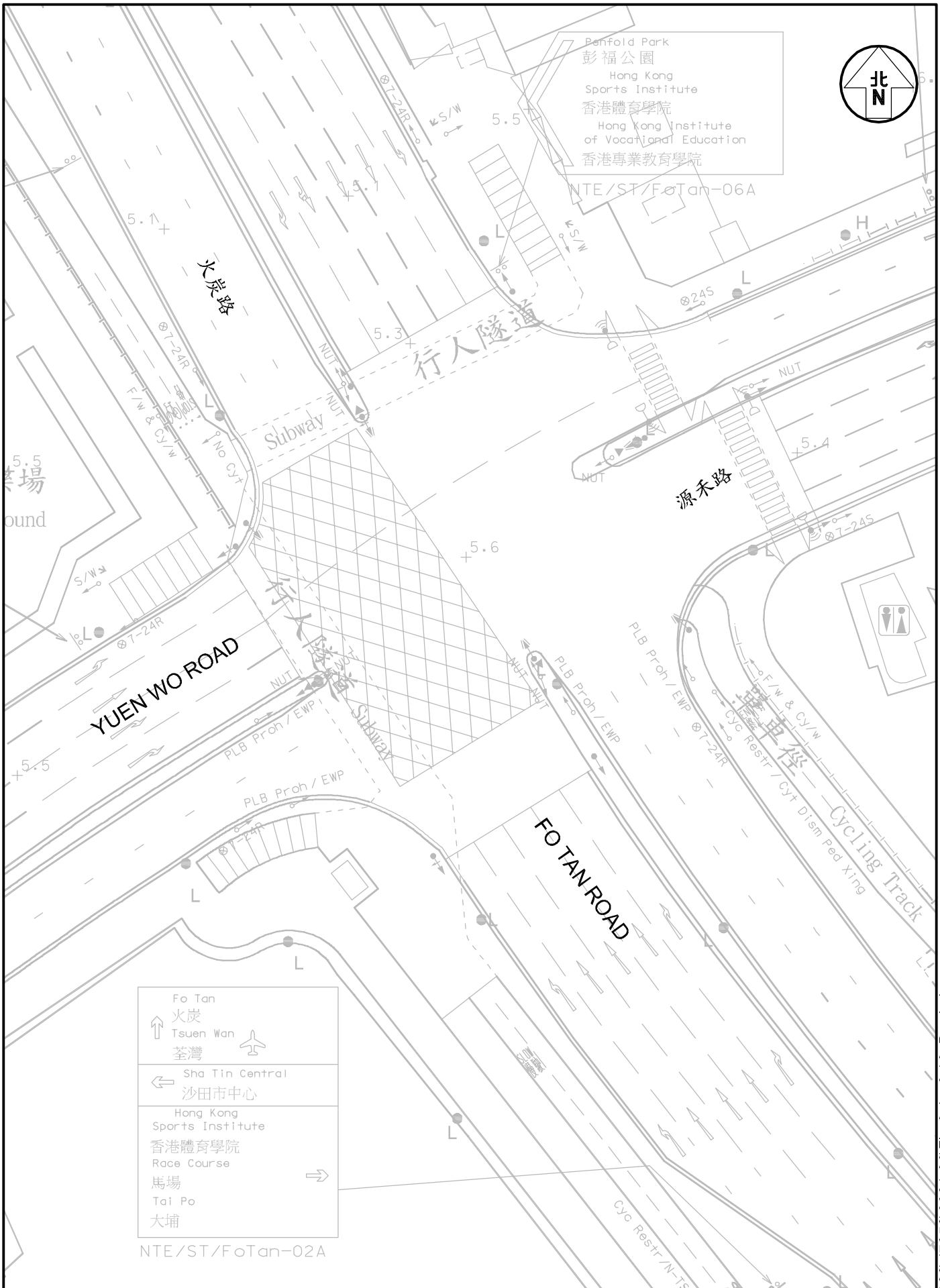


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| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.12 | | | Scale in A4 1 : 500 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF FO TAN ROAD / YUEN WO ROAD (J09) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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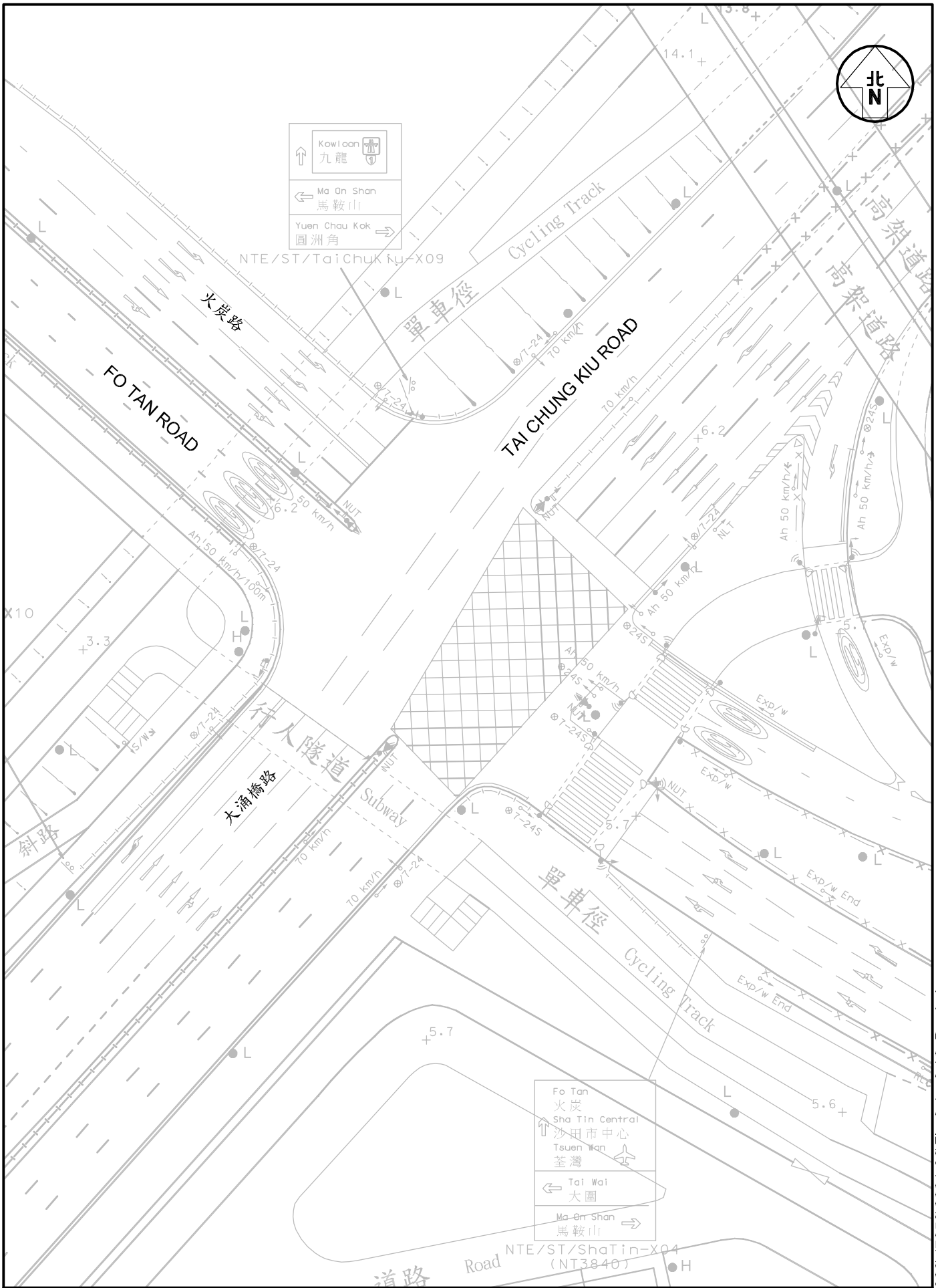


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|---|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.13 | | | Scale in A4 1 : 600 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: EXISTING JUNCTION LAYOUT OF FO TAN ROAD / TAI CHUNG KIU ROAD (J10) | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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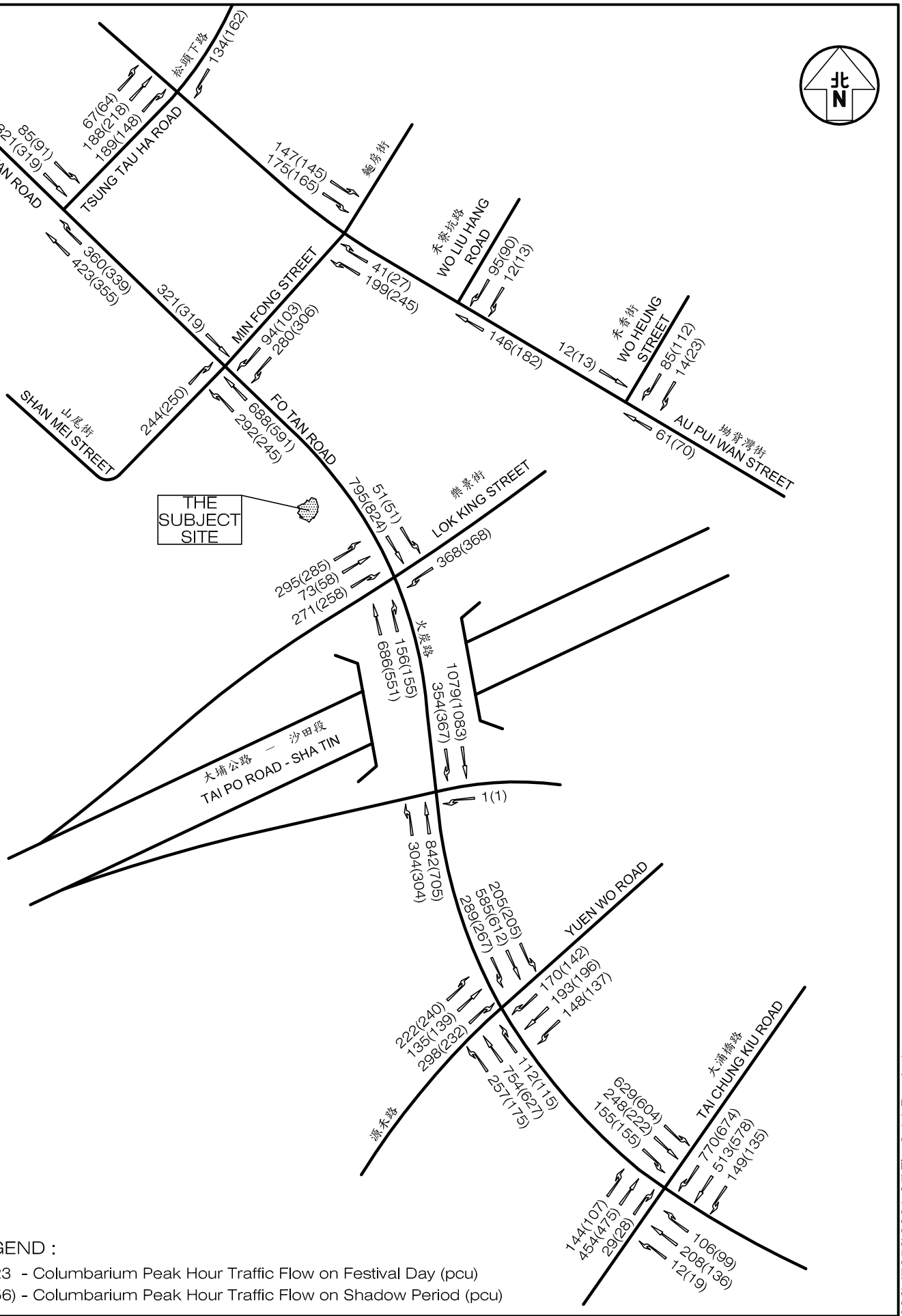


LEGEND :

123 - Columbarium Peak Hour Traffic Flow on Festival Day (pcu)

(456) - Columbarium Peak Hour Traffic Flow on Shadow Period (pcu)

| | | | | | |
|---|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 2.14 | | | Scale in A4 N.T.S. |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: OBSERVED EXISTING COLUMBARIUM PEAK HOUR TRAFFIC FLOWS | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

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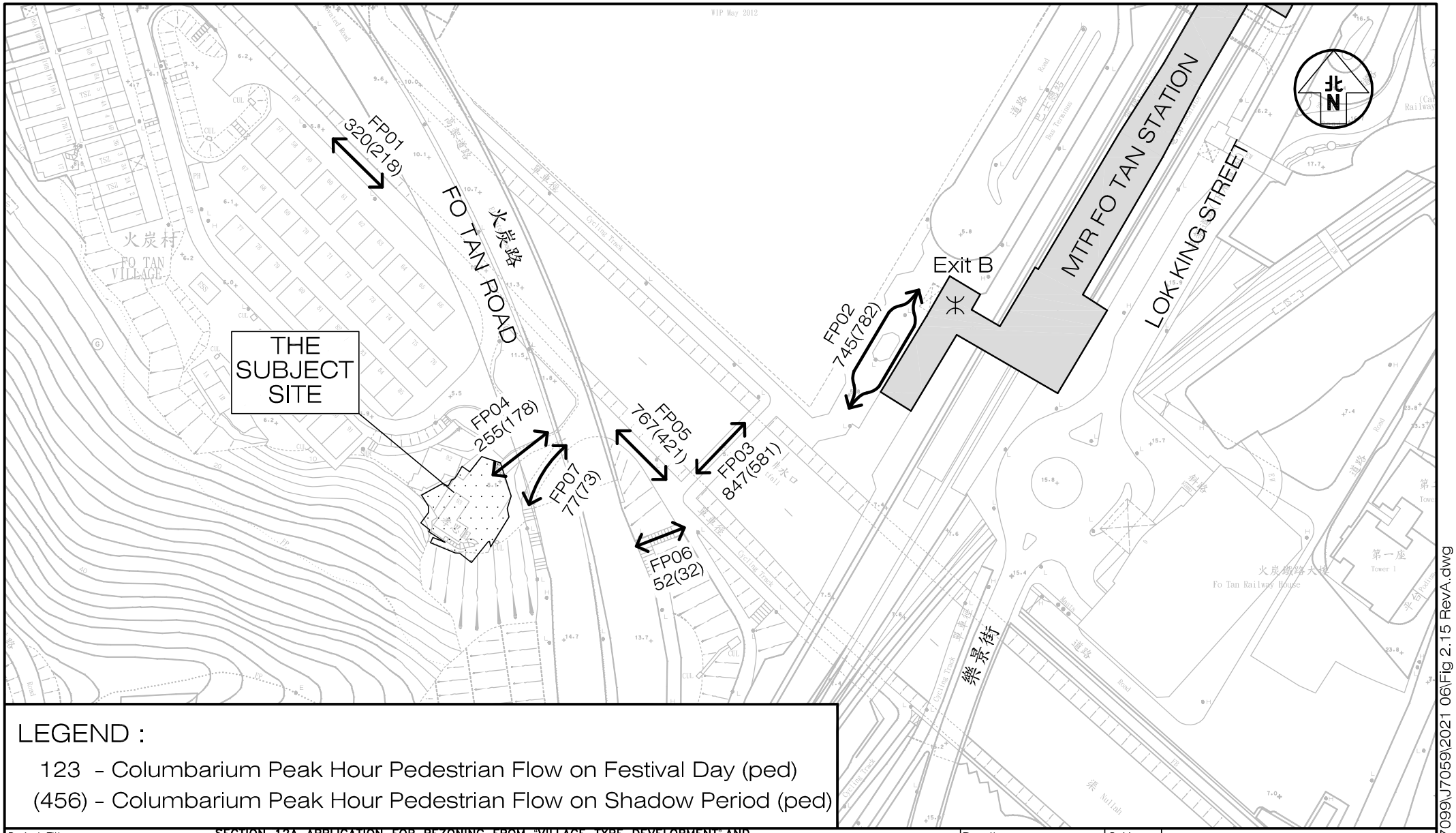


LEGEND :

123 - Columbarium Peak Hour Pedestrian Flow on Festival Day (ped)

(456) - Columbarium Peak Hour Pedestrian Flow on Shadow Period (ped)

| | | | |
|---|---|---|---|
| Project Title | SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | J7059 | Figure No. 2.15 / Revision A |
| Figure Title | OBSERVED EXISTING COLUMBARIUM PEAK HOUR PEDESTRIAN FLOWS | | Designed by H C F / Drawn by S C Y / Checked by K C |
| | | | Scale in A4 1 : 1,500 / Date 11 JUN 2021 |

CKM Asia Limited
Traffic and Transportation Planning Consultants
21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong
Tel : (852) 2520 5990 Fax : (852) 2528 6343
Email : mail@ckmasia.com.hk

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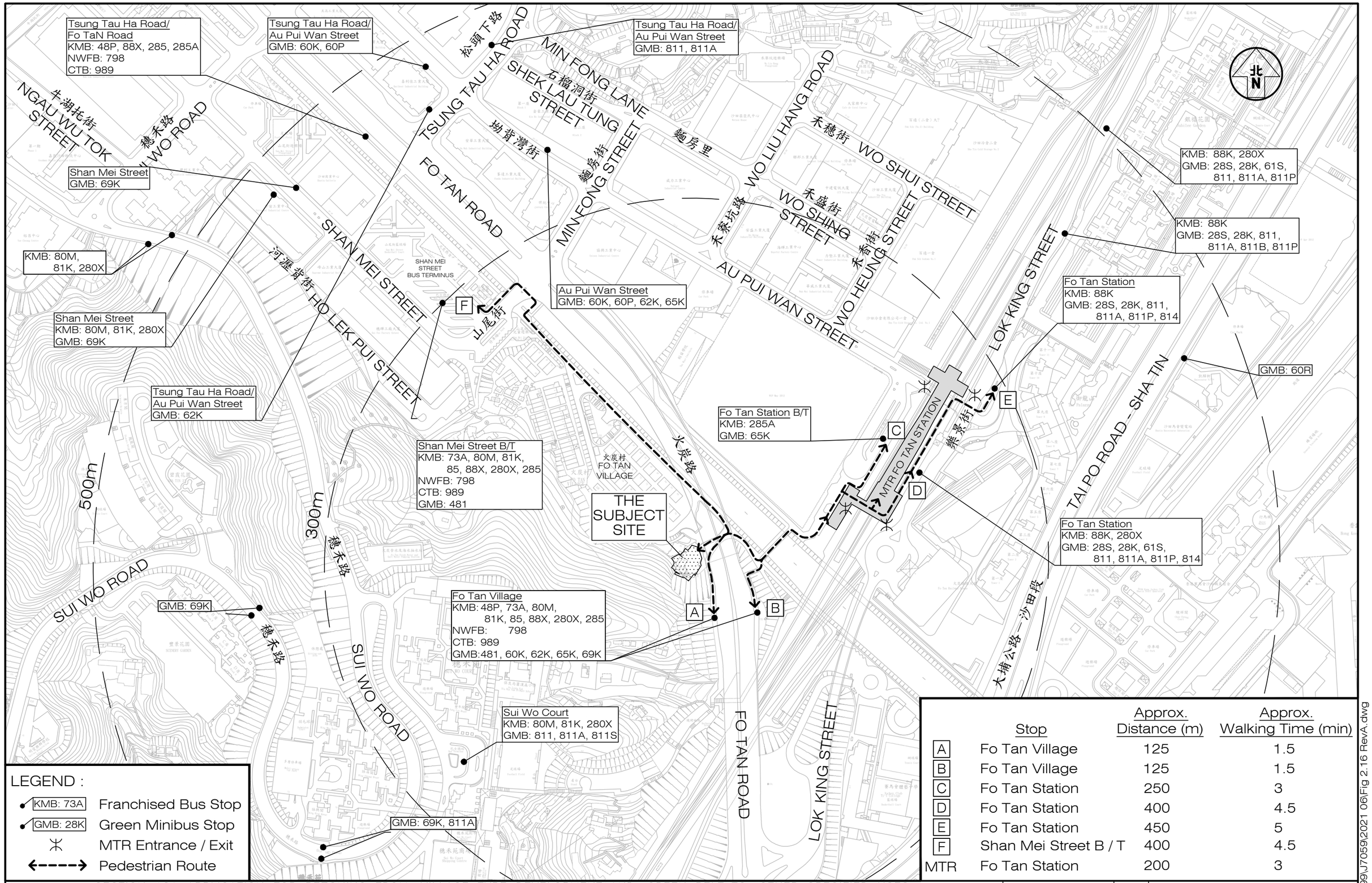


| | Stop | Approx. Distance (m) | Approx. Walking Time (min) |
|---|---|---|---|
| A | Fo Tan Village | 125 | 1.5 |
| B | Fo Tan Village | 125 | 1.5 |
| C | Fo Tan Station | 250 | 3 |
| D | Fo Tan Station | 400 | 4.5 |
| E | Fo Tan Station | 450 | 5 |
| F | Shan Mei Street B / T | 400 | 4.5 |
| MTR | Fo Tan Station | 200 | 3 |

Project Title
SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES
J7059

Figure Title
EXISTING PUBLIC TRANSPORT SERVICES LOCATED IN THE VICINITY OF THE SUBJECT SITE

Figure No. 2.16
Revision A
Designed by W C H
Drawn by S C Y
Checked by K C
Scale in A3 1 : 3,000
Date 11 JUN 2021

CKM Asia Limited
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Email : mail@ckmasia.com.hk

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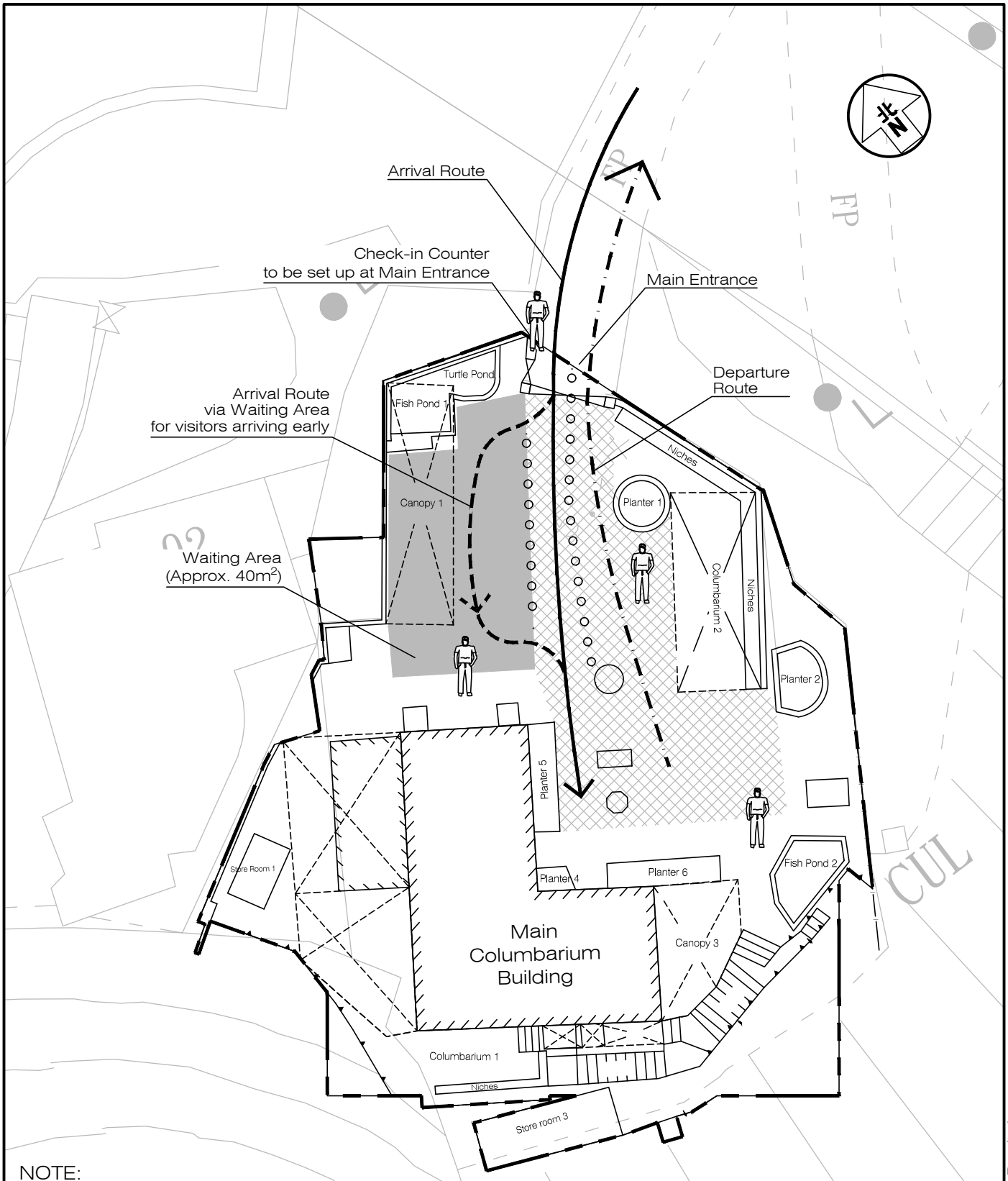



NOTE:

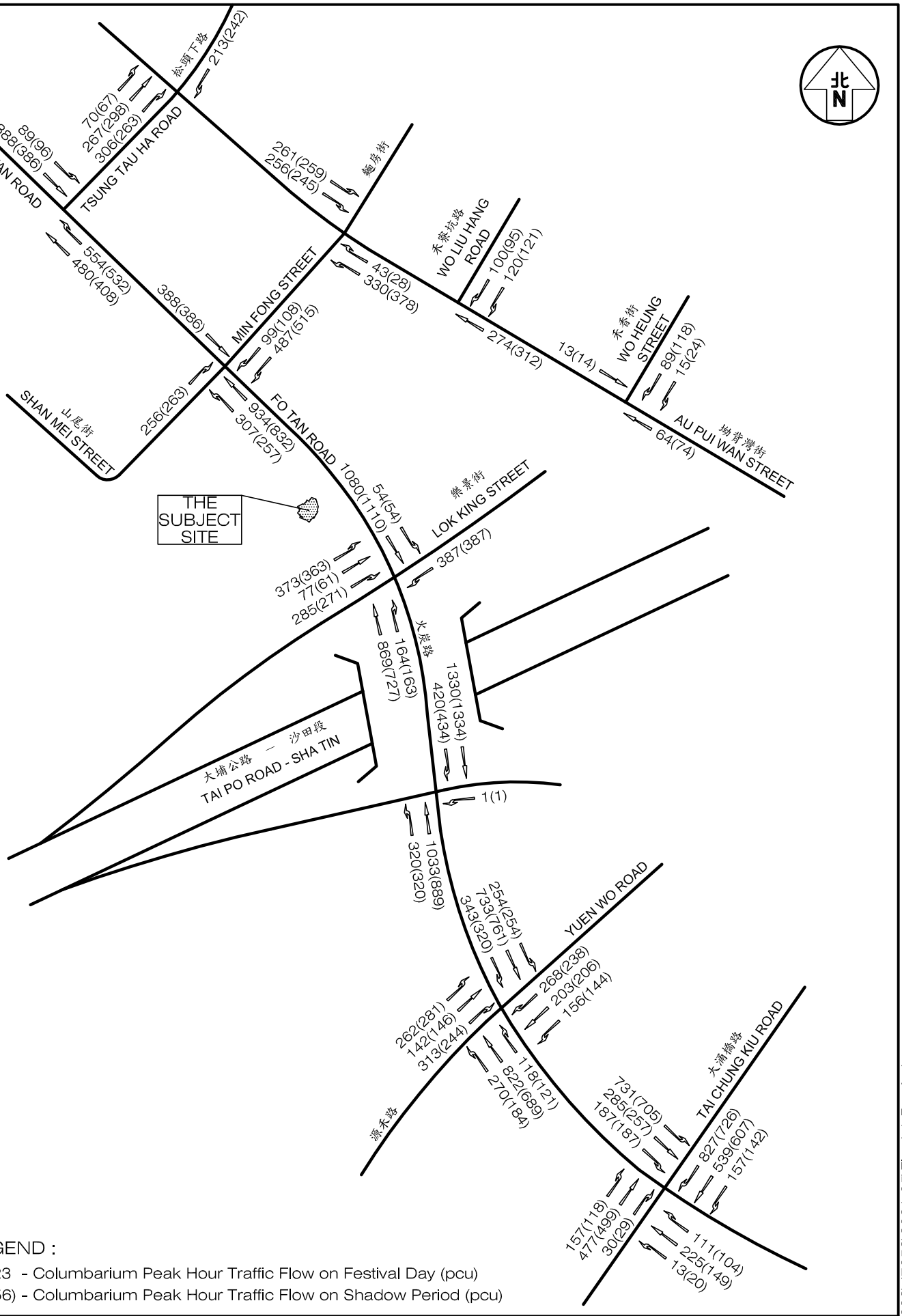
Visit-by-Appointment Arrangement will be implemented. Only visitors with valid registration at specific time and date will be allowed to enter.

## LEGEND :

- Waiting Area
- Circulation Area (No Waiting Permitted)
- Staff stationed for crowd control and to monitor operation condition within MPHK

| | | | | |
|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 3.1 | | Scale in A4 1 : 200 |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A / Date 11 JUN 2021 |
| Figure Title: PROPOSED SPECIAL PEDESTRIAN MANAGEMENT ON CHING MING AND CHUNG YEUNG FESTIVAL PERIODS | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | |

T:\JOB\J7050-J7099\J7059\2021 06\Fig 3.1 RevA.dwg



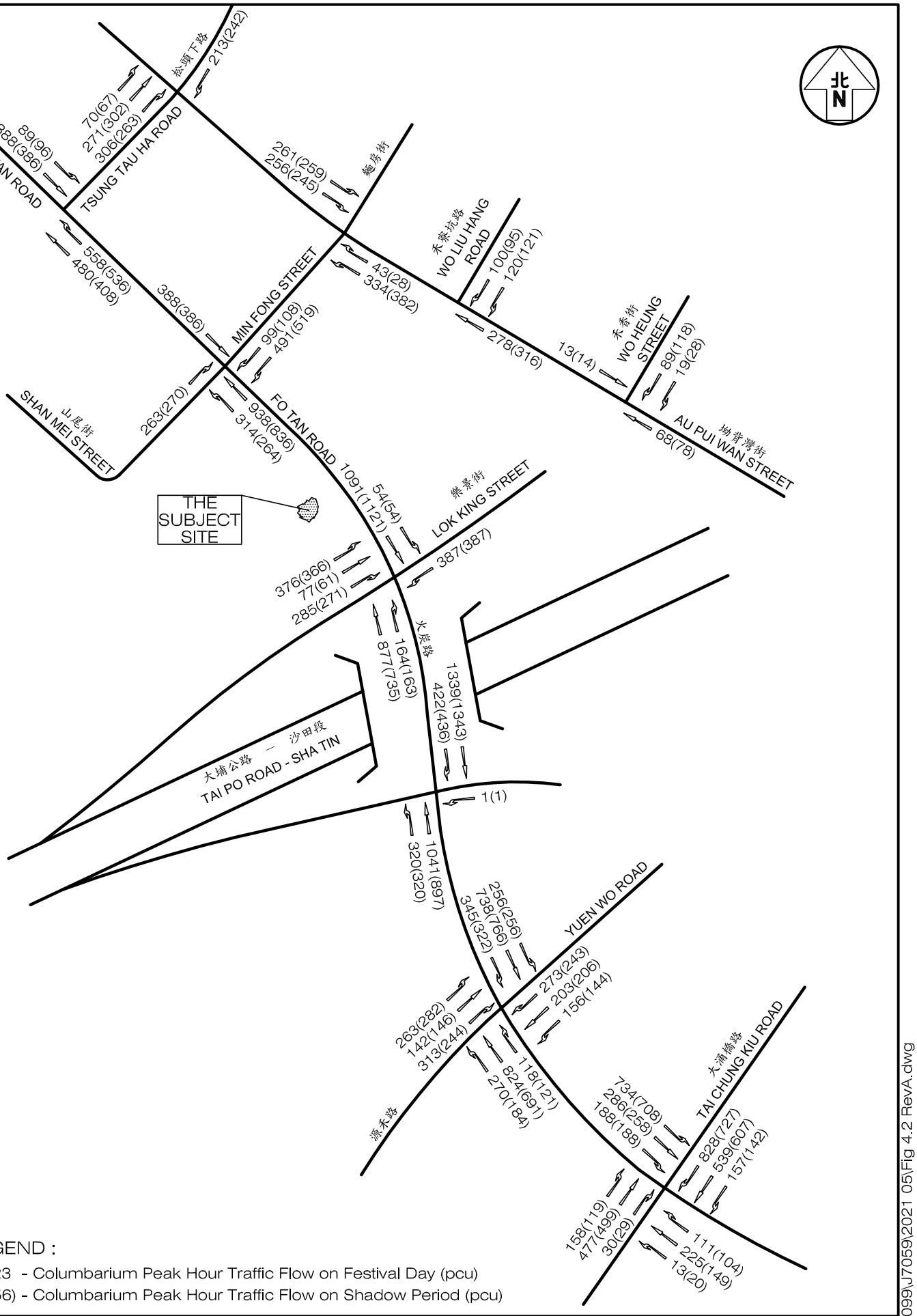

LEGEND :

123 - Columbarium Peak Hour Traffic Flow on Festival Day (pcu)

(456) - Columbarium Peak Hour Traffic Flow on Shadow Period (pcu)

| | | | | |
|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 4.1 | | Scale in A4 N.T.S. |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A | Date 11 JUN 2021 |
| Figure Title: YEAR 2026 COLUMBARIUM PEAK HOUR TRAFFIC FLOWS WITHOUT THE PROPOSED COLUMBARIUM | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | |

T:\JOBs\J7050-J7099\J7059\2021 05\Fig 4.1 RevA.dwg



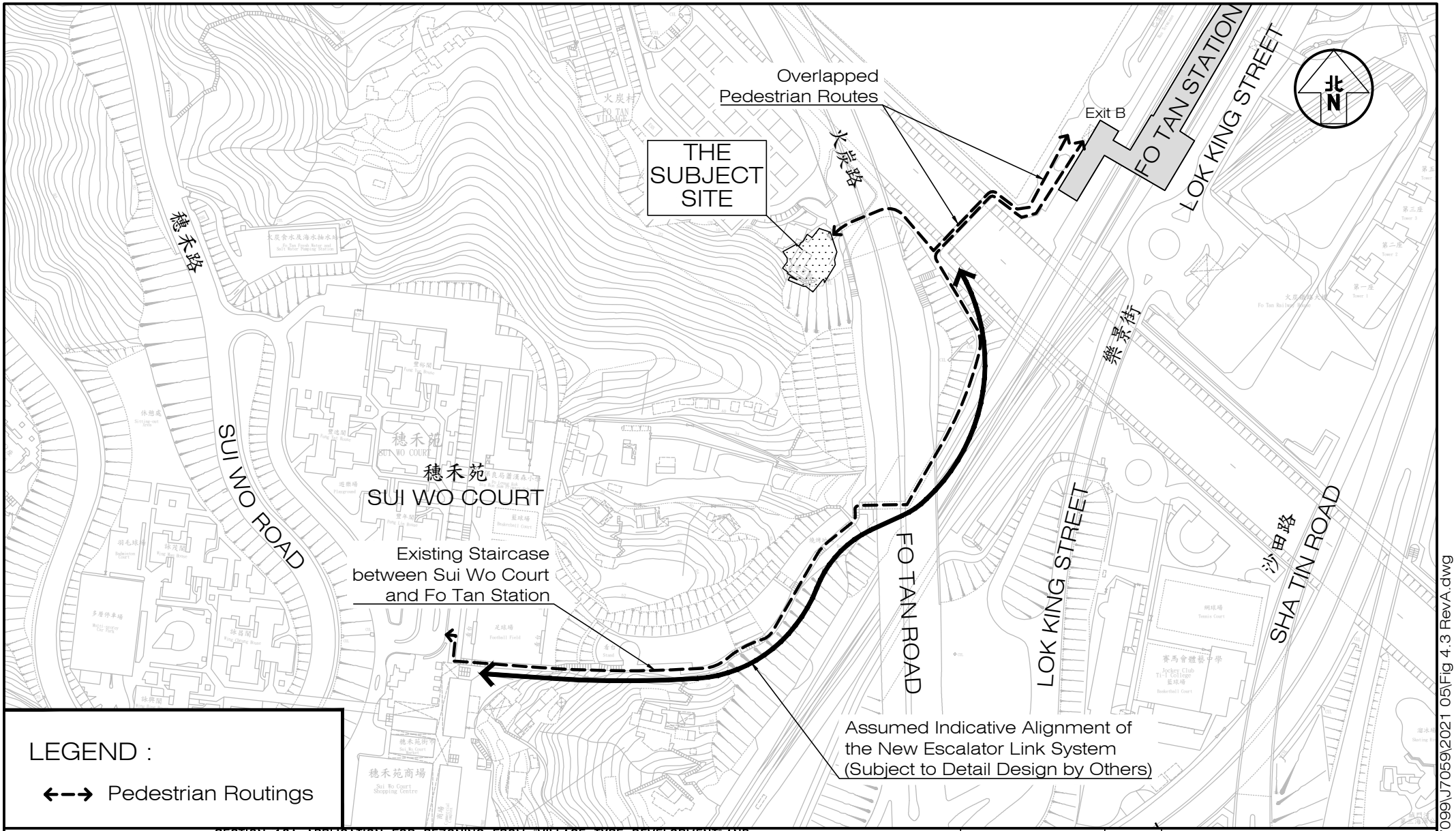

LEGEND :

123 - Columbarium Peak Hour Traffic Flow on Festival Day (pcu)

(456) - Columbarium Peak Hour Traffic Flow on Shadow Period (pcu)

| | | | | |
|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 4.2 | | Scale in A4 N.T.S. |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision A / Date 11 JUN 2021 |
| Figure Title: YEAR 2026 COLUMBARIUM PEAK HOUR TRAFFIC FLOWS WITH THE PROPOSED COLUMBARIUM | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | |

T:\JOBs\J7050-J7099\J7059\2021 05\Fig 4.2 RevA.dwg




| | | | |
|---|---|---|---|
| Project Title | SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | J7059 | Figure No. 4.3 / Revision A |
| Figure Title | INDICATIVE PEDESTRIAN ROUTE BETWEEN FO TAN STATION AND SUI WO COURT WITH THE PLANNED ESCALATOR LINK SYSTEM | | Designed by L T F / Drawn by S C Y / Checked by K C |
| | | | Scale in A4 1 : 2,500 / Date 11 JUN 2021 |

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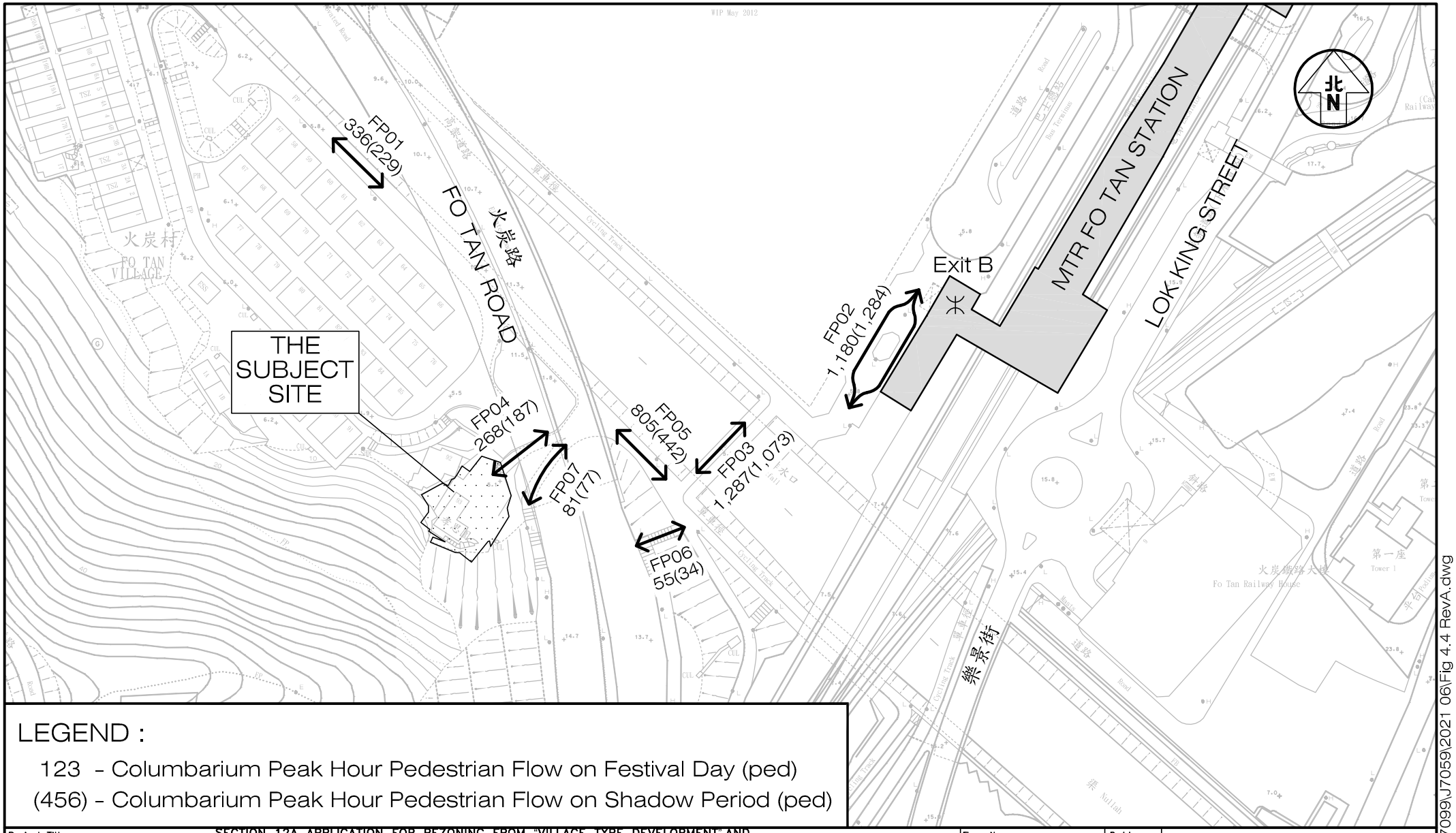


LEGEND :

123 - Columbarium Peak Hour Pedestrian Flow on Festival Day (ped)

(456) - Columbarium Peak Hour Pedestrian Flow on Shadow Period (ped)

| | | | |
|---|---|---|---|
| Project Title | SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | J7059 | Figure No. 4.4 / Revision A |
| Figure Title | YEAR 2026 COLUMBARIUM PEAK HOUR PEDESTRIAN FLOWS WITHOUT THE PROPOSED COLUMBARIUM | Designed by H C F / Drawn by S C Y / Checked by K C | Scale in A4 1 : 1,500 / Date 11 JUN 2021 |

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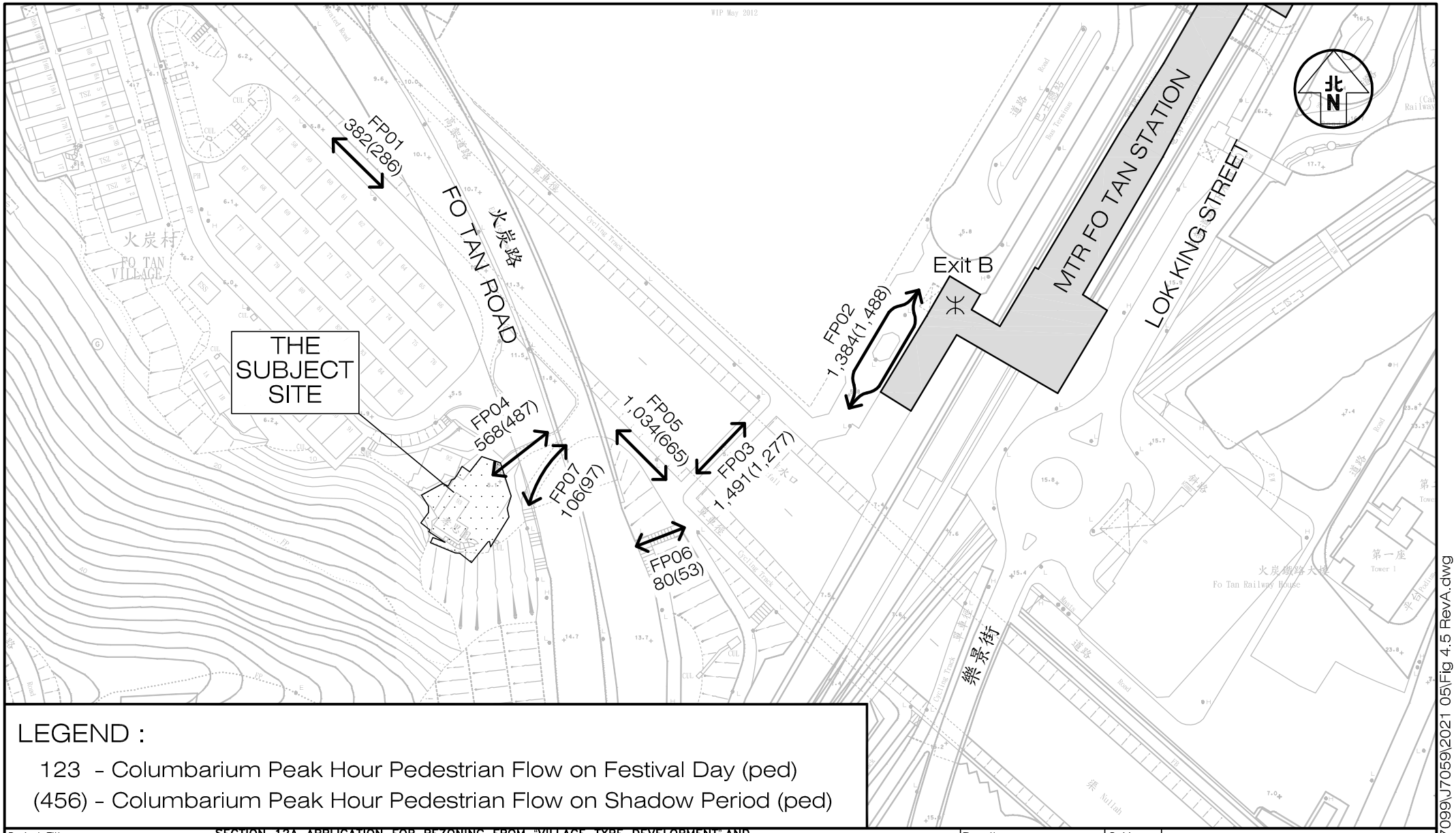


LEGEND :

123 - Columbarium Peak Hour Pedestrian Flow on Festival Day (ped)

(456) - Columbarium Peak Hour Pedestrian Flow on Shadow Period (ped)

| | | | |
|---|---|---|---|
| Project Title | SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | J7059 | Figure No. 4.5 / Revision A |
| Figure Title | YEAR 2026 COLUMBARIUM PEAK HOUR PEDESTRIAN FLOWS WITH THE PROPOSED COLUMBARIUM | | Designed by H C F / Drawn by S C Y / Checked by K C |
| | | | Scale in A4 1 : 1,500 / Date 11 JUN 2021 |

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Email : mail@ckmasia.com.hk

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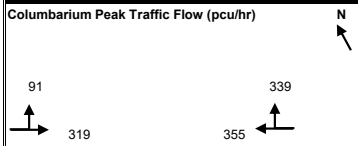
# Appendix A – Junction Capacity Analysis

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 1 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | LT | B1 | 2 | 3.50 | 13.8 | | 100 | 1772 | 91 | 0.051 | | | | | | |
| Fo Tan Road EB | SA | B2 | 2 | 3.20 | | | | 2075 | 106 | 0.051 | | | | | | |
| Fo Tan Road EB | SA | B3 | 2 | 3.50 | | | | 2105 | 108 | 0.051 | | | | | | |
| Fo Tan Road EB | SA | B4 | 2 | 3.00 | | | | 2055 | 105 | 0.051 | 0.051 | | | | | |
| Fo Tan Road WB | SA | A1 | 1 | 3.00 | | | | 1915 | 170 | 0.089 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.40 | | | | 2095 | 185 | 0.088 | | | | | | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.40 | 16.0 | | 100 | 1915 | 171 | 0.089 | | | | | | |
| Fo Tan Road WB | RT | A4 | 1 | 3.00 | 16.0 | | 100 | 1879 | 168 | 0.089 | 0.089 | | | | | |
| Pedestrian Phase | | P1 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P2 | 2 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 11 | sec FGM = | | 16 | sec | | |
| | | P4 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

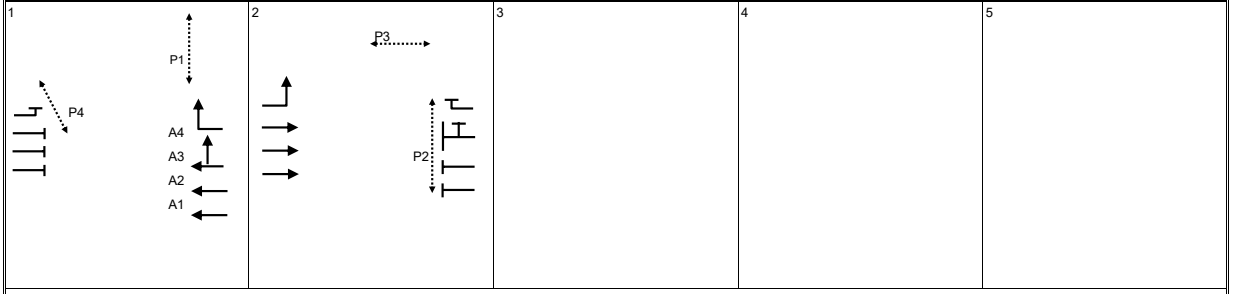



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.140 | | | | | |
| L (s) | 13 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.770 | | | | | |
| R.C. (%) | 450% | | | | | |

**NOTE:**



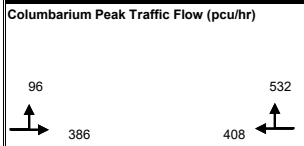

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 10 | G = | I/G = 5 | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 2 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | LT | B1 | 2 | 3.50 | 13.8 | | 100 | 1772 | 96 | 0.054 | | | | | | |
| Fo Tan Road EB | SA | B2 | 2 | 3.20 | | | | 2075 | 128 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B3 | 2 | 3.50 | | | | 2105 | 130 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B4 | 2 | 3.00 | | | | 2055 | 128 | 0.062 | 0.062 | | | | | |
| Fo Tan Road WB | SA | A1 | 1 | 3.00 | | | | 1915 | 195 | 0.102 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.40 | | | | 2095 | 213 | 0.102 | | | | | | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.40 | 16.0 | | 100 | 1915 | 269 | 0.140 | | | | | | |
| Fo Tan Road WB | RT | A4 | 1 | 3.00 | 16.0 | | 100 | 1879 | 263 | 0.140 | 0.140 | | | | | |
| Pedestrian Phase | | P1 | 1 | | Min Crossing Time = | | 5 | sec GM + | | | 10 | sec FGM = | | 15 | sec | |
| | | P2 | 2 | | Min Crossing Time = | | 6 | sec GM + | | | 12 | sec FGM = | | 18 | sec | |
| | | P3 | 2 | | Min Crossing Time = | | 5 | sec GM + | | | 11 | sec FGM = | | 16 | sec | |
| | | P4 | 1 | | Min Crossing Time = | | 5 | sec GM + | | | 9 | sec FGM = | | 14 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)**

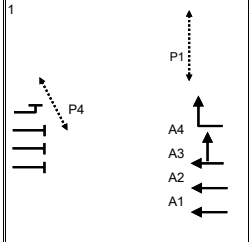
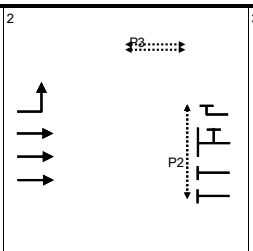



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.202 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 247% | | | | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  | | | |
| Col.Peak G = I/G = 10 | G = I/G = 5 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 3 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | LT | B1 | 2 | 3.50 | 13.8 | | 100 | 1772 | 96 | 0.054 | | | | | | |
| Fo Tan Road EB | SA | B2 | 2 | 3.20 | | | | 2075 | 128 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B3 | 2 | 3.50 | | | | 2105 | 130 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B4 | 2 | 3.00 | | | | 2055 | 128 | 0.062 | 0.062 | | | | | |
| Fo Tan Road WB | SA | A1 | 1 | 3.00 | | | | 1915 | 195 | 0.102 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.40 | | | | 2095 | 213 | 0.102 | | | | | | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.40 | 16.0 | | 100 | 1915 | 271 | 0.141 | | | | | | |
| Fo Tan Road WB | RT | A4 | 1 | 3.00 | 16.0 | | 100 | 1879 | 265 | 0.141 | 0.141 | | | | | |
| Pedestrian Phase | | P1 | 1 | | Min Crossing Time = | | 5 | sec GM + | | | 10 | sec FGM = | | 15 | sec | |
| | | P2 | 2 | | Min Crossing Time = | | 6 | sec GM + | | | 12 | sec FGM = | | 18 | sec | |
| | | P3 | 2 | | Min Crossing Time = | | 5 | sec GM + | | | 11 | sec FGM = | | 16 | sec | |
| | | P4 | 1 | | Min Crossing Time = | | 5 | sec GM + | | | 9 | sec FGM = | | 14 | sec | |

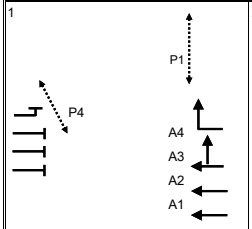
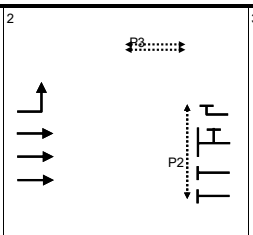
**Columbarium Peak Traffic Flow (pcu/hr)**

S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.203 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 245% | | | | | |

**NOTE:**

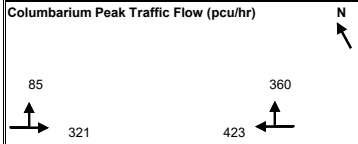
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  | | | |
| Col.Peak G = I/G = 10 | G = I/G = 5 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 4 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | LT | B1 | 2 | 3.50 | 13.8 | | 100 | 1772 | 85 | 0.048 | | | | | | |
| Fo Tan Road EB | SA | B2 | 2 | 3.20 | | | | 2075 | 107 | 0.052 | | | | | | |
| Fo Tan Road EB | SA | B3 | 2 | 3.50 | | | | 2105 | 108 | 0.051 | | | | | | |
| Fo Tan Road EB | SA | B4 | 2 | 3.00 | | | | 2055 | 106 | 0.052 | 0.052 | | | | | |
| Fo Tan Road WB | SA | A1 | 1 | 3.00 | | | | 1915 | 202 | 0.105 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.40 | | | | 2095 | 221 | 0.105 | | | | | | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.40 | 16.0 | | 100 | 1915 | 182 | 0.095 | | | | | | |
| Fo Tan Road WB | RT | A4 | 1 | 3.00 | 16.0 | | 100 | 1879 | 178 | 0.095 | 0.095 | | | | | |
| Pedestrian Phase | | P1 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P2 | 2 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 11 | sec FGM = | | 16 | sec | | |
| | | P4 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

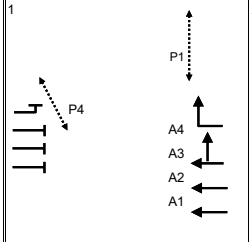
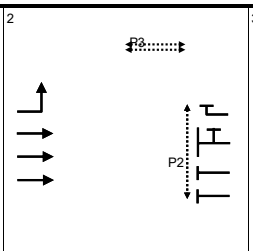



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.147 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 376% | | | | | |

**NOTE:**

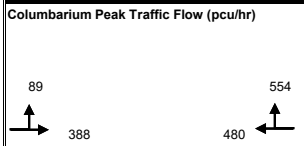
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  | | | |
| Col.Peak G = I/G = 10 | G = I/G = 5 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 5 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | LT | B1 | 2 | 3.50 | 13.8 | | 100 | 1772 | 89 | 0.050 | | | | | | |
| Fo Tan Road EB | SA | B2 | 2 | 3.20 | | | | 2075 | 129 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B3 | 2 | 3.50 | | | | 2105 | 131 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B4 | 2 | 3.00 | | | | 2055 | 128 | 0.062 | 0.062 | | | | | |
| Fo Tan Road WB | SA | A1 | 1 | 3.00 | | | | 1915 | 229 | 0.120 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.40 | | | | 2095 | 251 | 0.120 | | | | | | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.40 | 16.0 | | 100 | 1915 | 280 | 0.146 | | | | | | |
| Fo Tan Road WB | RT | A4 | 1 | 3.00 | 16.0 | | 100 | 1879 | 274 | 0.146 | 0.146 | | | | | |
| Pedestrian Phase | | P1 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P2 | 2 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 11 | sec FGM = | | 16 | sec | | |
| | | P4 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

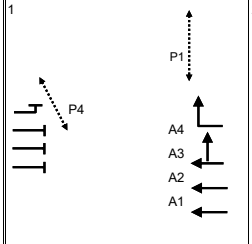
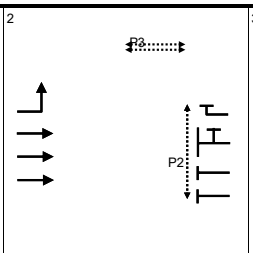



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.208 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 237% | | | | | |

**NOTE:**

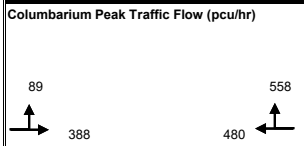
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  | | | |
|  |  | | | |
| Col.Peak G = I/G = 10 | G = I/G = 5 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 6 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | LT | B1 | 2 | 3.50 | 13.8 | | 100 | 1772 | 89 | 0.050 | | | | | | |
| Fo Tan Road EB | SA | B2 | 2 | 3.20 | | | | 2075 | 129 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B3 | 2 | 3.50 | | | | 2105 | 131 | 0.062 | | | | | | |
| Fo Tan Road EB | SA | B4 | 2 | 3.00 | | | | 2055 | 128 | 0.062 | 0.062 | | | | | |
| Fo Tan Road WB | SA | A1 | 1 | 3.00 | | | | 1915 | 229 | 0.120 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.40 | | | | 2095 | 251 | 0.120 | | | | | | |
| Fo Tan Road WB | SA+RT | A3 | 1 | 3.40 | 16.0 | | 100 | 1915 | 282 | 0.147 | | | | | | |
| Fo Tan Road WB | RT | A4 | 1 | 3.00 | 16.0 | | 100 | 1879 | 276 | 0.147 | 0.147 | | | | | |
| Pedestrian Phase | | P1 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P2 | 2 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 11 | sec FGM = | | 16 | sec | | |
| | | P4 | 1 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

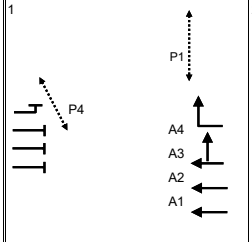
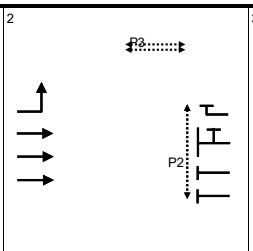



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.209 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 235% | | | | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  | | | |
| Col.Peak G = I/G = 10 | G = I/G = 5 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

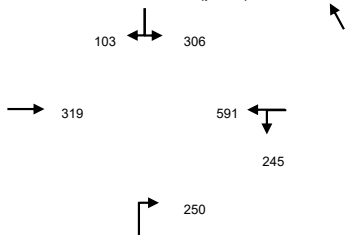
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 7 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | SA | A5 | 1 | 3.00 | 12.5 | | | 1915 | 75 | 0.039 | | | | | | |
| Fo Tan Road EB | SA | A6 | 1 | 3.50 | | | | 2105 | 82 | 0.039 | | | | | | |
| Fo Tan Road EB | SA | A7 | 1 | 3.40 | | | | 2095 | 82 | 0.039 | | | | | | |
| Fo Tan Road EB | SA | A8 | 1 | 3.10 | 20.0 | | | 2065 | 80 | 0.039 | | | | | | |
| Shan Mei Street NB | RT | C1 | 3 | 3.00 | 23.5 | | 100 | 1932 | 124 | 0.064 | 0.064 | | | | | |
| Shan Mei Street NB | RT | C2 | 3 | 3.40 | 23.5 | | 100 | 1969 | 126 | 0.064 | | | | | | |
| Fo Tan Road WB | LT | A1 | 1,3 | 3.60 | 17.5 | | 100 | 1948 | 245 | 0.126 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.60 | | | | 2115 | 198 | 0.094 | | | | | | |
| Fo Tan Road WB | SA | A3 | 1 | 3.60 | | | | 2115 | 198 | 0.094 | | | | | | |
| Fo Tan Road WB | SA | A4 | 1 | 3.40 | | | | 2095 | 195 | 0.093 | 0.093 | | | | | |
| Min Fong Street SB | LT | B1 | 2 | 2.60 | 14.4 | | 100 | 1825 | 151 | 0.083 | 0.083 | | | | | |
| Min Fong Street SB | LT | B2 | 2 | 3.00 | 14.4 | | 100 | 1861 | 155 | 0.083 | | | | | | |
| Min Fong Street SB | RT | B3 | 2 | 3.50 | 26.1 | | 100 | 1991 | 52 | 0.026 | | | | | | |
| Min Fong Street SB | RT | B4 | 2 | 3.20 | 26.1 | | 100 | 1962 | 51 | 0.026 | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 1,3 | Min Crossing Time = | 8 | sec GM + | 7 | sec FGM = | 15 | sec | |
| | P2 | 2,3 | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 | sec | |
| | P3 | 3 | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 | sec | |
| | P4 | 2 | Min Crossing Time = | 11 | sec GM + | 10 | sec FGM = | 21 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)**

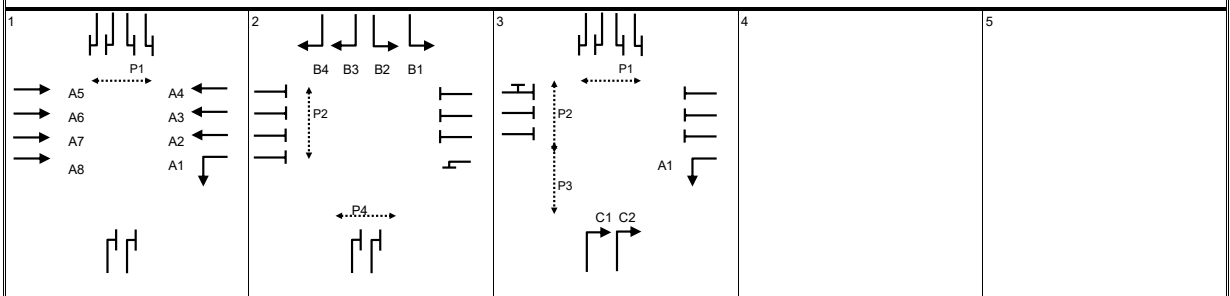



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.240 | | | | | |
| L (s) | 13 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.770 | | | | | |
| R.C. (%) | 220.8% | | | | | |

**NOTE:**



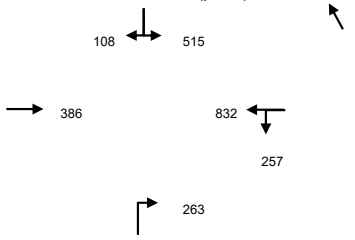

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 5 | G = | I/G = 5 | G = | I/G = 6 | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 8 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | SA | A5 | 1 | 3.00 | 12.5 | | | 1915 | 90 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A6 | 1 | 3.50 | | | | 2105 | 99 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A7 | 1 | 3.40 | | | | 2095 | 99 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A8 | 1 | 3.10 | 20.0 | | | 2065 | 98 | 0.047 | | | | | | |
| Shan Mei Street NB | RT | C1 | 3 | 3.00 | 23.5 | | 100 | 1932 | 130 | 0.067 | 0.067 | | | | | |
| Shan Mei Street NB | RT | C2 | 3 | 3.40 | 23.5 | | 100 | 1969 | 133 | 0.068 | | | | | | |
| Fo Tan Road WB | LT | A1 | 1,3 | 3.60 | 17.5 | | 100 | 1948 | 257 | 0.132 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.60 | | | | 2115 | 278 | 0.131 | | | | | | |
| Fo Tan Road WB | SA | A3 | 1 | 3.60 | | | | 2115 | 278 | 0.131 | | | | | | |
| Fo Tan Road WB | SA | A4 | 1 | 3.40 | | | | 2095 | 276 | 0.132 | 0.132 | | | | | |
| Min Fong Street SB | LT | B1 | 2 | 2.60 | 14.4 | | 100 | 1825 | 255 | 0.140 | 0.140 | | | | | |
| Min Fong Street SB | LT | B2 | 2 | 3.00 | 14.4 | | 100 | 1861 | 260 | 0.140 | | | | | | |
| Min Fong Street SB | RT | B3 | 2 | 3.50 | 26.1 | | 100 | 1991 | 54 | 0.027 | | | | | | |
| Min Fong Street SB | RT | B4 | 2 | 3.20 | 26.1 | | 100 | 1962 | 54 | 0.028 | | | | | | |
| Pedestrian Phase | | P1 | 1,3 | | Min Crossing Time = | | 8 | sec GM + | | 7 | sec FGM = | | 15 | sec | | |
| | | P2 | 2,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 3 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P4 | 2 | | Min Crossing Time = | | 11 | sec GM + | | 10 | sec FGM = | | 21 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

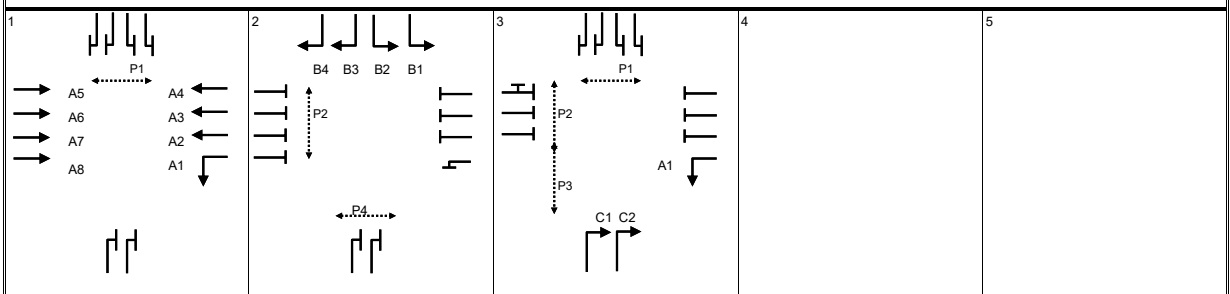



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.339 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 106.5% | | | | | |

**NOTE:**



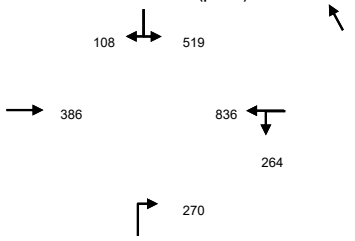

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 5 | G = | I/G = 5 | G = | I/G = 6 | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 9 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | SA | A5 | 1 | 3.00 | 12.5 | | | 1915 | 90 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A6 | 1 | 3.50 | | | | 2105 | 99 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A7 | 1 | 3.40 | | | | 2095 | 99 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A8 | 1 | 3.10 | 20.0 | | | 2065 | 98 | 0.047 | | | | | | |
| Shan Mei Street NB | RT | C1 | 3 | 3.00 | 23.5 | | 100 | 1932 | 134 | 0.069 | 0.069 | | | | | |
| Shan Mei Street NB | RT | C2 | 3 | 3.40 | 23.5 | | 100 | 1969 | 136 | 0.069 | | | | | | |
| Fo Tan Road WB | LT | A1 | 1,3 | 3.60 | 17.5 | | 100 | 1948 | 264 | 0.136 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.60 | | | | 2115 | 280 | 0.132 | | | | | | |
| Fo Tan Road WB | SA | A3 | 1 | 3.60 | | | | 2115 | 280 | 0.132 | | | | | | |
| Fo Tan Road WB | SA | A4 | 1 | 3.40 | | | | 2095 | 276 | 0.132 | 0.132 | | | | | |
| Min Fong Street SB | LT | B1 | 2 | 2.60 | 14.4 | | 100 | 1825 | 257 | 0.141 | 0.141 | | | | | |
| Min Fong Street SB | LT | B2 | 2 | 3.00 | 14.4 | | 100 | 1861 | 262 | 0.141 | | | | | | |
| Min Fong Street SB | RT | B3 | 2 | 3.50 | 26.1 | | 100 | 1991 | 54 | 0.027 | | | | | | |
| Min Fong Street SB | RT | B4 | 2 | 3.20 | 26.1 | | 100 | 1962 | 54 | 0.028 | | | | | | |
| Pedestrian Phase | | P1 | 1,3 | | Min Crossing Time = | | 8 | sec GM + | | 7 | sec FGM = | | 15 | sec | | |
| | | P2 | 2,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 3 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P4 | 2 | | Min Crossing Time = | | 11 | sec GM + | | 10 | sec FGM = | | 21 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

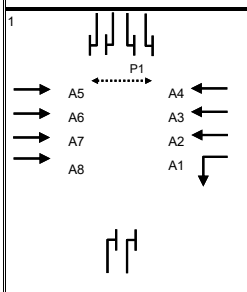


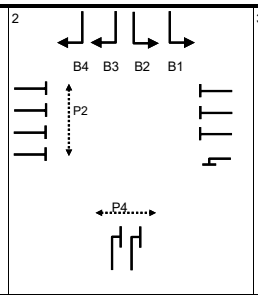

$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

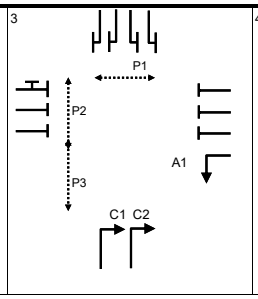
$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.342 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 104.7% | | | | | |

**NOTE:**




4

5

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 5 | G = | I/G = 5 | G = | I/G = 6 | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |

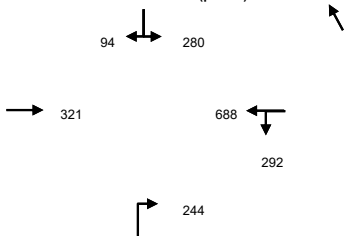
# Signal Junction Analysis

| | | | |
|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | Page | 10 |
| Design Year: | 2026 | Designed By: | LTF |
| Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | SA | A5 | 1 | 3.00 | 12.5 | | | 1915 | 75 | 0.039 | | | | | | |
| Fo Tan Road EB | SA | A6 | 1 | 3.50 | | | | 2105 | 83 | 0.039 | | | | | | |
| Fo Tan Road EB | SA | A7 | 1 | 3.40 | | | | 2095 | 82 | 0.039 | | | | | | |
| Fo Tan Road EB | SA | A8 | 1 | 3.10 | 20.0 | | | 2065 | 81 | 0.039 | | | | | | |
| Shan Mei Street NB | RT | C1 | 3 | 3.00 | 23.5 | | 100 | 1932 | 121 | 0.063 | 0.063 | | | | | |
| Shan Mei Street NB | RT | C2 | 3 | 3.40 | 23.5 | | 100 | 1969 | 123 | 0.062 | | | | | | |
| Fo Tan Road WB | LT | A1 | 1,3 | 3.60 | 17.5 | | 100 | 1948 | 292 | 0.150 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.60 | | | | 2115 | 230 | 0.109 | | | | | | |
| Fo Tan Road WB | SA | A3 | 1 | 3.60 | | | | 2115 | 230 | 0.109 | | | | | | |
| Fo Tan Road WB | SA | A4 | 1 | 3.40 | | | | 2095 | 228 | 0.109 | 0.109 | | | | | |
| Min Fong Street SB | LT | B1 | 2 | 2.60 | 14.4 | | 100 | 1825 | 139 | 0.076 | 0.076 | | | | | |
| Min Fong Street SB | LT | B2 | 2 | 3.00 | 14.4 | | 100 | 1861 | 141 | 0.076 | | | | | | |
| Min Fong Street SB | RT | B3 | 2 | 3.50 | 26.1 | | 100 | 1991 | 47 | 0.024 | | | | | | |
| Min Fong Street SB | RT | B4 | 2 | 3.20 | 26.1 | | 100 | 1962 | 47 | 0.024 | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 1,3 | Min Crossing Time = | 8 | sec GM + | 7 | sec FGM = | 15 | sec | |
| | P2 | 2,3 | Min Crossing Time = | 6 | sec GM + | 12 | sec FGM = | 18 | sec | |
| | P3 | 3 | Min Crossing Time = | 5 | sec GM + | 10 | sec FGM = | 15 | sec | |
| | P4 | 2 | Min Crossing Time = | 11 | sec GM + | 10 | sec FGM = | 21 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)**

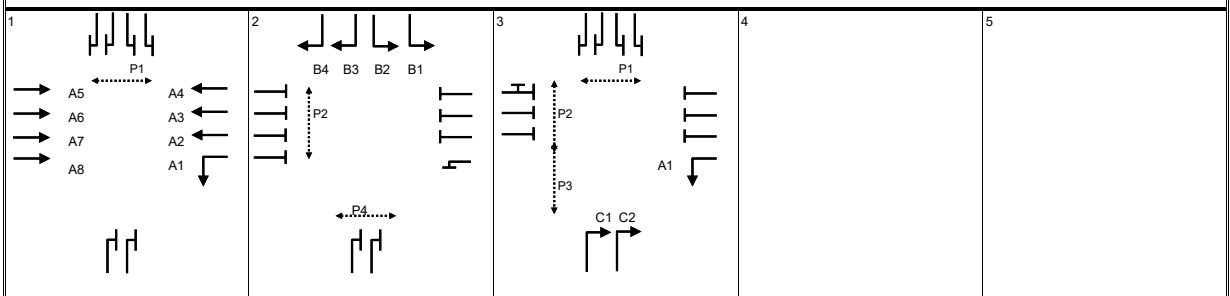



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.248 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 182.3% | | | | | |

**NOTE:**



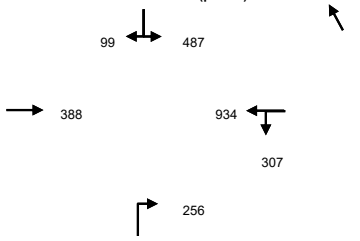

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 5 | G = | I/G = 5 | G = | I/G = 6 | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 11 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | SA | A5 | 1 | 3.00 | 12.5 | | | 1915 | 91 | 0.048 | | | | | | |
| Fo Tan Road EB | SA | A6 | 1 | 3.50 | | | | 2105 | 100 | 0.048 | | | | | | |
| Fo Tan Road EB | SA | A7 | 1 | 3.40 | | | | 2095 | 99 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A8 | 1 | 3.10 | 20.0 | | | 2065 | 98 | 0.047 | | | | | | |
| Shan Mei Street NB | RT | C1 | 3 | 3.00 | 23.5 | | 100 | 1932 | 127 | 0.066 | 0.066 | | | | | |
| Shan Mei Street NB | RT | C2 | 3 | 3.40 | 23.5 | | 100 | 1969 | 129 | 0.066 | | | | | | |
| Fo Tan Road WB | LT | A1 | 1,3 | 3.60 | 17.5 | | 100 | 1948 | 307 | 0.158 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.60 | | | | 2115 | 312 | 0.148 | | | | | | |
| Fo Tan Road WB | SA | A3 | 1 | 3.60 | | | | 2115 | 312 | 0.148 | | | | | | |
| Fo Tan Road WB | SA | A4 | 1 | 3.40 | | | | 2095 | 310 | 0.148 | 0.148 | | | | | |
| Min Fong Street SB | LT | B1 | 2 | 2.60 | 14.4 | | 100 | 1825 | 241 | 0.132 | 0.132 | | | | | |
| Min Fong Street SB | LT | B2 | 2 | 3.00 | 14.4 | | 100 | 1861 | 246 | 0.132 | | | | | | |
| Min Fong Street SB | RT | B3 | 2 | 3.50 | 26.1 | | 100 | 1991 | 50 | 0.025 | | | | | | |
| Min Fong Street SB | RT | B4 | 2 | 3.20 | 26.1 | | 100 | 1962 | 49 | 0.025 | | | | | | |
| Pedestrian Phase | | P1 | 1,3 | | Min Crossing Time = | | 8 | sec GM + | | 7 | sec FGM = | | 15 | sec | | |
| | | P2 | 2,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 3 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P4 | 2 | | Min Crossing Time = | | 11 | sec GM + | | 10 | sec FGM = | | 21 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

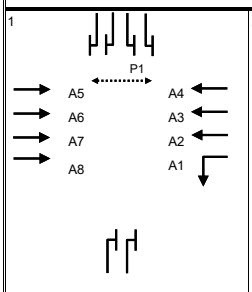


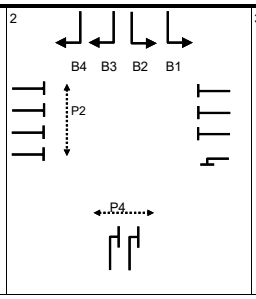

$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

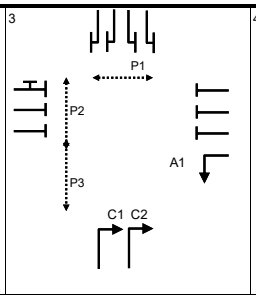
$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.346 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 102.3% | | | | | |

**NOTE:**

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5

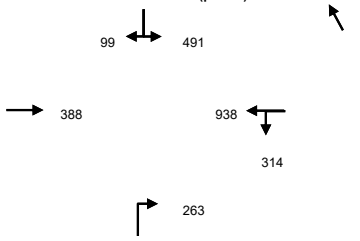
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 5 | G = | I/G = 5 | G = | I/G = 6 | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | |
|---|---|---|---|
| Junction: | Fo Tan Road / Shan Mei Street / Min Fong Street | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | Page | 12 |
| Design Year: | 2026 Designed By: LTF | Checked By: WCH | Date: 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road EB | SA | A5 | 1 | 3.00 | 12.5 | | | 1915 | 91 | 0.048 | | | | | | |
| Fo Tan Road EB | SA | A6 | 1 | 3.50 | | | | 2105 | 100 | 0.048 | | | | | | |
| Fo Tan Road EB | SA | A7 | 1 | 3.40 | | | | 2095 | 99 | 0.047 | | | | | | |
| Fo Tan Road EB | SA | A8 | 1 | 3.10 | 20.0 | | | 2065 | 98 | 0.047 | | | | | | |
| Shan Mei Street NB | RT | C1 | 3 | 3.00 | 23.5 | | 100 | 1932 | 130 | 0.067 | 0.067 | | | | | |
| Shan Mei Street NB | RT | C2 | 3 | 3.40 | 23.5 | | 100 | 1969 | 133 | 0.068 | | | | | | |
| Fo Tan Road WB | LT | A1 | 1,3 | 3.60 | 17.5 | | 100 | 1948 | 314 | 0.161 | | | | | | |
| Fo Tan Road WB | SA | A2 | 1 | 3.60 | | | | 2115 | 314 | 0.148 | | | | | | |
| Fo Tan Road WB | SA | A3 | 1 | 3.60 | | | | 2115 | 314 | 0.148 | | | | | | |
| Fo Tan Road WB | SA | A4 | 1 | 3.40 | | | | 2095 | 310 | 0.148 | 0.148 | | | | | |
| Min Fong Street SB | LT | B1 | 2 | 2.60 | 14.4 | | 100 | 1825 | 243 | 0.133 | 0.133 | | | | | |
| Min Fong Street SB | LT | B2 | 2 | 3.00 | 14.4 | | 100 | 1861 | 248 | 0.133 | | | | | | |
| Min Fong Street SB | RT | B3 | 2 | 3.50 | 26.1 | | 100 | 1991 | 50 | 0.025 | | | | | | |
| Min Fong Street SB | RT | B4 | 2 | 3.20 | 26.1 | | 100 | 1962 | 49 | 0.025 | | | | | | |
| Pedestrian Phase | | P1 | 1,3 | | Min Crossing Time = | | 8 | sec GM + | | 7 | sec FGM = | | 15 | sec | | |
| | | P2 | 2,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |
| | | P3 | 3 | | Min Crossing Time = | | 5 | sec GM + | | 10 | sec FGM = | | 15 | sec | | |
| | | P4 | 2 | | Min Crossing Time = | | 11 | sec GM + | | 10 | sec FGM = | | 21 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

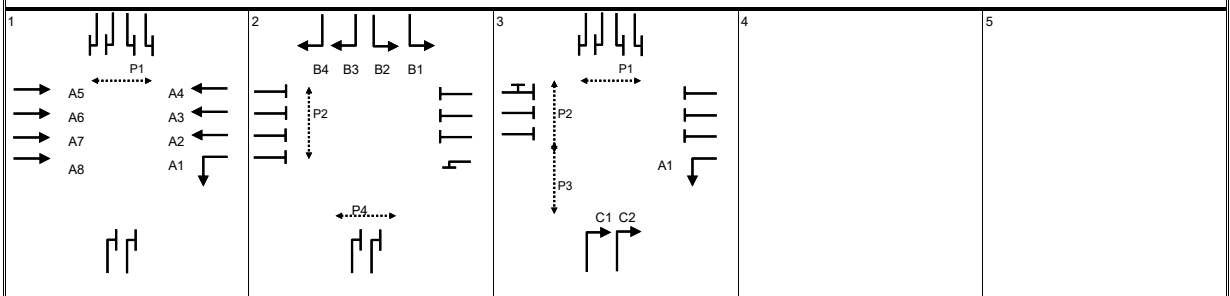



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.348 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 90 | | | | | |
| Prac. y | 0.700 | | | | | |
| R.C. (%) | 101.1% | | | | | |

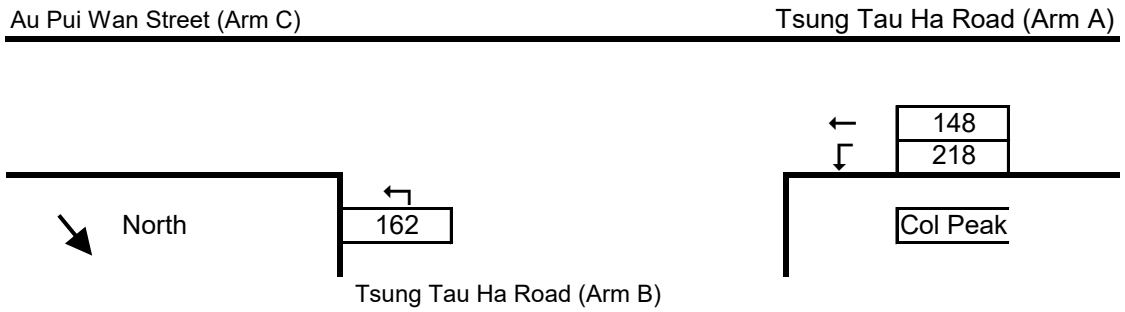
**NOTE:**




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 5 | G = | I/G = 5 | G = | I/G = 6 | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | | P. 13 |
| Design Year: | 2021 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 11.00 | V-rBA | 100 | w-BA | | D | 0.5870 |
| | W-CR | 0.00 | V-lBA | | w-BC | 4.10 | E | 0.9297 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6205 |

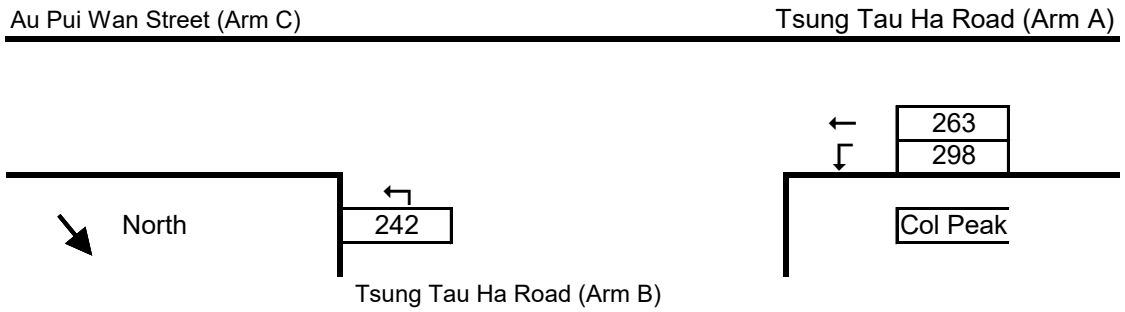
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 0 | Q-BA | 337 |
| q-CB | 0 | Q-BC | 643 |
| q-AB | 218 | Q-CB | 388 |
| q-AC | 148 | Q-BAC | 643 |
| q-BA | 0 | | |
| q-BC | 162 | | |
| f | 1.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.000 |
| B-C | 0.252 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbar | | | P. | 14 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 11.00 | V-rBA | 100 | w-BA | | D | 0.5870 |
| | W-CR | 0.00 | V-lBA | | w-BC | 4.10 | E | 0.9297 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6205 |

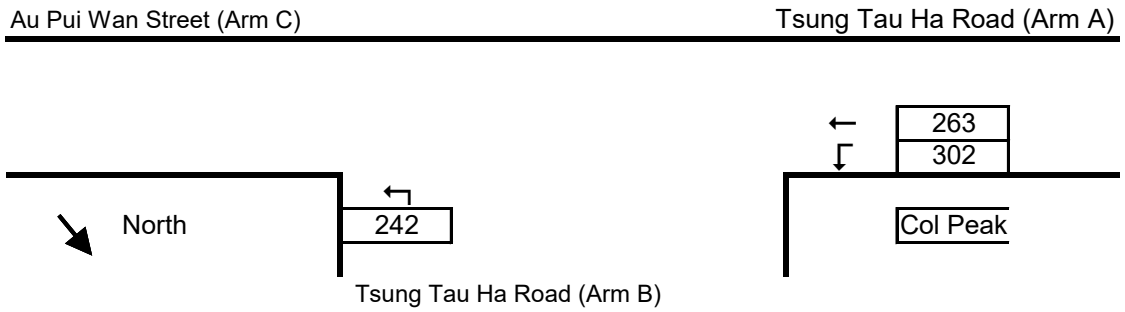
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 0 | Q-BA | 318 |
| q-CB | 0 | Q-BC | 613 |
| q-AB | 298 | Q-CB | 362 |
| q-AC | 263 | Q-BAC | 613 |
| q-BA | 0 | | |
| q-BC | 242 | | |
| f | 1.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.000 |
| B-C | 0.395 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbariun | | | P. | 15 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 11.00 | V-rBA | 100 | w-BA | | D | 0.5870 |
| | W-CR | 0.00 | V-lBA | | w-BC | 4.10 | E | 0.9297 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6205 |

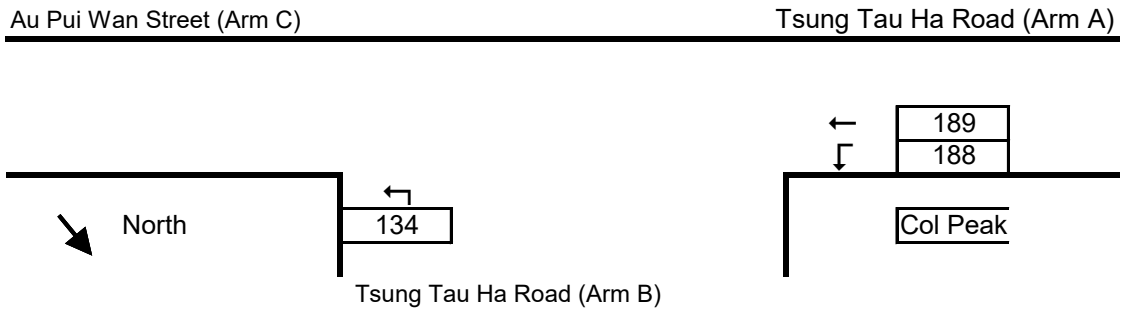
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 0 | Q-BA | 317 |
| q-CB | 0 | Q-BC | 612 |
| q-AB | 302 | Q-CB | 362 |
| q-AC | 263 | Q-BAC | 612 |
| q-BA | 0 | | |
| q-BC | 242 | | |
| f | 1.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.000 |
| B-C | 0.395 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | | P. 16 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 11.00 | V-rBA | 100 | w-BA | | D | 0.5870 |
| | W-CR | 0.00 | V-lBA | | w-BC | 4.10 | E | 0.9297 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6205 |

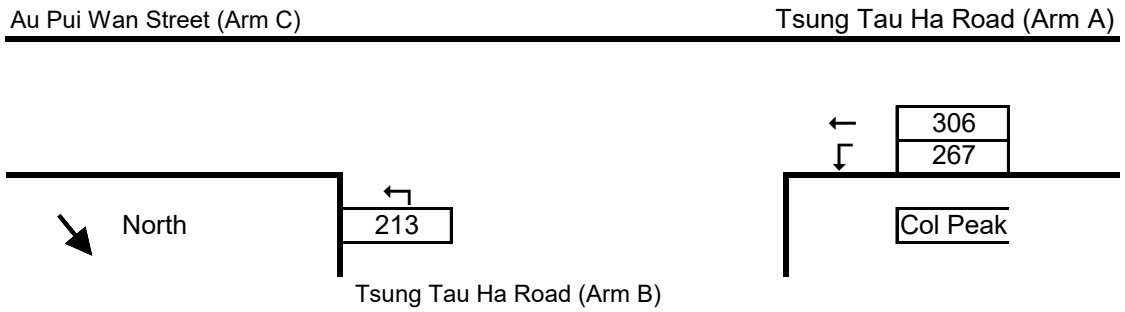
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 0 | Q-BA | 333 |
| q-CB | 0 | Q-BC | 637 |
| q-AB | 188 | Q-CB | 387 |
| q-AC | 189 | Q-BAC | 637 |
| q-BA | 0 | | |
| q-BC | 134 | | |
| f | 1.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.000 |
| B-C | 0.210 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | | P. 17 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 11.00 | V-rBA | 100 | w-BA | | D | 0.5870 |
| | W-CR | 0.00 | V-lBA | | w-BC | 4.10 | E | 0.9297 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6205 |

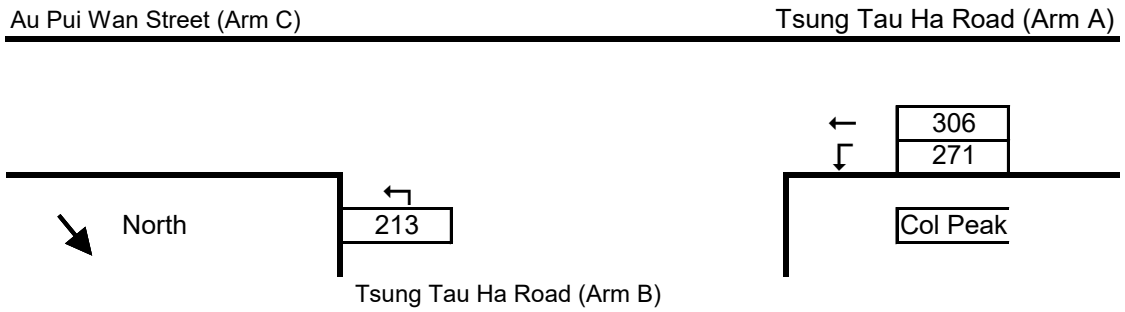
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 0 | Q-BA | 313 |
| q-CB | 0 | Q-BC | 606 |
| q-AB | 267 | Q-CB | 361 |
| q-AC | 306 | Q-BAC | 606 |
| q-BA | 0 | | |
| q-BC | 213 | | |
| f | 1.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.000 |
| B-C | 0.351 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Tsung Tau Ha Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | | P. 18 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 11.00 | V-rBA | 100 | w-BA | | D | 0.5870 |
| | W-CR | 0.00 | V-lBA | | w-BC | 4.10 | E | 0.9297 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6205 |

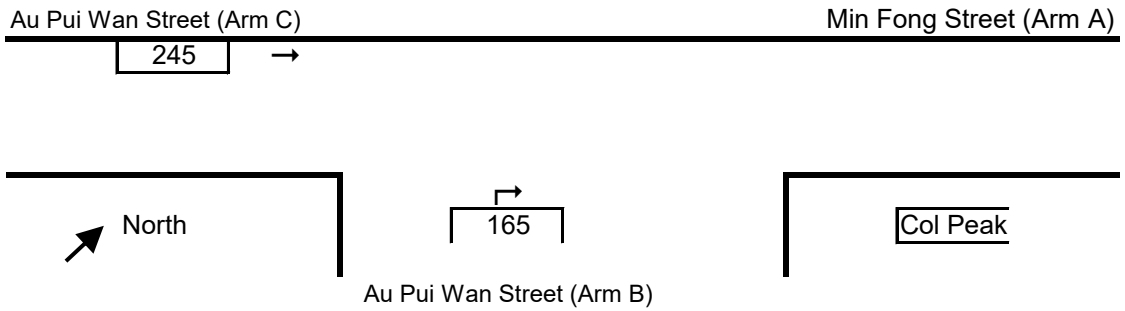
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 0 | Q-BA | 313 |
| q-CB | 0 | Q-BC | 606 |
| q-AB | 271 | Q-CB | 360 |
| q-AC | 306 | Q-BAC | 606 |
| q-BA | 0 | | |
| q-BC | 213 | | |
| f | 1.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.000 |
| B-C | 0.352 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | | | | P. 19 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | | w-BA | 3.40 | D | 0.8449 |
| | W-CR | 0.00 | V-lBA | 100 | w-BC | | E | 0.5860 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6585 |

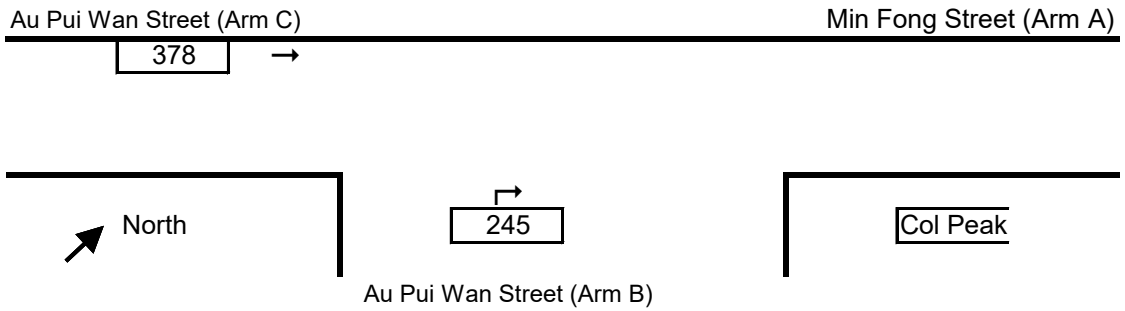
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 245 | Q-BA | 499 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 499 |
| q-BA | 165 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.331 |
| B-C | 0.000 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbar | | | P. | 20 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | | w-BA | 3.40 | D | 0.8449 |
| | W-CR | 0.00 | V-lBA | 100 | w-BC | | E | 0.5860 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6585 |

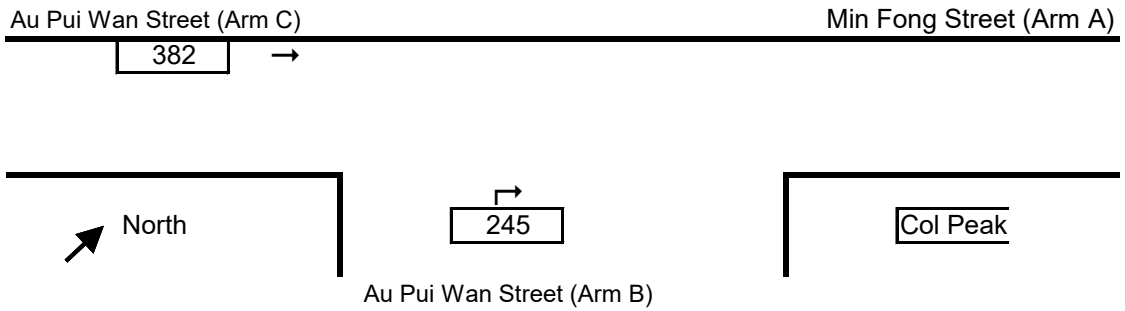
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 378 | Q-BA | 482 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 482 |
| q-BA | 245 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.509 |
| B-C | 0.000 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | P. | 21 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | | w-BA | 3.40 | D | 0.8449 |
| | W-CR | 0.00 | V-lBA | 100 | w-BC | | E | 0.5860 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6585 |

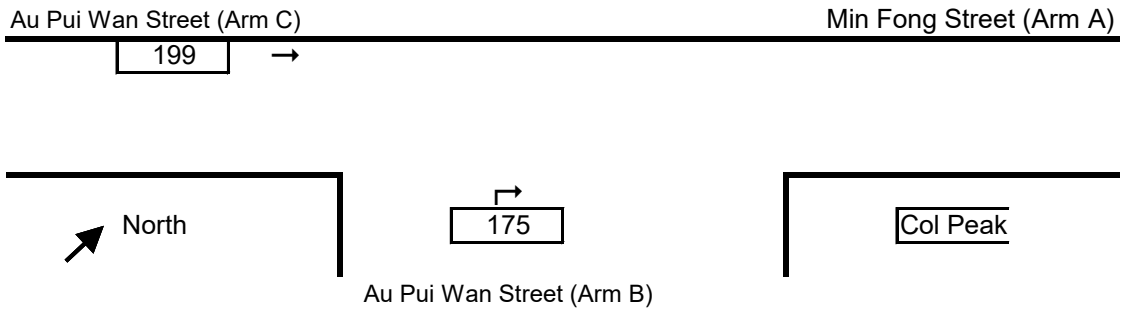
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 382 | Q-BA | 481 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 481 |
| q-BA | 245 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.509 |
| B-C | 0.000 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | | | | P. 22 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | | w-BA | 3.40 | D | 0.8449 |
| | W-CR | 0.00 | V-lBA | 100 | w-BC | | E | 0.5860 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6585 |

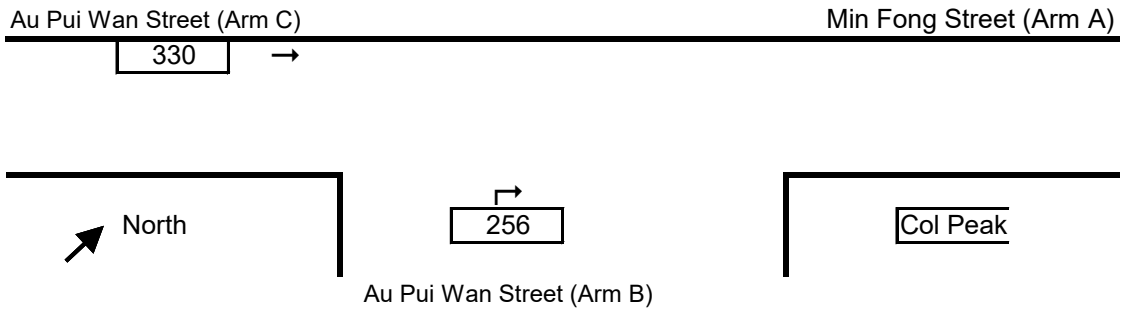
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 199 | Q-BA | 504 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 504 |
| q-BA | 175 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.347 |
| B-C | 0.000 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | | P. 23 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | | w-BA | 3.40 | D | 0.8449 |
| | W-CR | 0.00 | V-lBA | 100 | w-BC | | E | 0.5860 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6585 |

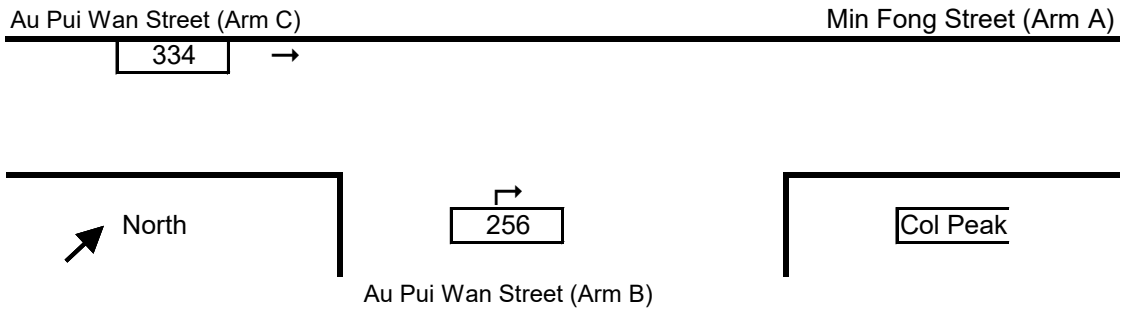
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 330 | Q-BA | 488 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 488 |
| q-BA | 256 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.525 |
| B-C | 0.000 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Min Fong Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | | P. 24 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 9.90 | V-rBA | | w-BA | 3.40 | D | 0.8449 |
| | W-CR | 0.00 | V-lBA | 100 | w-BC | | E | 0.5860 |
| | | | V-rBC | | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6585 |

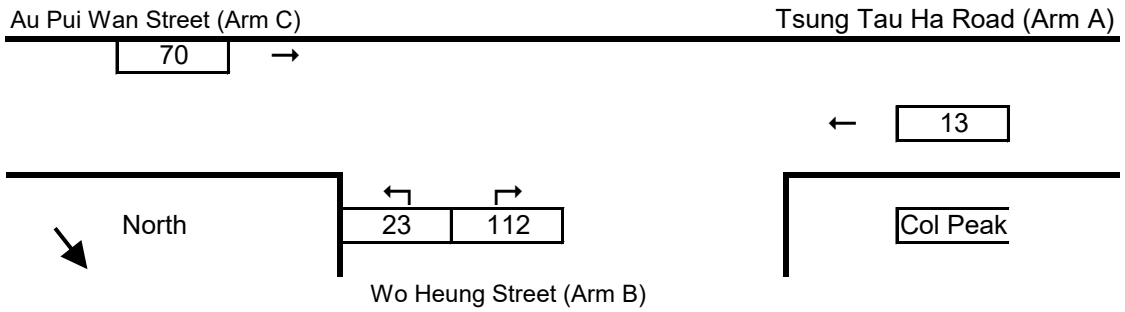
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 334 | Q-BA | 487 |
| q-CB | 0 | Q-BC | 437 |
| q-AB | 0 | Q-CB | 437 |
| q-AC | 0 | Q-BAC | 487 |
| q-BA | 256 | | |
| q-BC | 0 | | |
| f | 0.000 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.525 |
| B-C | 0.000 |
| C-B | 0.000 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | | P. 25 |
| Design Year: | 2021 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 10.20 | V-rBA | 20 | w-BA | 3.60 | D | 0.8378 |
| | W-CR | 25.00 | V-lBA | 25 | w-BC | 4.20 | E | 0.9618 |
| | | | V-rBC | 25 | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6481 |

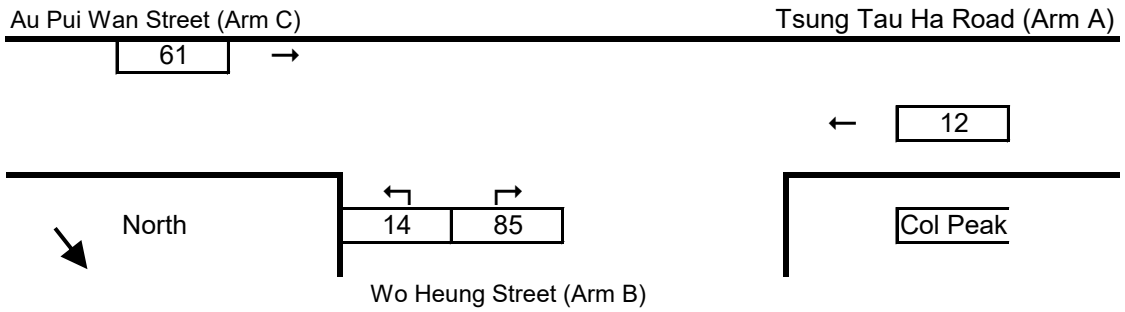
Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 70 | Q-BA | 807 |
| q-CB | 0 | Q-BC | 714 |
| q-AB | 0 | Q-CB | 435 |
| q-AC | 13 | Q-BAC | 790 |
| q-BA | 112 | | |
| q-BC | 23 | | |
| f | 0.170 | | |

| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.139 |
| B-C | 0.032 |
| C-B | 0.000 |
| B-AC | 0.171 |

# Priority Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | | P. 26 |
| Design Year: | 2026 | Designed By: LTF | Checked By: WCH | Date: | 11-Jun-21 |




The predictive equations of capacity of movement are:

Q-BA = D[627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB)]

Q-BC = E[745 - Y(0.364q-AC + 0.144q-AB)]

Q-CB = F[745 - 0.364Y(q-AC + q-AB)]

The geometric parameters represented by D, E, F are:

D = [1 + 0.094(w-BA - 3.65)][1 + 0.0009(V-rBA - 120)][1 + 0.0006(V-lBA - 150)]

E = [1 + 0.094(w-BC - 3.65)][1 + 0.0009(V-rBC - 120)]

F = [1 + 0.094(w-CB - 3.65)][1 + 0.0009(V-rCB - 120)]

where Y = 1 - 0.0345W

q-AB, etc = the design flow of movement AB, etc

W = major road width

W-CR = central reserve width

w-BA, etc = lane width to vehicle

v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc

v-lBA, etc = visibility to the left for waiting vehicles in stream BA, etc

| Geometry : | Input | | Input | | Input | | Calculated | |
|---|---|---|---|---|---|---|---|---|
| | W | 10.20 | V-rBA | 20 | w-BA | 3.60 | D | 0.8378 |
| | W-CR | 25.00 | V-lBA | 25 | w-BC | 4.20 | E | 0.9618 |
| | | | V-rBC | 25 | w-CB | | F | 0.5860 |
| | | | V-rCB | | | | Y | 0.6481 |

Analysis :

| Traffic Flows, pcu/hr | Col Peak | Capacity, pcu/hr | AM |
|---|---|---|---|
| q-CA | 61 | Q-BA | 809 |
| q-CB | 0 | Q-BC | 714 |
| q-AB | 0 | Q-CB | 435 |
| q-AC | 12 | Q-BAC | 794 |
| q-BA | 85 | | |
| q-BC | 14 | | |
| f | 0.141 | | |

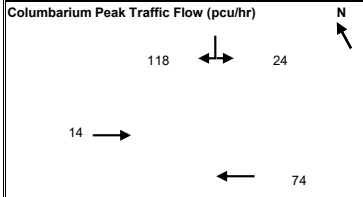
| Ratio-of-flow to Capacity | Col Peak |
|---|---|
| B-A | 0.105 |
| B-C | 0.020 |
| C-B | 0.000 |
| B-AC | 0.125 |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 27 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Au Pui Wan Street EB | SA | B2 | 1 | 4.80 | | | 100 | 2095 | 14 | 0.007 | | | | | | |
| Au Pui Wan Street WB | SA | B1 | 1 | 4.80 | | | | 2095 | 74 | 0.035 | 0.035 | | | | | |
| Wo Heung Street SB | LT | C1 | 2 | 4.00 | 12.0 | | 100 | 1791 | 24 | 0.013 | | | | | | |
| Wo Heung Street SB | RT | C2 | 2 | 3.70 | 9.0 | | 100 | 1701 | 118 | 0.069 | 0.069 | | | | | |
| Pedestrian Phase | | DP | 3 | | Min Crossing Time = | | 6 | sec GM + | | 5 | | sec FGM = | | 11 | sec | |
| | | EP | 1,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | | sec FGM = | | 18 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)**

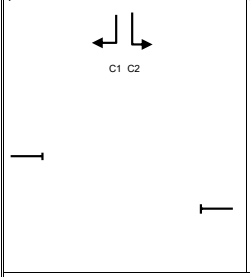
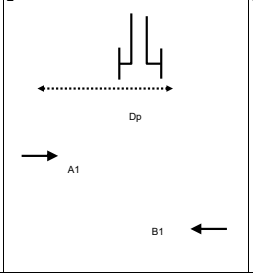
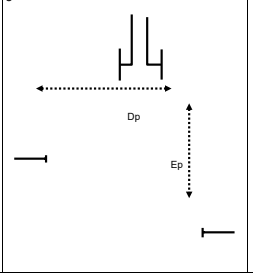



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.104 | | | | | |
| L (s) | 24 | | | | | |
| C (s) | 60 | | | | | |
| Prac. y | 0.540 | | | | | |
| R.C. (%) | 419% | | | | | |

**NOTE:**

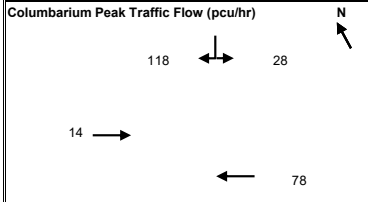
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   |   | | |
| Col.Peak G = | I/G = 5 | G = | I/G = 5 | G = 11 | I/G = 5 | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 28 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Au Pui Wan Street EB | SA | B2 | 1 | 4.80 | | | 100 | 2095 | 14 | 0.007 | | | | | | |
| Au Pui Wan Street WB | SA | B1 | 1 | 4.80 | | | | 2095 | 78 | 0.037 | 0.037 | | | | | |
| Wo Heung Street SB | LT | C1 | 2 | 4.00 | 12.0 | | 100 | 1791 | 28 | 0.016 | | | | | | |
| Wo Heung Street SB | RT | C2 | 2 | 3.70 | 9.0 | | 100 | 1701 | 118 | 0.069 | 0.069 | | | | | |
| Pedestrian Phase | | DP | 3 | | Min Crossing Time = | | 6 | sec GM + | | 5 | sec FGM = | | 11 | sec | | |
| | | EP | 1,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

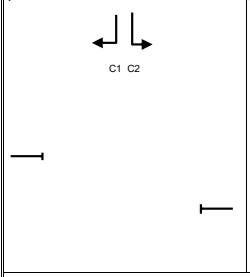
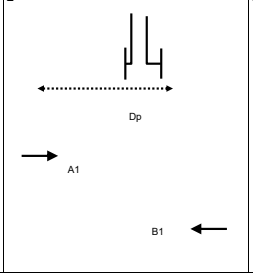
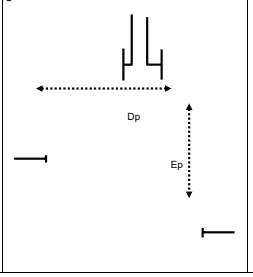



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.106 | | | | | |
| L (s) | 24 | | | | | |
| C (s) | 60 | | | | | |
| Prac. y | 0.540 | | | | | |
| R.C. (%) | 409% | | | | | |

**NOTE:**

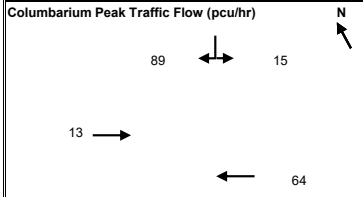
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   |   | | |
| Col.Peak G = | I/G = 5 | G = | I/G = 5 | G = 11 | I/G = 5 | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 29 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Au Pui Wan Street EB | SA | B2 | 1 | 4.80 | | | 100 | 2095 | 13 | 0.006 | | | | | | |
| Au Pui Wan Street WB | SA | B1 | 1 | 4.80 | | | | 2095 | 64 | 0.031 | 0.031 | | | | | |
| Wo Heung Street SB | LT | C1 | 2 | 4.00 | 12.0 | | 100 | 1791 | 15 | 0.008 | | | | | | |
| Wo Heung Street SB | RT | C2 | 2 | 3.70 | 9.0 | | 100 | 1701 | 89 | 0.052 | 0.052 | | | | | |
| Pedestrian Phase | | DP | 3 | | Min Crossing Time = | | 6 | sec GM + | | 5 | | sec FGM = | | 11 | sec | |
| | | EP | 1,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | | sec FGM = | | 18 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)**

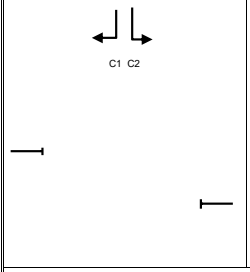
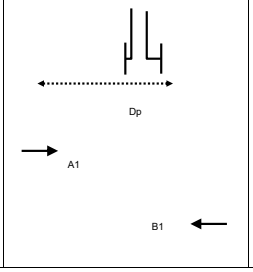
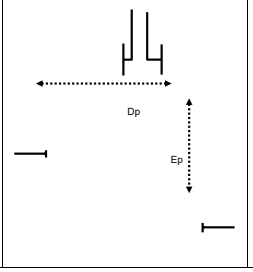



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.083 | | | | | |
| L (s) | 24 | | | | | |
| C (s) | 60 | | | | | |
| Prac. y | 0.540 | | | | | |
| R.C. (%) | 551% | | | | | |

**NOTE:**

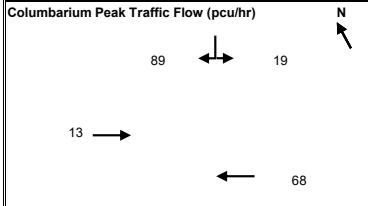
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   |   | | |
| Col.Peak G = | I/G = 5 | G = | I/G = 5 | G = 11 | I/G = 5 | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Au Pui Wan Street / Wo Heung Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 30 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Au Pui Wan Street EB | SA | B2 | 1 | 4.80 | | | 100 | 2095 | 13 | 0.006 | | | | | | |
| Au Pui Wan Street WB | SA | B1 | 1 | 4.80 | | | | 2095 | 68 | 0.032 | 0.032 | | | | | |
| Wo Heung Street SB | LT | C1 | 2 | 4.00 | 12.0 | | 100 | 1791 | 19 | 0.011 | | | | | | |
| Wo Heung Street SB | RT | C2 | 2 | 3.70 | 9.0 | | 100 | 1701 | 89 | 0.052 | 0.052 | | | | | |
| Pedestrian Phase | | DP | 3 | | Min Crossing Time = | | 6 | sec GM + | | 5 | sec FGM = | | 11 | sec | | |
| | | EP | 1,3 | | Min Crossing Time = | | 6 | sec GM + | | 12 | sec FGM = | | 18 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

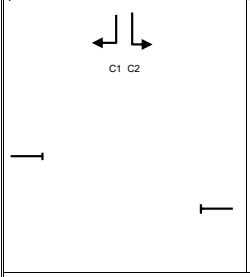
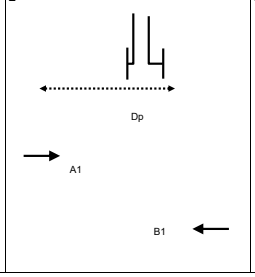
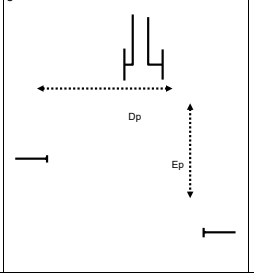



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.084 | | | | | |
| L (s) | 24 | | | | | |
| C (s) | 60 | | | | | |
| Prac. y | 0.540 | | | | | |
| R.C. (%) | 543% | | | | | |

**NOTE:**

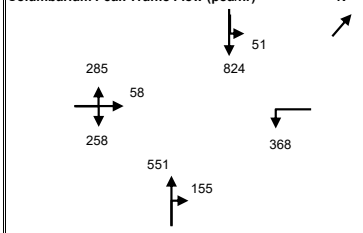
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   |   | | |
| Col.Peak G = | I/G = 5 | G = | I/G = 5 | G = 11 | I/G = 5 | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 31 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 266 | 0.135 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 285 | 0.135 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 78 | 0.041 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 77 | 0.040 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 285 | 0.138 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 58 | 0.027 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 131 | 0.068 | 0.068 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 127 | 0.068 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 51 | 0.026 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 207 | 0.098 | 0.098 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 207 | 0.098 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 205 | 0.098 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 205 | 0.098 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 178 | 0.097 | 0.097 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 190 | 0.096 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

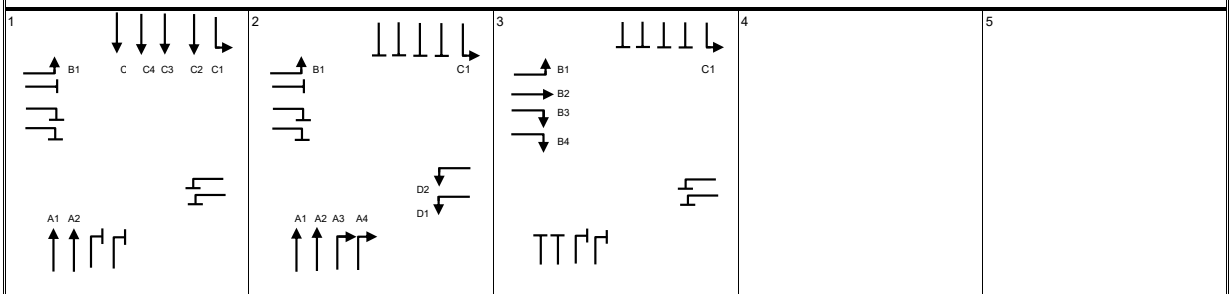



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.263 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 187% | | | | | |

**NOTE:**



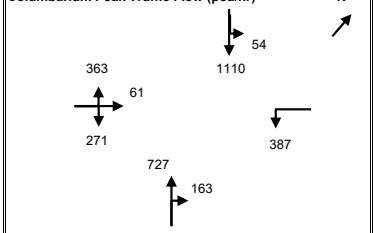

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 32 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 351 | 0.178 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 376 | 0.178 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 82 | 0.043 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 81 | 0.042 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 363 | 0.176 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 61 | 0.029 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 137 | 0.071 | 0.071 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 134 | 0.071 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 279 | 0.132 | 0.132 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 279 | 0.132 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 276 | 0.132 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 276 | 0.132 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 187 | 0.102 | 0.102 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 200 | 0.102 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

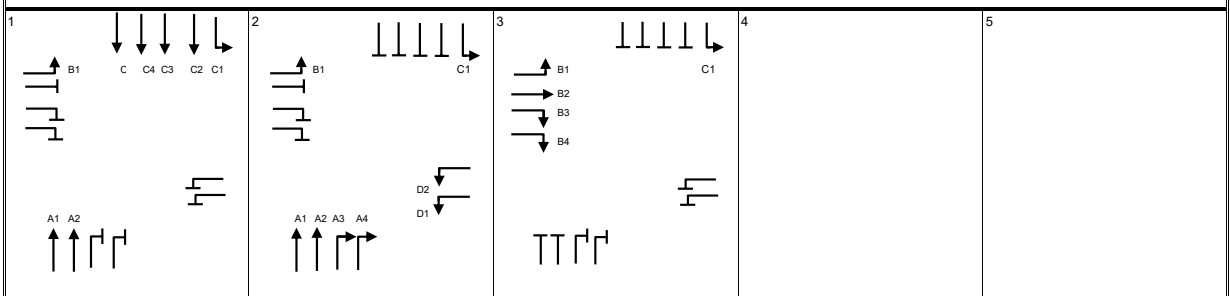



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3 | | | | | |
| Sum y | 0.305 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 148% | | | | | |

**NOTE:**



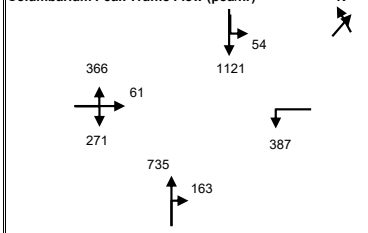

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 33 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 355 | 0.180 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 380 | 0.180 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 82 | 0.043 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 81 | 0.042 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 366 | 0.177 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 61 | 0.029 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 137 | 0.071 | 0.071 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 134 | 0.071 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 282 | 0.133 | 0.133 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 282 | 0.133 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 279 | 0.133 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 278 | 0.133 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 187 | 0.102 | 0.102 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 200 | 0.102 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

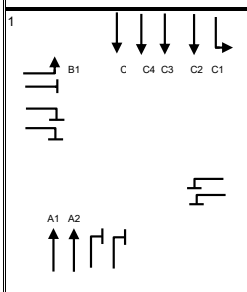


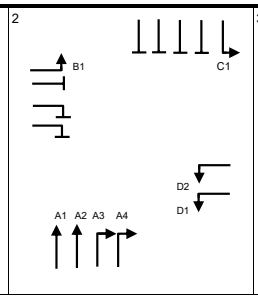

S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

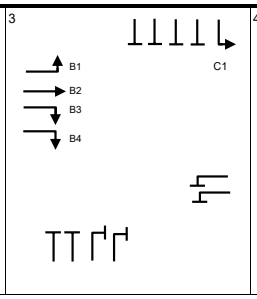
S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

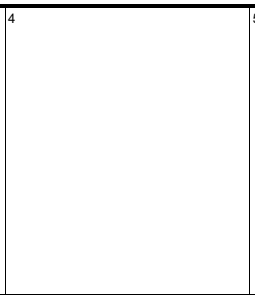
| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3 | | | | | |
| Sum y | 0.306 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 147% | | | | | |

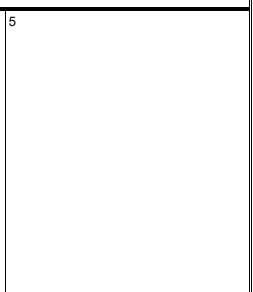
**NOTE:**



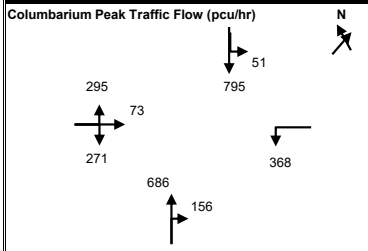

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 34 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 331 | 0.168 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 355 | 0.168 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 78 | 0.041 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 78 | 0.041 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 295 | 0.143 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 73 | 0.034 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 137 | 0.071 | 0.071 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 134 | 0.071 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 51 | 0.026 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 200 | 0.095 | 0.095 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 200 | 0.095 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 198 | 0.095 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 197 | 0.094 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 178 | 0.097 | 0.097 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 190 | 0.096 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

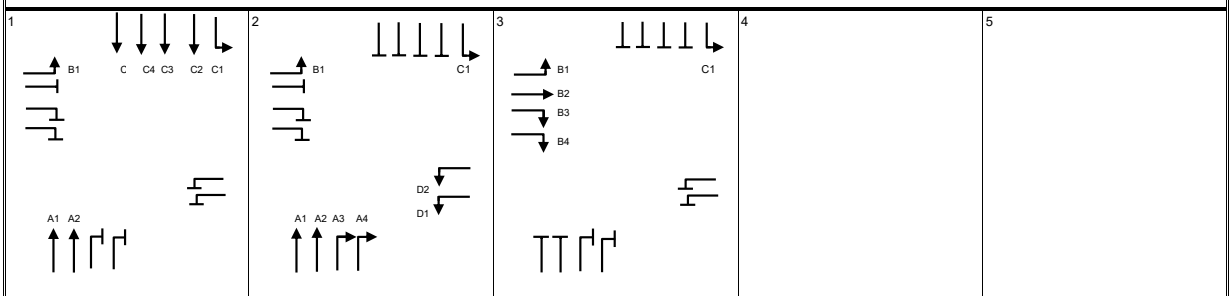



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3 | | | | | |
| Sum y | 0.263 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 187% | | | | | |

**NOTE:**



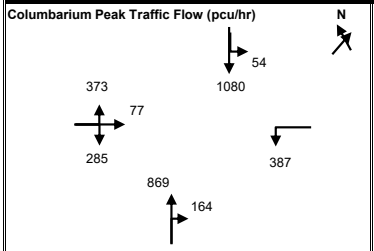

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 8 | G = | I/G = 5 | G = | I/G = 10 | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 35 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 420 | 0.213 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 449 | 0.212 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 82 | 0.043 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 82 | 0.043 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 373 | 0.181 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 77 | 0.036 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 144 | 0.075 | 0.075 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 141 | 0.075 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 271 | 0.128 | 0.128 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 271 | 0.128 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 269 | 0.128 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 269 | 0.128 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 187 | 0.102 | 0.102 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 200 | 0.102 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

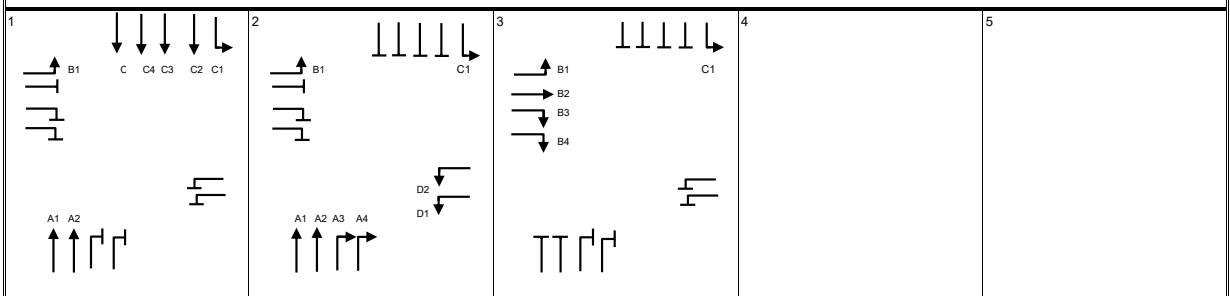



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.305 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 148% | | | | | |

**NOTE:**



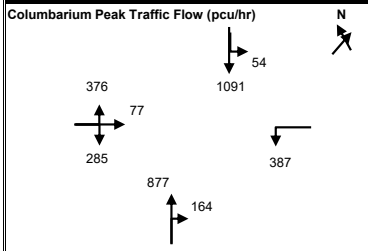

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 36 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 423 | 0.214 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 454 | 0.215 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 82 | 0.043 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 82 | 0.043 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 376 | 0.182 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 77 | 0.036 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 144 | 0.075 | 0.075 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 141 | 0.075 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 274 | 0.130 | 0.130 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 274 | 0.130 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 271 | 0.129 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 272 | 0.130 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 187 | 0.102 | 0.102 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 200 | 0.102 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

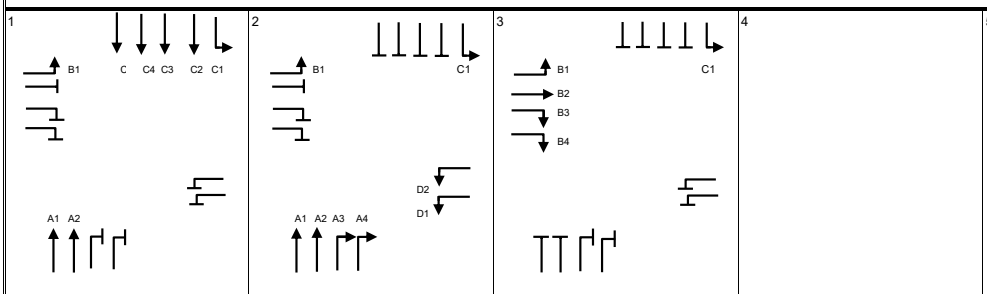



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.306 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 147% | | | | | |

**NOTE:**



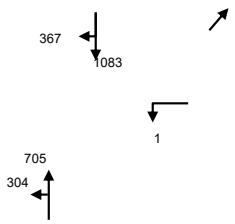

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 37 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 304 | 0.155 | 0.155 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 235 | 0.112 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 235 | 0.112 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 235 | 0.112 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 523 | 0.265 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 560 | 0.265 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 184 | 0.096 | 0.096 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 183 | 0.096 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

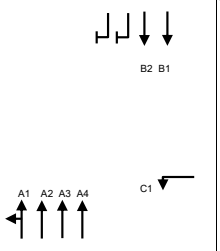
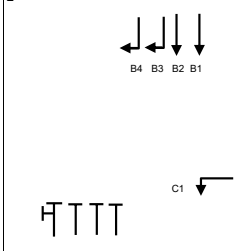



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.251 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 218% | | | | | |

**NOTE:**

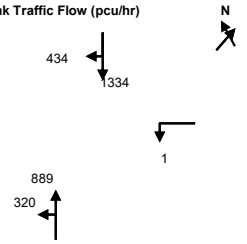
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 38 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 296 | 0.141 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 296 | 0.141 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 297 | 0.142 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 644 | 0.326 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 690 | 0.326 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 217 | 0.114 | 0.114 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 217 | 0.114 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

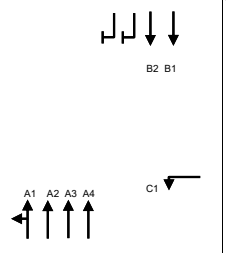
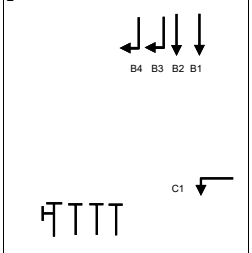



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.278 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 187% | | | | | |

**NOTE:**

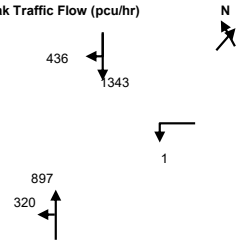
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  | | | |
| Col.Peak G = | I/G = 8 | G = | I/G = 8 | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 39 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 299 | 0.143 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 299 | 0.143 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 299 | 0.143 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 649 | 0.329 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 694 | 0.328 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 218 | 0.114 | 0.114 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 218 | 0.114 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

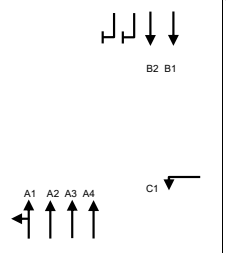
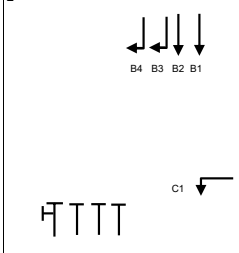



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.278 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 187% | | | | | |

**NOTE:**

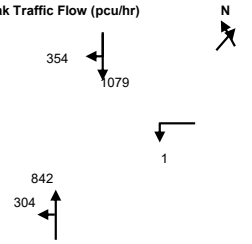
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 40 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 304 | 0.155 | 0.155 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 281 | 0.134 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 281 | 0.134 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 280 | 0.134 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 521 | 0.264 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 558 | 0.264 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 177 | 0.093 | 0.093 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 177 | 0.093 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

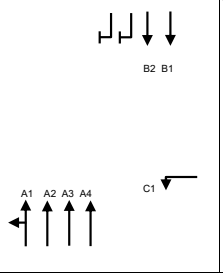
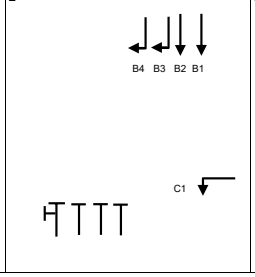



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.248 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 222% | | | | | |

**NOTE:**

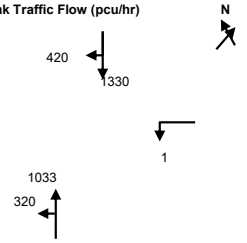
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 41 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 344 | 0.164 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 344 | 0.164 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 345 | 0.165 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 642 | 0.325 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 688 | 0.325 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 210 | 0.110 | 0.110 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 210 | 0.110 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

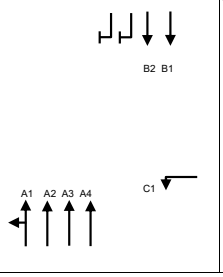
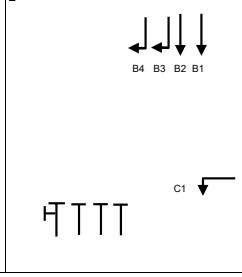



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.274 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 192% | | | | | |

**NOTE:**

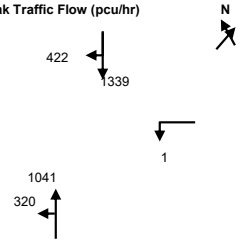
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 42 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 347 | 0.166 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 347 | 0.166 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 347 | 0.166 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 647 | 0.328 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 692 | 0.327 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 211 | 0.110 | 0.110 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 211 | 0.110 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

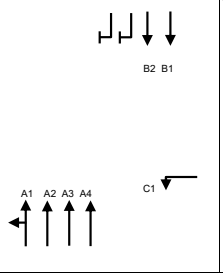
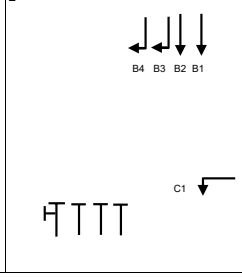



$S = 1940 + 100\ (W-3.25)$ $S_M = S / (1 + 1.5\ f/r)$

$S = 2080 + 100\ (W-3.25)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.274 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 192% | | | | | |

**NOTE:**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |

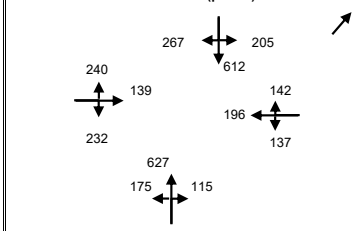
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 43 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 175 | 0.100 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 209 | 0.101 | 0.101 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 209 | 0.101 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 209 | 0.101 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 115 | 0.060 | | | | | | |
| | | | | | | | | | | | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 240 | 0.138 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 139 | 0.066 | 0.066 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 116 | 0.061 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 116 | 0.061 | | | | | | |
| | | | | | | | | | | | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 187 | 0.109 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 8 | 2090 | 227 | 0.109 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 230 | 0.109 | 0.109 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 23 | 2079 | 226 | 0.109 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 214 | 0.109 | | | | | | |
| | | | | | | | | | | | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 137 | 0.078 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 116 | 0.056 | 0.056 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 30 | 2037 | 114 | 0.056 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 108 | 0.056 | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | 7 | sec FGM = | 12 | sec | |
| | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | 11 | sec FGM = | 19 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)**

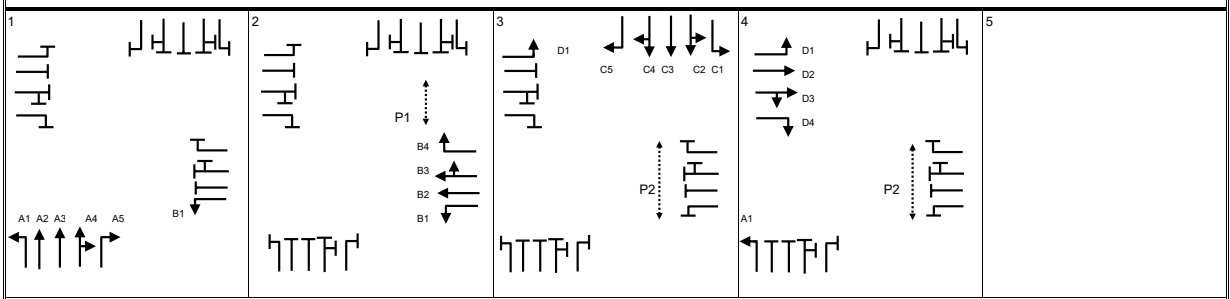



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.327 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 127% | | | | | |

**NOTE:**



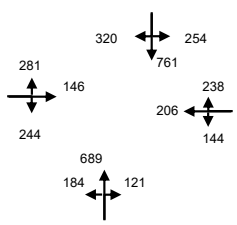

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 6 | G = | I/G = | 8 | G = | I/G = | 6 | G = | I/G = | 6 | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 44 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 184 | 0.105 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 230 | 0.111 | 0.111 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 230 | 0.111 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 230 | 0.111 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 121 | 0.063 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 281 | 0.162 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 146 | 0.069 | 0.069 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 230 | 0.134 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 9 | 2087 | 279 | 0.134 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 283 | 0.134 | 0.134 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 20 | 2084 | 279 | 0.134 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 264 | 0.134 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 144 | 0.082 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 154 | 0.074 | 0.074 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 64 | 1985 | 147 | 0.074 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 143 | 0.074 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

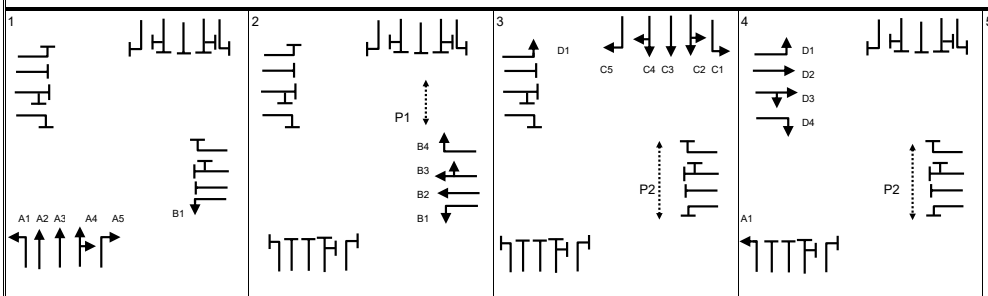



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.383 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 94% | | | | | |

**NOTE:**



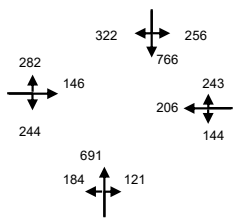

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 45 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 184 | 0.105 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 230 | 0.111 | 0.111 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 230 | 0.111 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 230 | 0.111 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 121 | 0.063 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 282 | 0.162 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 146 | 0.069 | 0.069 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 231 | 0.135 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 8 | 2090 | 282 | 0.135 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 285 | 0.135 | 0.135 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 20 | 2084 | 281 | 0.135 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 265 | 0.135 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 144 | 0.082 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 156 | 0.075 | 0.075 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 68 | 1979 | 148 | 0.075 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 145 | 0.075 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

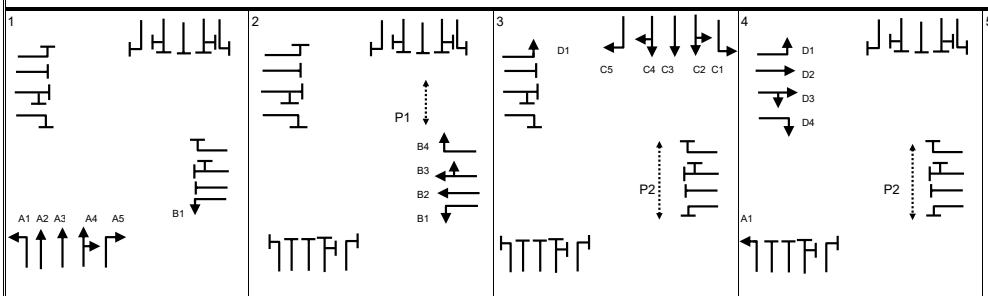



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.385 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 93% | | | | | |

**NOTE:**



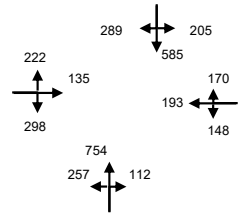

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 6 | G = | I/G = 8 | G = | I/G = 6 | G = | I/G = 6 | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 46 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 257 | 0.147 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 251 | 0.121 | 0.121 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 251 | 0.121 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 251 | 0.121 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 112 | 0.058 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 222 | 0.128 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 135 | 0.064 | 0.064 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 149 | 0.078 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 149 | 0.078 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 186 | 0.108 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 8 | 2090 | 227 | 0.109 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 229 | 0.108 | 0.108 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 34 | 2062 | 224 | 0.109 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 213 | 0.108 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 148 | 0.084 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 125 | 0.060 | 0.060 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 44 | 2015 | 121 | 0.060 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 117 | 0.061 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

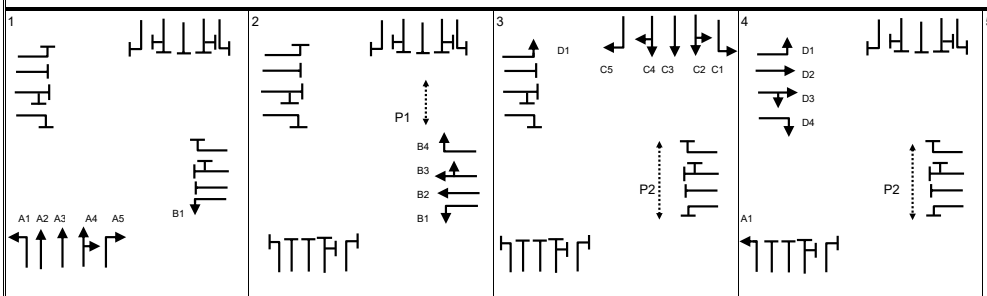



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.369 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 101% | | | | | |

**NOTE:**



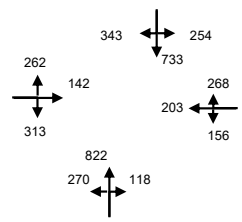

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 47 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 270 | 0.154 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 274 | 0.132 | 0.132 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 274 | 0.132 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 274 | 0.132 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 118 | 0.061 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 262 | 0.151 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 142 | 0.067 | 0.067 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 157 | 0.082 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 156 | 0.082 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 229 | 0.133 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 9 | 2087 | 279 | 0.134 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 283 | 0.134 | 0.134 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 29 | 2070 | 277 | 0.134 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 262 | 0.133 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 156 | 0.089 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 164 | 0.079 | 0.079 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 75 | 1968 | 155 | 0.079 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 152 | 0.079 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | | sec FGM = | | 12 | sec | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | | sec FGM = | | 19 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

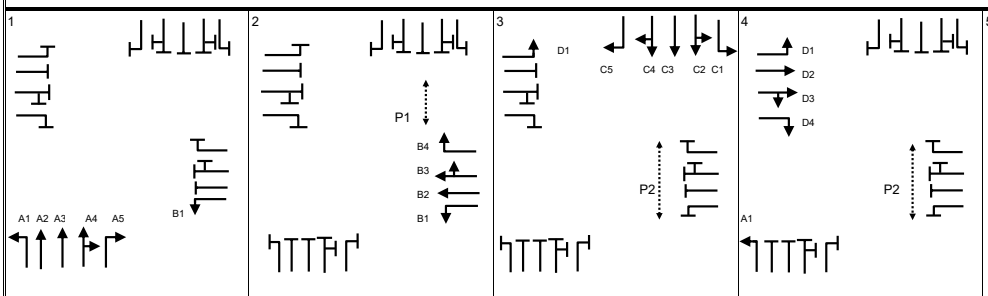



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.427 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 74% | | | | | |

**NOTE:**



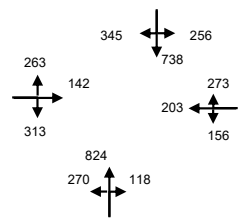

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 48 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 270 | 0.154 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 275 | 0.133 | 0.133 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 275 | 0.133 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 275 | 0.133 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 118 | 0.061 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 263 | 0.151 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 142 | 0.067 | 0.067 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 157 | 0.082 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 156 | 0.082 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 231 | 0.135 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 9 | 2087 | 281 | 0.135 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 284 | 0.134 | 0.134 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 28 | 2071 | 279 | 0.135 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 264 | 0.134 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 156 | 0.089 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 166 | 0.080 | 0.080 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 79 | 1963 | 156 | 0.079 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 154 | 0.080 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | | sec FGM = | | 12 | sec | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | | sec FGM = | | 19 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

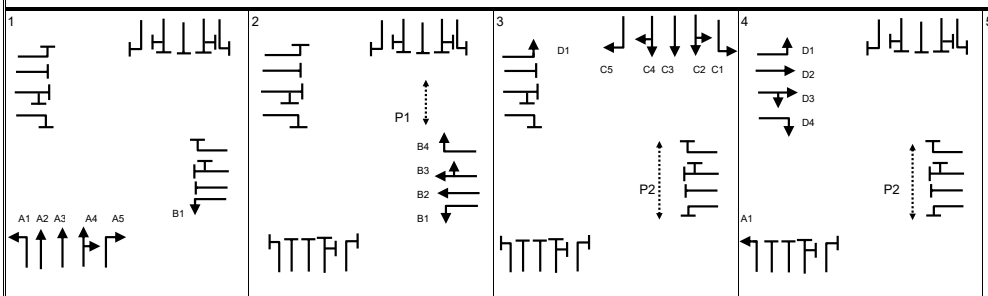



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.430 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 72% | | | | | |

**NOTE:**




| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

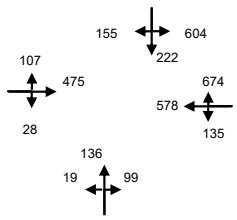
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 49 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 24 | 1897 | 79 | 0.042 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 88 | 0.042 | 0.042 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 87 | 0.041 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 107 | 0.062 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 238 | 0.115 | 0.115 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 237 | 0.115 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 290 | 0.170 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 314 | 0.169 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 195 | 0.094 | 0.094 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 85 | 1934 | 182 | 0.094 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 135 | 0.067 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 193 | 0.094 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 193 | 0.094 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 192 | 0.093 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 338 | 0.177 | 0.177 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 336 | 0.176 | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 1,2,3 | Min Crossing Time = | 5 | sec GM + | 9 | sec FGM = | 14 | sec | |
| | P2 | 1,2 | Min Crossing Time = | 5 | sec GM + | 7 | sec FGM = | 12 | sec | |
| | P3 | 3,4 | Min Crossing Time = | 5 | sec GM + | 5 | sec FGM = | 10 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

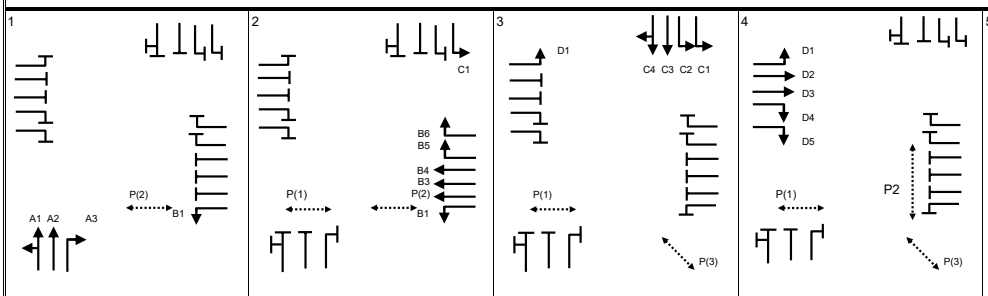



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.428 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 75% | | | | | |

**NOTE:**



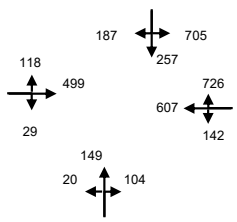

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 50 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 23 | 1899 | 85 | 0.045 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 94 | 0.045 | 0.045 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 94 | 0.045 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 118 | 0.068 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 250 | 0.121 | 0.121 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 249 | 0.121 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 338 | 0.198 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 367 | 0.198 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 230 | 0.111 | 0.111 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 87 | 1931 | 214 | 0.111 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 142 | 0.070 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 203 | 0.099 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 364 | 0.190 | 0.190 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 362 | 0.190 | | | | | | |
| Pedestrian Phase | | P1 | 1,2,3 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |
| | | P2 | 1,2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P3 | 3,4 | | Min Crossing Time = | | 5 | sec GM + | | 5 | sec FGM = | | 10 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

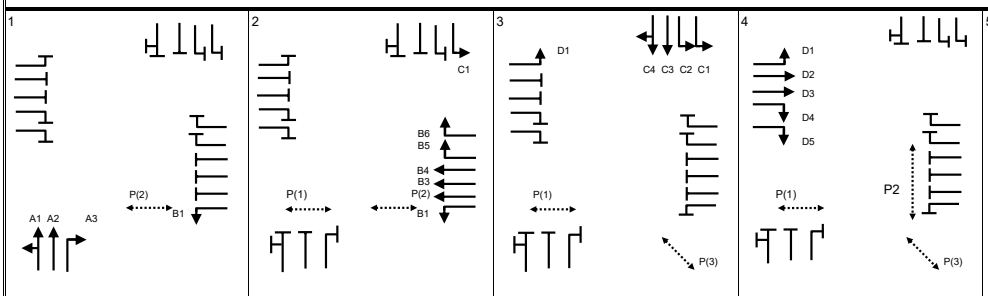



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.467 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 60% | | | | | |

**NOTE:**




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

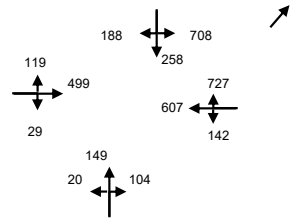
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 51 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 23 | 1899 | 85 | 0.045 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 94 | 0.045 | 0.045 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 94 | 0.045 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 119 | 0.068 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 250 | 0.121 | 0.121 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 249 | 0.121 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 339 | 0.199 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 369 | 0.199 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 231 | 0.111 | 0.111 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 87 | 1931 | 215 | 0.111 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 142 | 0.070 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 203 | 0.099 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 364 | 0.190 | 0.190 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 363 | 0.191 | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 1,2,3 | Min Crossing Time = | 5 | sec GM + | 9 | sec FGM = | 14 | sec | |
| | P2 | 1,2 | Min Crossing Time = | 5 | sec GM + | 7 | sec FGM = | 12 | sec | |
| | P3 | 3,4 | Min Crossing Time = | 5 | sec GM + | 5 | sec FGM = | 10 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

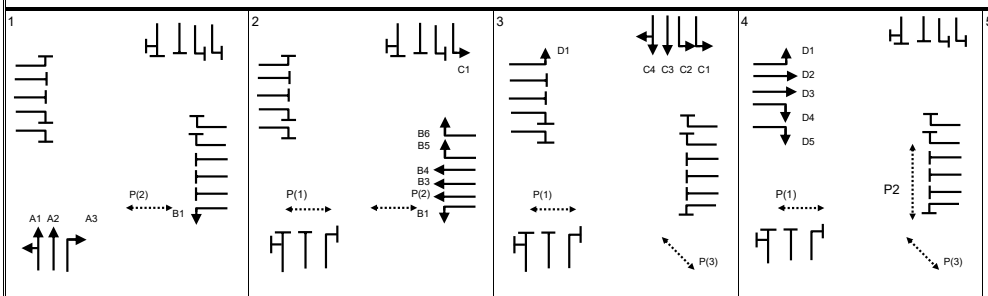



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.467 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 60% | | | | | |

**NOTE:**



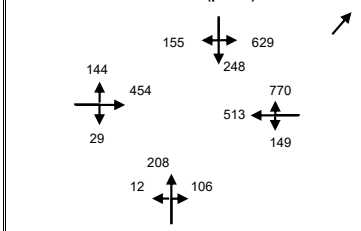

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 52 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 12 | 1930 | 102 | 0.053 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 112 | 0.053 | 0.053 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 112 | 0.053 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 144 | 0.083 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 227 | 0.110 | 0.110 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 227 | 0.110 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 302 | 0.177 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 327 | 0.177 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 208 | 0.100 | 0.100 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 79 | 1943 | 195 | 0.100 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 149 | 0.074 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 171 | 0.083 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 171 | 0.083 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 171 | 0.083 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 386 | 0.202 | 0.202 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 384 | 0.202 | | | | | | |
| Pedestrian Phase | | P1 | 1,2,3 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |
| | | P2 | 1,2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P3 | 3,4 | | Min Crossing Time = | | 5 | sec GM + | | 5 | sec FGM = | | 10 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

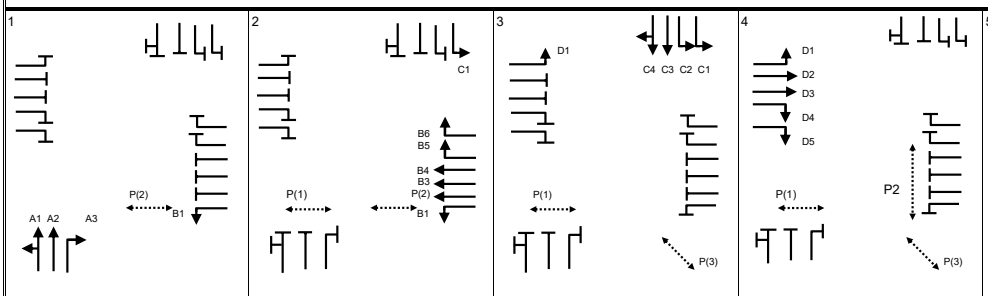



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.465 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 61% | | | | | |

**NOTE:**



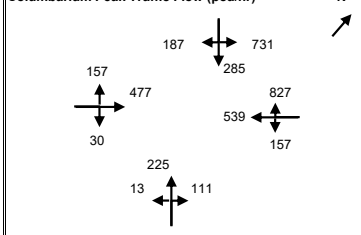

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 53 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 12 | 1930 | 110 | 0.057 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 120 | 0.057 | 0.057 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 119 | 0.057 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 157 | 0.090 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 239 | 0.116 | 0.116 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 238 | 0.115 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 350 | 0.205 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 381 | 0.206 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 244 | 0.118 | 0.118 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 82 | 1939 | 228 | 0.118 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 157 | 0.078 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 179 | 0.087 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 414 | 0.217 | 0.217 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 413 | 0.217 | | | | | | |
| Pedestrian Phase | | P1 | 1,2,3 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |
| | | P2 | 1,2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P3 | 3,4 | | Min Crossing Time = | | 5 | sec GM + | | 5 | sec FGM = | | 10 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

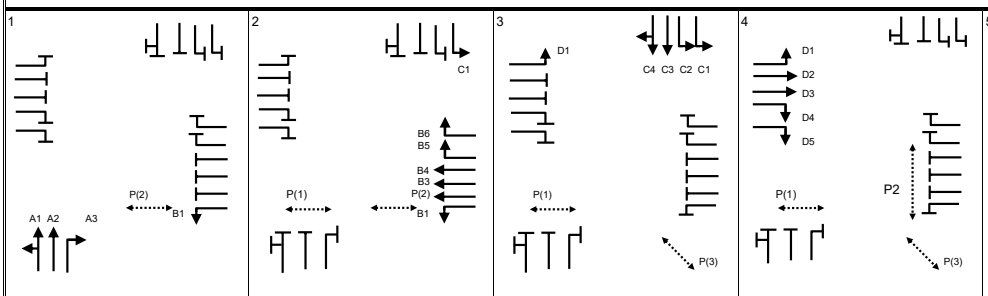



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.508 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 47% | | | | | |

**NOTE:**



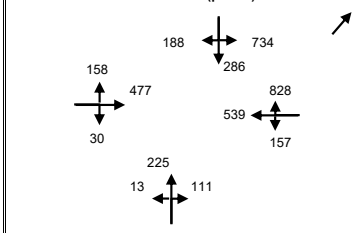

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 54 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 11 June 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 12 | 1930 | 110 | 0.057 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 120 | 0.057 | 0.057 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 119 | 0.057 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 158 | 0.091 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 239 | 0.116 | 0.116 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 238 | 0.115 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 352 | 0.206 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 382 | 0.206 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 245 | 0.118 | 0.118 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 82 | 1939 | 229 | 0.118 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 157 | 0.078 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 179 | 0.087 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 415 | 0.217 | 0.217 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 413 | 0.217 | | | | | | |
| Pedestrian Phase | | P1 | 1,2,3 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |
| | | P2 | 1,2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P3 | 3,4 | | Min Crossing Time = | | 5 | sec GM + | | 5 | sec FGM = | | 10 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

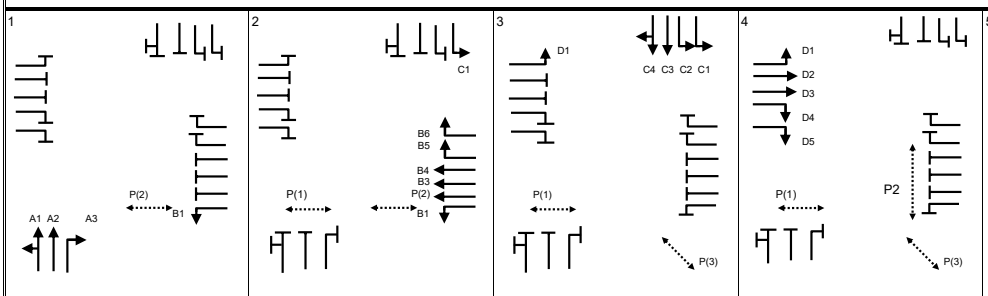



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.508 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 47% | | | | | |

**NOTE:**




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

Knight Frank 萊坊

Your Ref: TPB/Y/ST/47
Our Ref: LAS/AC/CK/TT (19-21788)

The Secretary
Town Planning Board
15/F North Point Government Offices
333 Java Road, North Point
Hong Kong

2 August 2021

**By Post and Email (tpbpd@pland.gov.hk)**

Dear Sirs

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

We refer to the captioned planning application No. Y/ST/47.

Further to our original submission made to the Town Planning Board ("TPB") via letter dated 16 October 2020 and the further information submitted on 1 April 2021 and 16 June 2021, we enclose a copy of Responses-to-Comments table addressing comments from the Environmental Protection Department.

The above information is submitted to address departmental comments received and constitutes no material change to the application. We sincerely request to exempt the application from publication and recounting requirements. Should there be any queries, please feel free to contact the undersigned or our Ms Tammy Tam at 2846 7483.

Yours faithfully
For and on behalf of
Knight Frank Petty Limited

**Calvin Kan** MHKIP RPP
Senior Manager, Planning & Development
Land Advisory Services
calvin.kan@hk.knightframk.com
D +852 2846 7429

cc Client (By email)
Sha Tin, Tai Po and North District Planning Office, (By email)
(Attn: Mr Derek Wong / Mr. Victor Ho)

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| Comments | Response(s) |
|---|---|
| **Environmental Protection Officer, Environmental Protection Department**<br>**received on 30 July 2021**<br>**(Contact: Mr. Nicholas Tsang \| Tel: 2835 1096)** | |
| The applicant should provide the relevant equation(s) to show the calculation of the sound power level of the noise source S01. Also, the directivity factor should be 2 instead of 1. | The directivity factor has been revised accordingly. Relevant equations showing the calculation of the sound power level of the noise source S01 can be found in the relevant excel table. |

| NSR Label | Descriptions | Nature of Use | Existing/ Planned Uses | Location | | Local Ground, (mPD) | Selected Floor | Floor Level, (mPD) | Assessment Point, z, (mPD) | ASR | Noise Criteria (ANL-5 / Background), $L_{eq}$ (30 min), dB(A) | | Unmitigated Noise Impact at NSR, $L_{eq}$ (30 min), dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | x Easting | y Northing | | | | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | Daytime (0700-1900) | Evening and Night Time (1900-0700) |
| N01 | No.92 Fo Tan Village | Residential | Existing | 838269 | 828358 | 4.3 | 1/F | 7.3 | 8.5 | B | 58.8 | N.A. | 49.8 | N.A. |

| Noise Source ID | Description of Noise Sources | Sources | Source Location | | | Measured SPL, dB(A) (free-field) | Noise Measurement Location | | | Distance from Source (m) | Measured Background SPL, dB(A) (free-field) | Corrected SPL, dB(A) (free-field) | Corrected SWL, dB(A), $L_{eq}$ (30 min) | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | % on-time within 30min (Night-time Peak) | Tonality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Planned | X | Y | Z, mPD | | x Easting | y Northing | Z, mPD | | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | | | | | |
| S01 | Joss Paper Furnace cum Dry-type APCE | Existing | 838279 | 828340 | 7.3 | 66.6 | 838274 | 828343 | 6.3 | 5 | 58.8 | 65.8 | 88.2 | OFF | 2 | 1 | 100% | N.A. | 6 |

**Prediction of Fixed Noise Source Impact on Identified NSR**

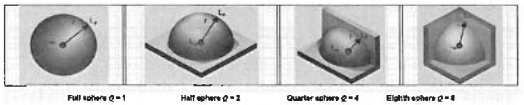
| NSR Labels | Descriptions | ASR | Noise Criteria (ANL-5 / Background), $L_{eq}$ (30 min) | | Noise Source ID | Description of Noise Sources | Unmitigated SWL, dB(A), $L_{eq}$ (30 min) | | Location | | | Directivity Factor (Q) | No. of Plant | % on-time within 30min (Daytime Peak) | Distance to NSR, d (m) | Correction for, dB(A) | | | | | | | | Noise Impact at NSR, dB(A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | | | Daytime (0700-1900) | Evening and Night Time (1900-0700) | X | Y | Z, mPD | | | | | Distance | No. | % on time (Daytime) | Screening by Features [1] | Enclosure/ Barrier | Tonality | Impulsive | Façade [2] | Daytime | Evening and Night Time |
| N01 | No.92 Fo Tan Village | B | 58.8 | N.A. | S01 | Joss Paper Furnace cum Dry-type APCE | 88 | OFF | 838279 | 825340 | 7.3 | 2 | 1 | 100% | 21 | -34.4 | 0 | 0 | -10 | 0 | 8 | 0 | 0 | 49.8 | N.A. |

Notes:

[1] Screening by structures (building/ wall) resulting in rough noise attenuation of 5 to 10 dB(A). The 10dB(A) attenuation has been claimed for situation where source- reciever are substantially blocked by a major obstacle e.g. buildings/ topography, and the 5dB(A) attenuation is claimed for case where the direct line of sight from source is barely blocked by obstable when viewed from the reciever.

[2] Directivity Factor (Q) is a correction index quantifies the deviation of the sound propagation from unitfrom spherical spreading. Q=1 for spherical sound propagation; Q=2 for hemispherical sound propagation; Q=4 for quarter spherical sound propagation and Q=8 for octantspherical sound propagation.

[3] Background noise level of N01 was measured at the façade of NSR, therefore façade correction is not applied.



## Frequency Analysis to determine the correction of tonality in accordance with IND-TM

Noise Source Type(s): ***Joss Paper Furnace cum Dry-type APCE*** SLM file: NOR139_4156695_210302_0004_PROFILE

| Freq | SPL (dB(A)) | 10^(SPL/10) | For 1/3 octave band | | | | | | | | For pair of 1/3 octave band | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Freq | 1/3 octave band | (a) | (b) | Ftone | (c) | Tonal? | Corr | Freq | highest of 1/3 octave band pair | average of 1/3 octave band pair | (a) | (b) | Ftone | (c) | Tonal? | Corr |
| 58.5 | 33.62 | 2301.4 | 58.5 | 33.6 | FALSE | FALSE | -- | FALSE | FALSE | NA | 58.5-63.7 | 36.3 | 35.0 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 63.7 | 36.28 | 4246.2 | 63.7 | 36.3 | FALSE | FALSE | -- | FALSE | FALSE | NA | 63.7-63.2 | 41.1 | 38.7 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 63.2 | 41.06 | 12764.4 | 63.2 | 41.1 | FALSE | TRUE | -- | FALSE | FALSE | NA | 63.2-59.6 | 41.1 | 39.9 | FALSE | TRUE | -- | FALSE | FALSE | NA |
| 59.6 | 38.81 | 7603.3 | 59.6 | 38.8 | FALSE | FALSE | -- | FALSE | FALSE | NA | 59.6-65.1 | 38.8 | 37.7 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 65.1 | 36.55 | 4518.6 | 65.1 | 36.6 | FALSE | FALSE | -- | FALSE | FALSE | NA | 65.1-58.5 | 44.4 | 40.5 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 58.5 | 44.43 | 27733.2 | 58.5 | 44.4 | FALSE | FALSE | -- | FALSE | FALSE | NA | 58.5-55.3 | 50.3 | 47.4 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 55.3 | 50.34 | 108143.4 | 55.3 | 50.3 | FALSE | TRUE | -- | FALSE | FALSE | NA | 55.3-57.4 | 50.3 | 49.2 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 57.4 | 48.02 | 63387.0 | 57.4 | 48.0 | FALSE | FALSE | -- | FALSE | FALSE | NA | 57.4-56.2 | 54.1 | 51.1 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 56.2 | 54.13 | 258821.3 | 56.2 | 54.1 | FALSE | FALSE | -- | FALSE | FALSE | NA | 56.2-56 | 60.7 | 57.4 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 56 | 60.73 | 1183041.6 | 56 | 60.7 | FALSE | FALSE | -- | FALSE | FALSE | NA | 56-55.2 | 80.1 | 70.4 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 55.2 | 80.11 | 102565192.6 | 55.2 | 80.1 | FALSE | TRUE | -- | FALSE | FALSE | NA | 55.2-64 | 80.1 | 79.2 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 64 | 78.36 | 68548822.6 | 64 | 78.4 | FALSE | FALSE | -- | FALSE | FALSE | NA | 64-58.9 | 89.7 | 84.0 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 58.9 | 89.71 | 935405674.1 | 58.9 | 89.7 | TRUE | FALSE | -- | FALSE | FALSE | NA | 58.9-54.2 | 91.3 | 90.5 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 54.2 | 91.31 | 1352072563.2 | 54.2 | 91.3 | TRUE | FALSE | -- | FALSE | FALSE | NA | 54.2-56 | 96.0 | 93.7 | TRUE | TRUE | 2.5 | FALSE | FALSE | NA |
| 56 | 96.03 | 4008667176.3 | 56 | 96.0 | TRUE | TRUE | *6.6* | TRUE | TRUE | 6 | 56-56.8 | 96.0 | 91.8 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 56.8 | 87.5 | 562341325.2 | 1000 | 87.5 | TRUE | FALSE | -- | FALSE | FALSE | NA | 56.8-54.8 | 89.7 | 88.6 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 54.8 | 89.72 | 937562006.9 | 1250 | 89.7 | TRUE | TRUE | 1.7 | FALSE | FALSE | NA | 54.8-52.3 | 89.7 | 89.1 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 52.3 | 88.54 | 714496326.1 | 1600 | 88.5 | TRUE | FALSE | -- | FALSE | FALSE | NA | 52.3-50.1 | 88.5 | 88.5 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 50.1 | 88.38 | 688652296.3 | 2000 | 88.4 | TRUE | FALSE | -- | FALSE | FALSE | NA | 50.1-47.4 | 88.4 | 86.0 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 47.4 | 83.55 | 226464430.8 | 2500 | 83.6 | TRUE | FALSE | -- | FALSE | FALSE | NA | 47.4-45.6 | 83.6 | 81.1 | TRUE | FALSE | -- | FALSE | FALSE | NA |
| 45.6 | 78.66 | 73451386.8 | 3150 | 78.7 | FALSE | FALSE | -- | FALSE | FALSE | NA | 45.6-43.3 | 78.7 | 74.0 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 43.3 | 69.3 | 8511380.4 | 4000 | 69.3 | FALSE | FALSE | -- | FALSE | FALSE | NA | 43.3-41 | 69.3 | 64.4 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 41 | 59.53 | 897428.8 | 5000 | 59.5 | FALSE | FALSE | -- | FALSE | FALSE | NA | 41-38.1 | 59.5 | 53.4 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 38.1 | 47.32 | 53951.1 | 6300 | 47.3 | FALSE | FALSE | -- | FALSE | FALSE | NA | 38.1-35.5 | 54.0 | 50.7 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 35.5 | 54.04 | 253512.9 | 8000 | 54.0 | FALSE | FALSE | -- | FALSE | FALSE | NA | 35.5-34.3 | 54.0 | 53.8 | FALSE | TRUE | -- | FALSE | FALSE | NA |
| 34.3 | 53.58 | 228034.2 | 10000 | 53.6 | FALSE | FALSE | -- | FALSE | FALSE | NA | 34.3-28.8 | 53.6 | 46.7 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 28.8 | 39.76 | 9462.4 | 12500 | 39.8 | FALSE | FALSE | -- | FALSE | FALSE | NA | 12.5k-16k | 39.8 | 33.0 | FALSE | FALSE | -- | FALSE | FALSE | NA |
| 25.9 | 26.31 | 427.6 | 16000 | 26.3 | FALSE | FALSE | -- | FALSE | FALSE | NA | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| | |
|---|---|
| Highest | 96.0 |
| Overall | 99.9 |
| ***Tonality Correction Adopted, dB(A)*** | ***6*** |

A correction for tonality shall be applied if, between 31.5Hz and 16kHz, any one-third octave band or any pair of adjacent one-third octave bands of the A-weighted spectrum of the noise under investigation satifies all of the following conditions:

(a) the level of the one-third octave band under consideration, or, in the case of a pair of bands, the level of the highest band in that pair, is not more than 15.0 dB below the level of the highest one-third octave band;

(b) the level of the one-third octave band under consideration, or, in the case of a pair of bands, the arithmetic average of the levels of the two bands, is more than 1.0 dB higher than the level of each of the adjacent bands on either side of the band or pair of bands under consideration; and

(c) the level difference, known as the tonality factor, ftone, between the level of the one-third octave band under consideration, or, in the case of a pair of bands, the arithmetic average of the levels of the two bands, and the arithmetic average of the levels of the adjacent bands on either side of the band or pair of bands under consideration is 3.0 dB or more

| $f_{tone}$(dB) | $C_{tone}$(dB(A)) | |
|---|---|---|
| | in cases where the frequency of any band under consideration is below 250 Hz | in cases where the frequency of each band under consideration is higher than or equal to 250 Hz |
| greater than or equal to 3.0 and less than 6.0 | 0 | 3 |
| greater than or equal to 6.0 and less than 9.0 | 3 | 6 |
| greater than or equal to 9.0 | 6 | 6 |

Your Ref: TPB/Y/ST/47
Our Ref: LAS/AC/CK/TT (19-21788)

The Secretary
Town Planning Board
15/F North Point Government Offices
333 Java Road, North Point
Hong Kong

16 August 2021

**By Hand and Email (tpbpd@pland.gov.hk)**

Dear Sirs

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

We refer to the captioned planning application No. Y/ST/47.

Further to our original submission made to the Town Planning Board ("TPB") via letter dated 16 October 2020 and the further information submitted on 1 April 2021, 16 June 2021 and 2 August 2021, we enclose a set of further information comprising the following:

**Attachment I** A Copy of Responses-to-Comments table addressing comments from the Food and Environmental Hygiene Department and Transport Department

**Attachment II** A Copy of Responses-to-Comments table addressing comments from the Public

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16 August 2021
Town Planning Board
Attention: Secretary, Town Planning Board

The above information is submitted to address departmental and public comments received and constitutes no material change to the application. We sincerely request to exempt the application from publication and recounting requirements. Should there be any queries, please feel free to contact the undersigned or our Ms Tammy Tam at 2846 7483.

Yours faithfully
For and on behalf of
Knight Frank Petty Limited

**Calvin Kan** MHKIP RPP
Senior Manager, Planning & Development
Land Advisory Services
calvin.kan@hk.knightfrank.com
D +852 2846 7429

| | | |
|---|---|---|
| cc | Client | (By email) |
| | Sha Tin, Tai Po and North District Planning Office,<br>(Attn: Mr Derek Wong / Mr. Victor Ho) | (By email) |
| | Traffic Engineering (NTE) Division, Transport Department<br>(Attn: Mr. Thomas Man) | (By email) |

# Attachment I

# Responses-to-Comments Table addressing Comments from Government Departments

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information (August 2021)

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| Comments | Response(s) |
|---|---|
| **Director of Food and Environmental Hygiene**<br>**received on 30 July 2021**<br>**(Contact: Mr. Raymond Chan \| Tel: 3141 1231)** | |
| 骨灰所辦就「香港孝思園有限公司」所提交的管理方案的意見如下：<br><br>第(1)骨灰安置所基本資料<br><br>骨灰安置所地址與指明文書申請資料不符。根據本署紀錄，指明文書申請的骨灰安置所地址應為「新界沙田火炭火炭村93 號(丈量約份第176 約地段第551 號A 段及餘段、第640 號及第644 號A 分段、B 分段及餘段) 」。申請人請澄清骨灰安置所的地址。 | 申請人正準備向食環署更改指明文書中骨灰安置所的地址。由於有關修改需時，管理方案中的地址與指明文書申請資料暫時不符。待正式修改過後，骨灰安置所地址及指明文書中的資料均為「新界沙田火炭火炭村 93 號 (丈量約份第 176 約地段第 551 號餘段 (部分)、第 640 號 (部分)、第 644 號 B 分段 (部分), 第 644 號餘段 (部分) 及 毗連的政府土地 (部分)) 」。 |
| **Transport Officer, Traffic Engineering (NTE) Division**<br>**received on 5 August 2021**<br>**(Contact: Mr. Thomas Man \| Tel: 2399 2402)** | |
| 1. Para. 2.8 to 2.34 of TIA report – According to the previous TIA report, the number of peak hour visitor on Ching Ming Festival 2018 was 177 visitors/hour, which was 27.3% more than that on Ching Ming Festival 2021 of 139 visitors/hour. The reduction in the number of peak hour visitor may be the combined effect of COVID-19 and 5-day holidays from 2 April 2021 to 6 April 2021. Please justify it is | The Applicant has implemented a Visit-by-Appointment arrangement since October 2019, i.e. during the 2019 Chung Yeung Festival Period. With this arrangement, there is reduction in the number of visitors during the peak hours of the Ching Ming and Chung Yeung Festival period.<br><br>Hence, the number of peak hour visitor during the 2021 Ching Ming Festival Period represents the **latest** operational condition of the Subject Site with |

<table>
<tr><th>Comments</th><th>Response(s)</th></tr>
<tr><td>representable to use the survey data of 2021 Ching Ming Festival period for the traffic impact assessment arising from the proposed development.</td><td>implementation of a Visit-by-Appointment arrangement and is considered suitable for carrying out the traffic impact assessment.<br><br>In addition, further review of the traffic flows on Fo Tan Road between Lok King Street and Shan Mei Street / Min Fong Street found that the observed columbarium peak hour 2-way traffic flow on 2021 Ching Ming Festival Day is some 15% higher than those observed in 2018. In particular, the northbound traffic flow, i.e. entering Fo Tan, was some 30% higher in 2021 than 2018. Table 1 compares the 2018 and 2021 observed traffic flow.<br><br>TABLE 1 COMPARISON OF CHING MING FESTIVAL DAY COLUMBARIUM PEAK HOUR TRAFFIC FLOW (PCU) ON FO TAN ROAD<br><table><tr><th>Direction</th><th>2018 Ching Ming Festival Day [a]</th><th>2021 Ching Ming Festival Day [b]</th><th>Difference [b] – [a]</th></tr><tr><td>Northbound</td><td>753</td><td>980</td><td>+227 (+30%)</td></tr><tr><td>Southbound</td><td>828</td><td>845</td><td>+17 (+2%)</td></tr><tr><td>TOTAL</td><td>1,581</td><td>1,825</td><td>+238 (+15%)</td></tr></table><br>In view of the above, the survey data collected during the recent 2021 Ching Ming Festival Period is considered suitable for carrying out the traffic impact assessment.</td></tr>
<tr><td>2. Table 2.3 of TIA report – The total number of visitors during 2021 Ching Ming Festival period is 2,320 persons while the number of sold and occupied niches is 801. In other words, the average number of visitors per sold and occupied niches is 2.89 visitors/niche only. Please advise the total number of visitors and sold and occupied niches during Ching Ming Festival period in 2018 or other years without COVID-19 and social event.</td><td>The visitor record available during the 2018 Ching Ming Festival Period is summarised in Table 2 attached, which includes:<br>(i) 2nd Sundays before the Festival Day,<br>(ii) 1st Saturday and 1st Sunday before the Festival Day,<br>(iii) Ching Ming Festival Day,<br>(iv) 1st Saturday and 1st Sunday after the Festival Day, and<br>(v) Public Holidays between (i) and (iv).<br><br>As shown in Table 2, the number of visitors during 2018 Ching Ming Festival Period was 2,147, while the number of sold and occupied niches was also 801. Hence, the average number of visitors per sold and occupied niches is 2.68 visitors / niche.</td></tr>
</table>

| Comments | Response(s) |
|---|---|
| | To compare with the number of visitors during 2021 Ching Ming Festival Period, the visitor record was extracted to cover the same period of time as in the 2018 Ching Ming Festival Period, i.e. (i) to (v) above, which is presented in Table 3 attached.<br><br>As shown in Table 3, the number of visitors during the corresponding 2021 Ching Ming Festival Period was 2,028, and the number of sold and occupied niches was 801. Hence, the average number of visitors per sold and occupied niches is 2.53 visitors/niche, which is only around 5% different from the 2018 Ching Ming Festival Period.<br><br>The difference in overall average number of visitors per sold and occupied niches between 2018 and 2021 Ching Ming Festival Period is insignificant, i.e. 2.68 versus 2.53 visitor / niche. |

TABLE 2 RESULTS OF VISITOR COUNTS DURING THE 2018 CHING MING FESTIVAL PERIOD

| **Hours** | **Hourly Number of Visitors on Date of Survey** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sun, 25th Mar 2018 | Fri., 30 Mar 2018 (Public Holiday) | Sat, 31st Mar 2018 (Public Holiday) | Sun, 1st Apr 2018 (Public Holiday) | Mon., 2nd Apr 2018 (Public Holiday) | Wed., 5th Apr 2021 (**Ching Ming Festival**) | Sat., 7th Apr 2021 | Sun, 8th Apr 2021 | **TOTAL** | *Percentage* |
| 0900–1000 | 38 | 5 | 12 | 46 | 11 | 90 | 0 | 22 | 224 | *10%* |
| 1000–1100 | 68 | 19 | 67 | 81 | 8 | 122 | 14 | 31 | 410 | *19%* |
| 1100–1200 | 25 | 42 | 32 | 55 | 33 | **177** | 27 | 69 | 460 | *21%* |
| 1200–1300 | 20 | 22 | 27 | 65 | 13 | 116 | 5 | 38 | 306 | *14%* |
| 1300–1400 | 88 | 14 | 7 | **97** | 6 | 57 | 22 | 38 | 329 | *15%* |
| 1400–1500 | 15 | 12 | 3 | 40 | 10 | 42 | 28 | 92 | 242 | *11%* |
| 1500–1600 | 3 | 14 | 5 | 18 | 4 | 40 | 7 | 25 | 116 | *5%* |
| 1600 - 1700 | 4 | 0 | 1 | 6 | 18 | 16 | 2 | 13 | 60 | ***3%*** |
| **TOTAL** | 261 | 128 | 154 | 408 | 103 | 660 | 105 | 328 | 2,147 | ***100%*** |
| *Percentage* | *12%* | *6%* | *7%* | *19%* | *5%* | *31%* | *5%* | *15%* | ***100%*** | **--** |

| Comments | Response(s) |
|---|---|

TABLE 3 EXTRACT RESULTS OF VISITOR COUNTS DURING THE 2021 CHING MING FESTIVAL PERIOD

| **Hours** | **Hourly Number of Visitors on Date of Survey** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sun, 21st Mar 2021 | Sat, 27th Mar 2021 | Sun, 28th Mar 2021 | Fri, 2nd Apr 2021 (Public Holiday) | Sat, 3rd Apr 2021 (Public Holiday) | Sun, 4th Apr 2021 (**Ching Ming Festival**) | Mon, 5th Apr 2021 (Public Holiday) | Tue, 6th Apr 2021 (Public Holiday) | Sat., 10th Apr 2021 | Sun, 11th Apr 2021 | **TOTAL** | *Percentage* |
| 0900–1000 | 55 | 17 | 38 | 31 | 15 | 20 | 12 | 9 | 0 | 8 | 205 | *10%* |
| 1000–1100 | 12 | 12 | 63 | 33 | 33 | 66 | 46 | 27 | 7 | 50 | 349 | *17%* |
| 1100–1200 | 6 | 11 | **91** | 50 | 10 | **139** | 49 | 51 | 13 | 27 | 447 | *22%* |
| 1200–1300 | 23 | 23 | 64 | 38 | 29 | 95 | 45 | 22 | 14 | 58 | 411 | *20%* |
| 1300–1400 | 25 | 2 | 33 | 23 | 56 | 73 | 26 | 20 | 6 | 21 | 285 | *14%* |
| 1400–1500 | 5 | 9 | 24 | 23 | 19 | 17 | 11 | 10 | 17 | 36 | 171 | *8%* |
| 1500–1600 | 6 | 2 | 14 | 9 | 4 | 34 | 7 | 14 | 10 | 13 | 113 | *6%* |
| 1600 - 1700 | 0 | 2 | 6 | 3 | 6 | 17 | 10 | 0 | 0 | 3 | 47 | ***2%*** |
| **TOTAL** | **132** | **78** | **333** | **210** | **172** | **461** | **206** | **153** | **67** | **216** | 2,028 | ***100%*** |
| *Percentage* | *7%* | *4%* | *16%* | *10%* | *8%* | *23%* | *10%* | *8%* | *3%* | *11%* | ***100%*** | **--** |

| | |
|---|---|
| 3. Table 2.12 of TIA report – Service hours for some of public transport services are incorrect, e.g. KMB 48P, 285A, GMB 811B, 811P, 811S, etc. Please revise. In addition, please add abbreviation "CTB" in the note under Table 2.12 on Page 10. | Service frequency of the public transport services are checked and updated based on the information obtained from the operator's website or from Transport Department and is found in attached Table 2.12 (**Annex A**). |
| 4. Para. 2.30 of TIA report – There is no Table 2.16 in the report. Please revise. | This is a typo. "Table 2.16" should read "Table 2.12". |
| 5. Para. 3.5 to 3.9 of TIA report – It is proposed to impose an hourly visiting quota of 150 persons during the Ching Ming and Chung Yeung Festival day and their shadow periods of 2 weekends before and after the festival day. Please review whether the total visiting quota during festival periods could meet the demand arising from proposed development and revise the proposed hourly visiting quota | Due to limited site area and to avoid overcrowding within the Subject Site, the hourly visiting quota of 150 persons during the Ching Ming and Chung Yeung Festival Period remains unchanged.<br><br>The implementation period will be extended to include 3 weekends before and |

| Comments | Response(s) |
|---|---|
| or implementation period of special traffic arrangement as appropriate. | after the festival day, including any public holidays in between. Table 4 compares the visitor demand and visiting capacity per festival period.<br><br>TABLE 4 COMPARISON ON VISITOR DEMAND AND VISITING CAPACITY OF THE SUBJECT SITE |

| | |
|---|---|
| **Estimated Visitor Demand per Festival Period** | |
| Number of visitors per sold and occupied niches | = 2.89 visitors/niche |
| Total number of niches | = 3,499 niches |
| Total number of visitor (Visitor Demand per Festival Period) | = 3,499 niches x 2.89 visitors/niche<br>**= 10,112 visitors** |
| **Visiting Capacity per Festival Period** | |
| Opening hours of the Subject Site | = 0900 to 1800 hours = 9 hr/day |
| Daily visiting capacity | = 150 visitors/hr x 9 hr / day<br>= 1,350 visitors/day |
| Number of Days within the Festival Period | = Minimum 12 Days<br>(including 3 weekends before and 3 weekends after the Festival Day, and assuming the Festival Day falls on a Saturday or Sunday; other public holidays in between also excluded.) |
| Minimum Visiting Capacity per Festival Period | = 1,350 visitors / day x 12 days<br>**= 16,200 visitors**<br><br>**> Visitor Demand of 10,112 visitors, hence, OK** |

<table>
<tr><th>Comments</th><th>Response(s)</th></tr>
<tr><td></td><td>As shown in Table 4, the visitor demand is estimated to be some 10,112 during the Festival Period; whereas the visiting capacity for minimum 12 days will be 16,200 visitors, i.e. at least 1.6 times more than the visitor demand.<br><br>Hence, the proposed hourly visiting quota of 150 persons with the proposed implementation period of minimum 12 days, i.e. 3 weekends before and 3 weekends after the festival day, is considered appropriate and will be sufficient to accommodate the expected visitor demand.<br><br>In addition, special arrangement can also be requested by the visitors to the Applicant on a weekday. Visitors must contact the Applicant in-advance for this special arrangement. However, the number of visitors on weekday is expected to be negligible, and shall not result in any adverse traffic impact.</td></tr>
<tr><td>6. Table 3.1 of TIA report – In conjunction with Comments 1, 2 and 5 above, please review the visitor and traffic generation of the proposed development</td><td>In view that the hourly visiting quota of 150 persons remains unchanged, the visitor and traffic generations of the proposed development remain the same as stated in Table 3.1 of the TIA.</td></tr>
<tr><td>7. Para. 4.9 of TIA report – Please elaborate how to estimate the traffic and pedestrian generated by other known developments.</td><td><u>Traffic Generation for Proposed Home Ownership Scheme Development (Choi Wo Court)</u><br>Traffic generation for the Choi Wo Court is estimated based on the trip generation rates obtained from the TPDM, which are summarised in Table 5.<br><br>TABLE 5 TRIP RATES FROM TPDM<br><table><tr><th></th><th colspan="2">AM Peak Hour</th><th colspan="2">PM Peak Hour</th></tr><tr><th></th><th>Generation</th><th>Attraction</th><th>Generation</th><th>Attraction</th></tr><tr><td>Trip Rates from TPDM (pcu/hr/flat)</td><td>0.0622</td><td>0.0426</td><td>0.0297</td><td>0.0401</td></tr></table>Note: Mean trip rates for Subsidised Housing: HOS/PSPS<br><br>To be conservative, the highest trip rates presented in Table 5 are adopted to calculate the Columbarium Peak Hour trip generation and attraction, and are presented in Table 6.</td></tr>
</table>

| Comments | Response(s) |
|---|---|

TABLE 6 COLUMBARIUM PARK HOUR TRAFFIC GENERATION AND ATTRACTION OF CHOI WO COURT

| Item | Generation | Attraction |
|---|---|---|
| Trip Rates Adopted (pcu/hr/flat) | 0.0622 | 0.0426 |
| Trip Generation / Attraction adopted (pcu/hr) | 55 | 38 |

**Traffic Generation for Comprehensive Development with Government, Institution or Community Facilities and Public Transport Interchange (TPB A/ST/927)**

Traffic generation for the Comprehensive Development (TPB A/ST/927) is referenced to the approved Traffic Impact Assessment report, and is summarized in Table 7.

TABLE 7 TRAFFIC GENERATION AND ATTRACTION OF TPB A/ST/927

| | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | Generation | Attraction | Generation | Attraction |
| Phase 1 | 121 | 107 | 65 | 79 |
| Phase 2/3 | 240 | 133 | 131 | 176 |
| Total Trip Generation (pcu/hr) | **361** | 240 | 196 | **255** |

Note:
Vehicular Access for Phase 1 is located on Au Pui Wan Street.
Vehicular Access for Phase 2/3 is located on Lok King Street.

To be conservative, the highest trip generation and attraction between the AM and PM peak hours are adopted to represent the Columbarium Peak Hour trip generation and attraction, and summarised in Table 8.

TABLE 8 COLUMBARIUM PEAK HOUR TRAFFIC GENERATION AND ATTRACTION OF TPB A/ST/927

| Item | Generation | Attraction |
|---|---|---|
| Phase 1 | 121 | 79 |
| Phase 2/3 | 240 | 176 |
| Trip Generation / Attraction Adopted (pcu/hr) | **361** | **255** |

Note:
Vehicular Access for Phase 1 is located on Au Pui Wan Street.

| Comments | Response(s) |
|---|---|
| | Vehicular Access for Phase 2/3 is located on Lok King Street.<br><br>**<u>Traffic Generation for Proposed Industrial Development with Public Vehicle Park at STTL 613</u>**<br>The Proposed Industrial Development at STTL 613 will be constructed as a Data Centre with Public Vehicle Park. In view that the TPDM published by the Transport Department has no trip generation rates for both data centre and public vehicle park (both private car and commercial vehicle), traffic consultant in-house trip generation rates are adopted, which are summarised in Table 9. |

TABLE 9 TRIP RATES FOR PROPOSED INDUSTRIAL DEVELOPMENT WITH PUBLIC VEHICLE PARK AT STTL 613

| | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | **Generation** | **Attraction** | **Generation** | **Attraction** |
| Data Centre (pcu/hr/100m$^2$) | 0.0120 | **0.0284** | **0.0334** | 0.0150 |
| Public Vehicle Park (Private Car) (pcu/hr/space) | 0.0975 | 0.1895 | **0.1684** | **0.2168** |
| Public Vehicle Park (Commercial Vehicle) (pcu/hour/space) | **0.1881** | 0.1248 | 0.0733 | **0.1446** |

To be conservative, the highest trip rates presented in Table 9 are adopted to estimate the Columbarium Peak Hour trip generation and attraction, which are presented in Table 10.

TABLE 10 COLUMBARIUM PARK HOUR TRAFFIC GENERATION AND ATTRACTION OF PROPOSED INDUSTRIAL DEVELOPMENT WITH PUBLIC VEHICLE PARK AT STTL 613

| Item | Generation | Attraction |
|---|---|---|
| **Trip Rates Adopted** | | |
| Data Centre (pcu/hr/100m$^2$) | 0.0334 | 0.0284 |
| Public Vehicle Park (Private Car) (pcu/hr/space) | 0.1684 | 0.2168 |

| Comments | Response(s) |
|---|---|

| | | |
|---|---|---|
| Public Vehicle Park (Commercial Vehicle) (pcu/hour/space) | 0.1881 | 0.1446 |
| **Trip Generation / Attraction (pcu/hr)** | | |
| Data Centre | 29 | 25 |
| Public Vehicle Park (Private Car) | 35 | 44 |
| Public Vehicle Park (Commercial Vehicle) | 19 | 14 |
| **TOTAL** | **83** | **83** |

**Pedestrian Generation for Proposed Home Ownership Scheme Development (Choi Wo Court)**

Choi Wo Court located at Wo Sheung Tun Street is some 1km away from the Subject Site, hence, pedestrian generated by Choi Wo Court is not expected to walk within the study area for pedestrian analysis between Fo Tan Village and Fo Tan Station Exit B beneath the Fo Tan Road Flyover.

**Pedestrian Generation for Comprehensive Development with Government, Institution or Community Facilities and Public Transport Interchange (TPB A/ST/927)**

The Comprehensive Development will have direct internal pedestrian connections to Fo Tan Station at its podium level, and to the Public Transport Interchanges at Au Pui Wan Street and Lok King Street; hence, pedestrian generated is not expected to walk within the study area for pedestrian analysis between Fo Tan Village and Fo Tan Station Exit B beneath the Fo Tan Road Flyover.

**Pedestrian Generation for Proposed Industrial Development with Public Vehicle Park at STTL 613**

The Proposed Industrial Development with Public Vehicle Park at STTL 613 located at Tsung Tau Ha Road is some 700m away from the Subject Site, hence, pedestrian generated by this Proposed Industrial Development is not expected to walk within the study area for pedestrian analysis between Fo Tan Village and Fo Tan Station Exit B beneath the Fo Tan Road Flyover.

| Comments | Response(s) |
|---|---|
| | **<u>Updated Traffic Forecast and Junction Analysis</u>**<br>After further review, it is noted that traffic generated by Phase 2/3 of the Proposed Comprehensive Development with Government, Institution or Community Facilities and Public Transport Interchange (TPB A/ST/927) was not included in the previous traffic forecast and junction analysis, hence, Figures 4.1 and 4.2 show the updated traffic forecast for the Columbarium Peak Hour on Ching Ming Festival Day and its Shadow Period. Table 4.5 (**Annex A**) attached summarises the update junction analysis.<br><br>The results show that the surveyed junctions are expected to operate with capacities during the columbarium peak hour of Festival Shadow Period and on Festival Day. Hence, traffic associated with the Proposed Columbarium has no significant adverse traffic impact. |
| 8. Section 5 of Management Plan – Please clarify whether the ”雙警戒線外” are government land or private land. It is considered that queuing at government land without agreed by relevant departments is not appropriate. | With the use of advance appointment via website and mobile phone App, the number of visitors in different timeslots will be strictly controlled by MPHK. The number of visitors will be limited to 150 persons per hour or 75 persons per 30-minute session; and the waiting area within the Subject Site has a capacity to hold 120 persons at any one time. The waiting area reserved within the Application Site is hence considered sufficient to accommodate the scheduled visitors.<br><br>The Subject Site has sufficient waiting area to accommodate the number of arriving visitors at the beginning of each grave sweeping session. As such, queuing outside the MPHK on public footpath beyond the ”雙警戒線外” is no longer anticipated. Relevant arrangement to queue outside is removed from Section 5 of the Management Plan (**Annex B**). |

# Annex A

# Replacement Pages for Traffic Impact Assessment

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information (Aug 2021)

# Updated Tables

# TABLE 2.12 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR MPHK [UPDATED]

| Route | Routing | Frequency (min) | Nearest Stop |
|---|---|---|---|
| CTB 989 | Munsang College, Tai On Street → Fo Tan Chun Yeung Estate | 4 per PM (1) | A |
| | Fo Tan Chun Yeung Estate → Munsang College, Tai On Street | 4 per AM (1) | B |
| KMB 48P | Tsing Lung Tau → Fo Tan Chun Yeung Estate | 1 AM +1 PM Service(1) | A |
| | Fo Tan Chun Yeung Estate → Tsing Lung Tau | 1 AM +1 PM Service(1) | B |
| KMB 73A | Wah Ming Estate → Yu Chui Court | 30 – 35 | A |
| | Yu Chui Court → Wah Ming Estate | 20 – 30 | B |
| KMB 80M | Kowloon Tong Railway Station → Sui Wo Court | 20 – 30 | A |
| | Sui Wo Court → Kowloon Tong Railway Station | 20 – 30 | B |
| KMB 81K | Sun Tin Wai Estate → Sui Wo Court | 7 – 15 | A |
| | Sui Wo Court → Sun Tin Wai Estate | 7 – 15 | B |
| KMB 85 | Kowloon City Ferry Pier → Shan Mei Street | 13 – 25 | A |
| | Shan Mei Street → Kowloon City Ferry Pier | 15 – 20 | B |
| KMB 88K | Hin Keng → Royal Ascot | 12 – 20 | D |
| | Royal Ascot → Hin Keng | 12 – 20 | E |
| KMB 88X | Ping Tin → Fo Tan Chun Yeung Estate | 20 – 30 | A |
| | Fo Tan Chun Yeung Estate→ Ping Tin | 20 – 30 | B |
| KMB 280X | Tsim Sha Tsui East (Mody Road) → Sui Wo Court | 15 – 25 | A |
| | Sui Wo Court → Tsim Sha Tsui East (Mody Road) | 15 – 30 | B |
| KMB 285 | Sha Tin Central → Fo Tan Chun Yeung Estate | 15 – 30 | A |
| | Fo Tan Chun Yeung Estate → Sha Tin Central (to Sha Tin) | 15 – 30 | B |
| KMB 285A | Fo Tan Chun Yeung Estate → Fo Tan Station Bus Terminus (Circular) | 3 per days(1) | C |
| NWFB 798 | Tiu Keng Leng Station → Fo Tan (Chun Yeung Estate) | 12 – 30 | A |
| | Fo Tan (Chun Yeung Estate) → Tiu Keng Leng Station | 10 – 20 | B |
| GMB 28K | Shatin (Pak Hok Ting Street)→ Tai Po Market Station | 6 – 9 | D |
| | Tai Po Market Station → Shatin (Pak Hok Ting Street) | 6 – 9 | E |
| GMB 28S | Sha Tin (Pak Hok Ting Street) → Pak Shek Kok (Providence Bay) | 30 – 45 | D |
| | Pak Shek Kok (Providence Bay) → Sha Tin (Pak Hok Ting Street) | 30 – 45 | E |
| GMB 60K | Sha Tin Station → Kwei Tei New Village | 4 - 6 | A |
| | Kwei Tei New Village → Sha Tin Station | 4 - 6 | B |
| GMB 60P | Sha Tin Station → Chun Yeung Estate | 2 – 3(2) | A |
| | Chun Yeung Estate → Sha Tin Station | 2 – 3(2) | B |
| GMB 61S | Mong Kok Station → Fo Tan | 30(3) | A |
| GMB 62K | Sha Tin Station → Shatin Lodge | 7 – 15 | A |
| | Shatin Lodge → Sha Tin Station | 7 – 15 | B |
| GMB 65K | Wong Nai Tau → Fo Tan Station | 10 – 20 | A |
| | Fo Tan Station → Wong Nai Tau (to Wong Nai Tau) | 10 – 20 | B |
| GMB 69K | Sha Tin Station (Pai Tau Street) → Ville De Jardin / Greenwood Terrace | 4 – 10 | A |
| | Ville De Jardin / Greenwood Terrace → Sha Tin Station (Pai Tau Street) | 4 – 10 | B |
| GMB 481 | Tsuen Wan Central → Fo Tan (Shan Mei Street) | 6 – 15 | A |
| | Fo Tan (Shan Mei Street) → Tsuen Wan Central | 6 – 15 | B |
| GMB 811 | Yu Chui Court → Sui Wo Court | 8 | D |
| | Sui Wo Court → Yu Chui Court | 8 | E |

Note: (1) No services on Saturdays, Sundays and Public Holidays
(2) No services on Sundays and Public Holidays
(3) Overnight service.

KMB – Kowloon Motor Bus
CTB – Citybys
NWFB – New World First Bus
GMB – Green Minibus

| Nearest Stop | Locaiton of Stop | Approx. Distance (m) | Approx. Walking Time (min) |
|---|---|---|---|
| A | Fo Tan Village (Fo Tan bound) | 125m | 1.5 min |
| B | Fo Tan Village (Shatin bound) | 125m | 1.5min |
| C | Fo Tan Station Bus Terminus | 250m | 3.0 min |
| D | Fo Tan Station (Northbound) | 400m | 4.5 min |
| E | Fo Tan Station (Southbound) | 450m | 5.0 min |

TABLE 2.12 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR MPHK (CONT'D) [UPDATED]

| Route | Routing | Frequency (min) | Nearest Stop |
|---|---|---|---|
| GMB 811A | Bella Vista → Greenwood Terrace | 20 – 25 | D |
| | Greenwood Terrace → Bella Vista | 20 – 25 | E |
| GMB 811B | Yiu On → Fo Tan (Cheung Lek Mei Street) | 10 – 20 (1) | D |
| | Fo Tan (Cheung Lek Mei Street)→ Yiu On | 10 – 20 (1) | E |
| GMB 811P | City One → Royal Ascot | 8 | D |
| | Royal Ascot → City One | 8 | E |
| GMB 811S | Yiu On Estate → Sui Wo Court | 20 – 30 | D |
| | Sui Wo Court → Yiu On Estate | 20 – 30 | E |
| GMB 814 | Sha Tin (Pak Hok Ting Street) → Lai Ping Road | 15 | D |
| | Lai Ping Road → Sha Tin (Pak Hok Ting Street) | 15 | E |

Note: (1) No services on Saturdays, Sundays and Public Holidays
(2) No services on Sundays and Public Holidays
(3) Overnight service.

KMB – Kowloon Motor Bus
CTB – Citybys
NWFB – New World First Bus
GMB – Green Minibus

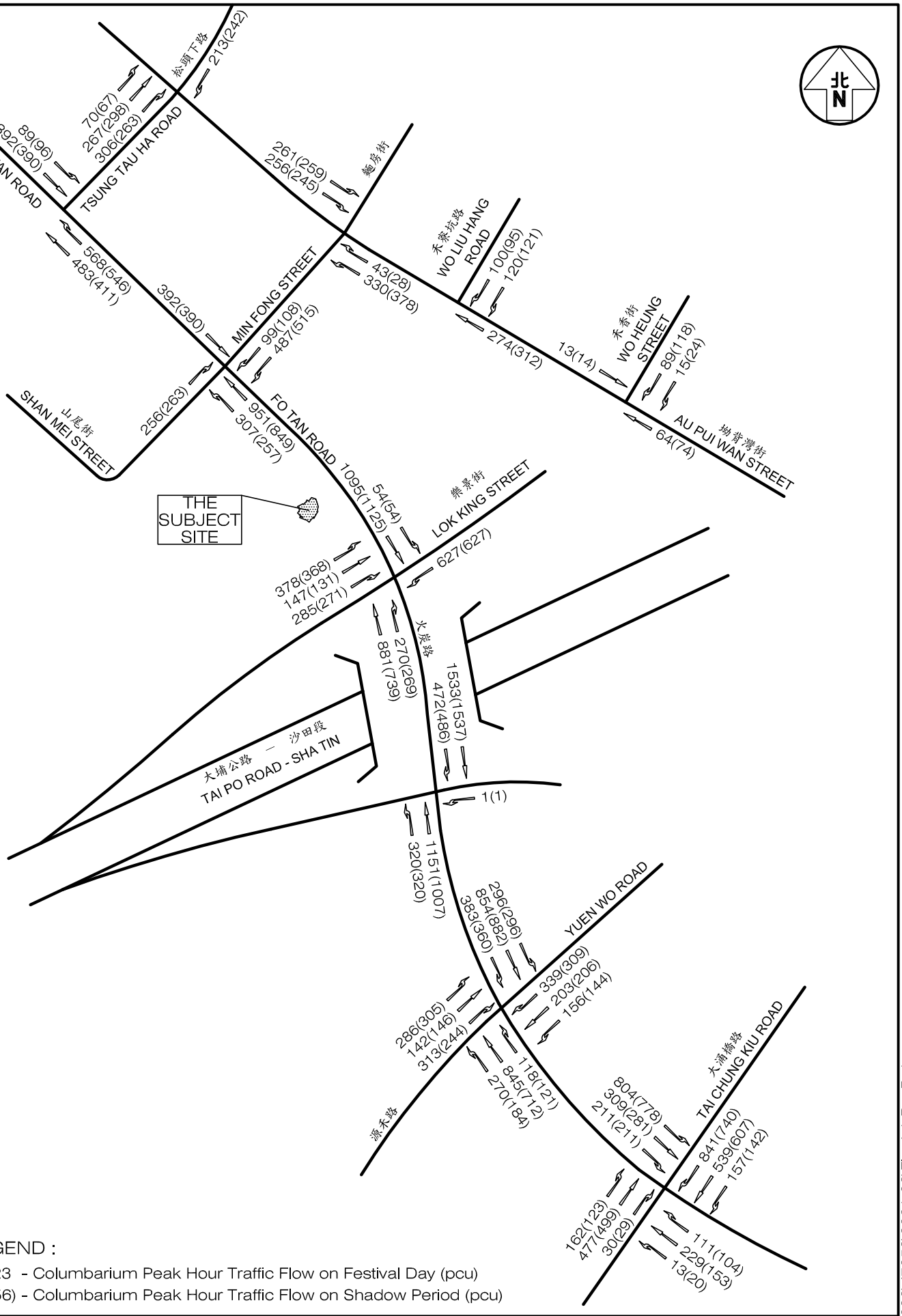
| Nearest Stop | Locaiton of Stop | Approx. Distance (m) | Approx. Walking Time (min) |
|---|---|---|---|
| A | Fo Tan Village (Fo Tan bound) | 125m | 1.5 min |
| B | Fo Tan Village (Shatin bound) | 125m | 1.5min |
| C | Fo Tan Station Bus Terminus | 250m | 3.0 min |
| D | Fo Tan Station (Northbound) | 400m | 4.5 min |
| E | Fo Tan Station (Southbound) | 450m | 5.0 min |

## TABLE 4.5 YEAR 2026 JUNCTION OPERATIONAL PERFORMANCE [UPDATED]

| Junction | | Type of Junction | Indicator | Without the Proposed Columbarium | With the Proposed Columbarium |
|---|---|---|---|---|---|
| **Peak Hour on Ching Ming Festival Day** | | | | | |
| J01 | Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% | >100% |
| J02 | Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | >100% | >100% |
| J03 | Au Pui Wan Street / Tsung Tau Ha Road | Priority | RFC | 0.351 | 0.352 |
| J04 | Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.525 | 0.525 |
| J05 | Au Pui Wan Street / Wo Heung Street | Signal | RC | >100% | >100% |
| J06 | Au Pui Wan Street / Wo Liu Hang Road | Free Flow Junction | | | |
| J07 | Fo Tan Road / Tai Po Road / Lok King Street | Signal | RC | >100% | >100% |
| J08 | Fo Tan Road / Tai Po Road | Signal | RC | >100% | >100% |
| J09 | Fo Tan Road / Yuen Wo Road | Signal | RC | 60% | 60% |
| J10 | Fo Tan Road / Tai Chung Kiu Road | Signal | RC | 43% | 43% |
| **Peak Hour on Festival Shadow Period** | | | | | |
| J01 | Fo Tan Road / Tsung Tau Ha Road | Signal | RC | >100% | >100% |
| J02 | Fo Tan Road / Shan Mei Street / Min Fong Street | Signal | RC | >100% | >100% |
| J03 | Au Pui Wan Street / Tsung Tau Ha Road | Priority | RFC | 0.395 | 0.395 |
| J04 | Au Pui Wan Street / Min Fong Street | Priority | RFC | 0.509 | 0.509 |
| J05 | Au Pui Wan Street / Wo Heung Street | Signal | RC | >100% | >100% |
| J06 | Au Pui Wan Street / Wo Liu Hang Road | Free Flow Junction | | | |
| J07 | Fo Tan Road / Tai Po Road / Lok King Street | Signal | RC | >100% | >100% |
| J08 | Fo Tan Road / Tai Po Road | Signal | RC | >100% | >100% |
| J09 | Fo Tan Road / Yuen Wo Road | Signal | RC | 77% | 77% |
| J10 | Fo Tan Road / Tai Chung Kiu Road | Signal | RC | 55% | 55% |

Note: RC – Reserved Capacity RFC – Ratio-of-Flow to Capacity

# Updated Figures



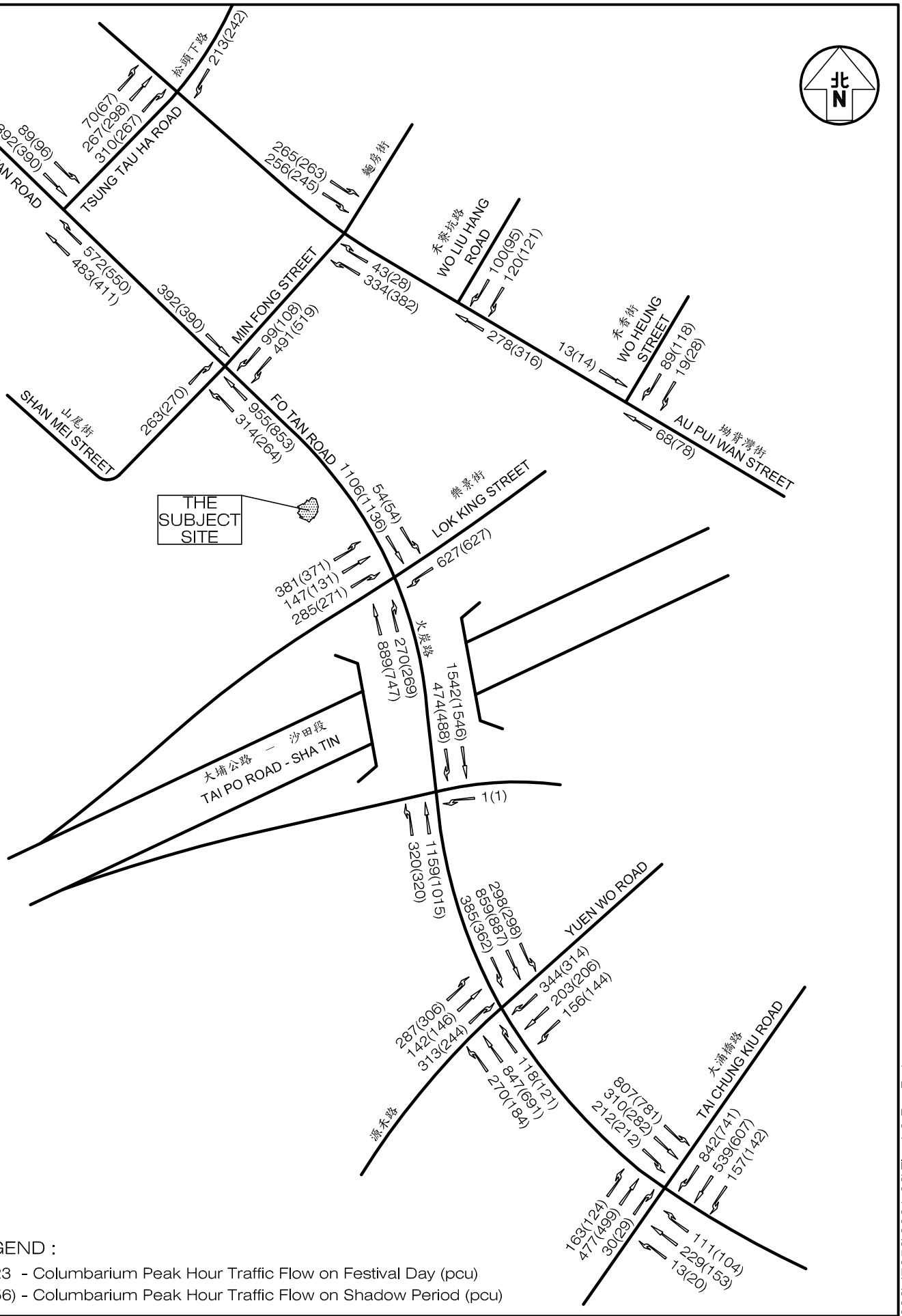

LEGEND :

123 - Columbarium Peak Hour Traffic Flow on Festival Day (pcu)

(456) - Columbarium Peak Hour Traffic Flow on Shadow Period (pcu)

| | | | | | |
|---|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 4.1 | | | Scale in A4 N.T.S. |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision B | Date 16 AUG 2021 |
| Figure Title: YEAR 2026 COLUMBARIUM PEAK HOUR TRAFFIC FLOWS WITHOUT THE PROPOSED COLUMBARIUM | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

T:\JOBs\J7050-J7099\J7059\2021 08\Fig 4.1 RevB.dwg




LEGEND :

123 - Columbarium Peak Hour Traffic Flow on Festival Day (pcu)

(456) - Columbarium Peak Hour Traffic Flow on Shadow Period (pcu)

| | | | | | |
|---|---|---|---|---|---|
| Project Title: SECTION 12A APPLICATION FOR REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT" TO "OTHER SPECIFIED USES" ANNOTATED "COLUMBARIUM (1)" AT MEMORIAL PARK HONG KONG, 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES | Job No. J7059 | Figure No. 4.2 | | | Scale in A4 N.T.S. |
| | Designed by L T F | Drawn by S C Y | Checked by K C | Revision B | Date 16 AUG 2021 |
| Figure Title: YEAR 2026 COLUMBARIUM PEAK HOUR TRAFFIC FLOWS WITH THE PROPOSED COLUMBARIUM | CKM Asia Limited<br>Traffic and Transportation Planning Consultants<br>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong<br>Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk | | | | |

T:\JOB\J7050-J7099\J7059\2021 08\Fig 4.2 RevB.dwg

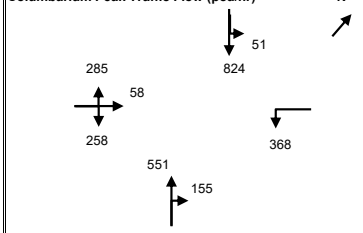
# Updated Appendix A – Junction Capacity Analysis For J07 – J10

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 31 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 266 | 0.135 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 285 | 0.135 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 78 | 0.041 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 77 | 0.040 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 285 | 0.138 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 58 | 0.027 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 131 | 0.068 | 0.068 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 127 | 0.068 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 51 | 0.026 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 207 | 0.098 | 0.098 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 207 | 0.098 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 205 | 0.098 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 205 | 0.098 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 178 | 0.097 | 0.097 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 190 | 0.096 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

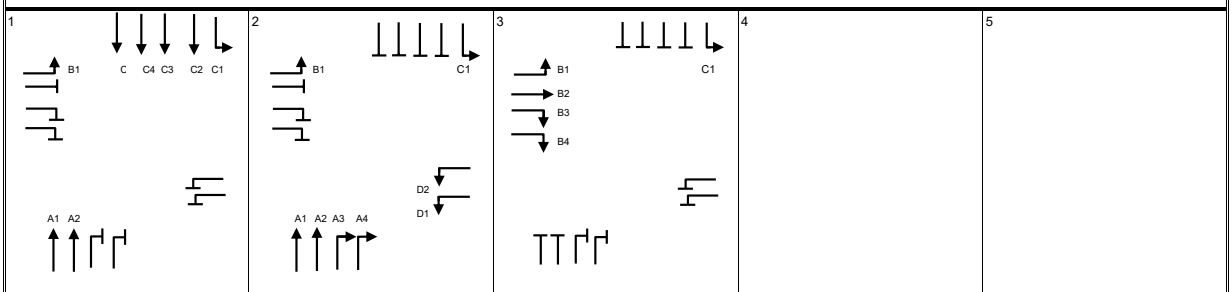



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3 | | | | | |
| Sum y | 0.263 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 187% | | | | | |

**NOTE:**



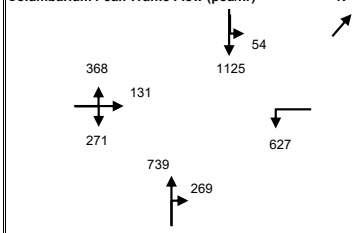

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 32 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 357 | 0.181 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 382 | 0.181 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 135 | 0.070 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 134 | 0.070 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 368 | 0.178 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 131 | 0.061 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 137 | 0.071 | 0.071 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 134 | 0.071 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 283 | 0.134 | 0.134 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 283 | 0.134 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 280 | 0.134 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 279 | 0.133 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 303 | 0.164 | 0.164 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 324 | 0.164 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

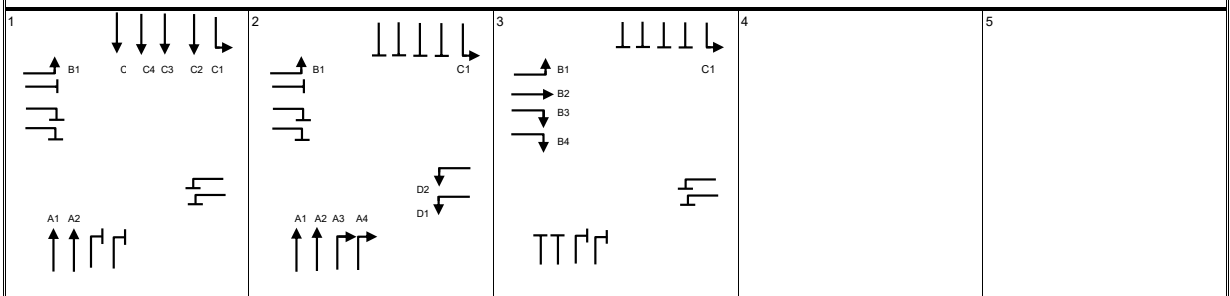



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3 | | | | | |
| Sum y | 0.369 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 105% | | | | | |

**NOTE:**



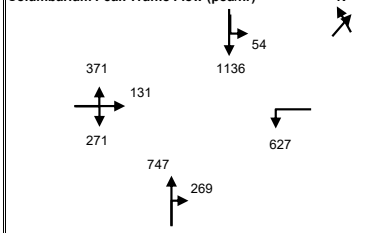

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 33 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 361 | 0.183 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 386 | 0.183 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 135 | 0.070 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 134 | 0.070 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 371 | 0.180 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 131 | 0.061 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 137 | 0.071 | 0.071 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 134 | 0.071 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 285 | 0.135 | 0.135 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 285 | 0.135 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 283 | 0.135 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 283 | 0.135 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 303 | 0.164 | 0.164 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 324 | 0.164 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

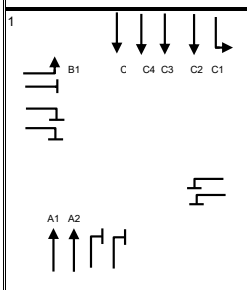


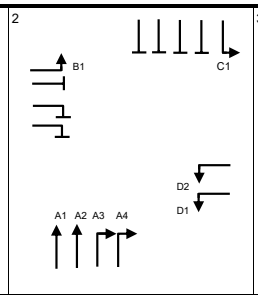

S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

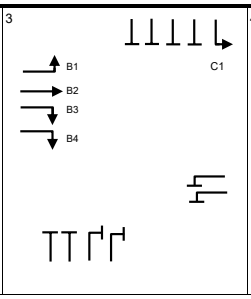
S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

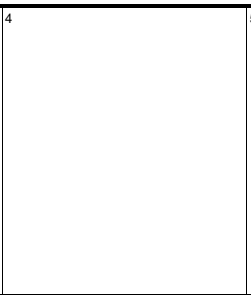
| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.370 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 104% | | | | | |

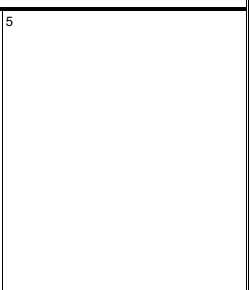
**NOTE:**



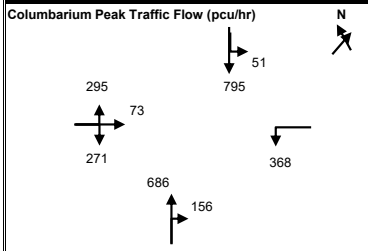

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 34 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 331 | 0.168 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 355 | 0.168 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 78 | 0.041 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 78 | 0.041 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 295 | 0.143 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 73 | 0.034 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 137 | 0.071 | 0.071 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 134 | 0.071 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 51 | 0.026 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 200 | 0.095 | 0.095 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 200 | 0.095 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 198 | 0.095 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 197 | 0.094 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 178 | 0.097 | 0.097 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 190 | 0.096 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

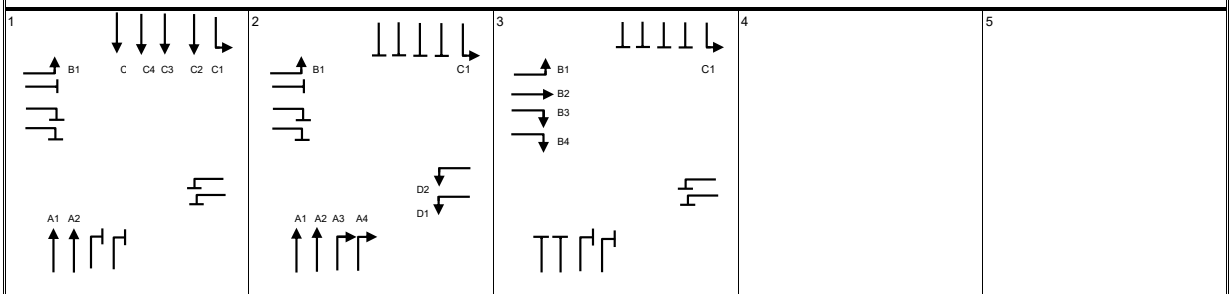



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3 | | | | | |
| Sum y | 0.263 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 187% | | | | | |

**NOTE:**



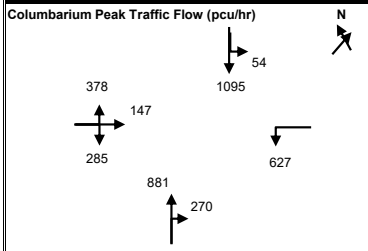

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 8 | G = | I/G = 5 | G = | I/G = 10 | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = |

# Signal Junction Analysis

| | | | |
|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | Page | 35 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 425 | 0.215 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 456 | 0.216 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 135 | 0.070 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 135 | 0.070 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 378 | 0.183 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 147 | 0.069 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 144 | 0.075 | 0.075 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 141 | 0.075 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 275 | 0.130 | 0.130 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 275 | 0.130 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 272 | 0.130 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 273 | 0.130 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 303 | 0.164 | 0.164 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 324 | 0.164 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

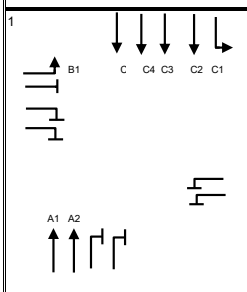


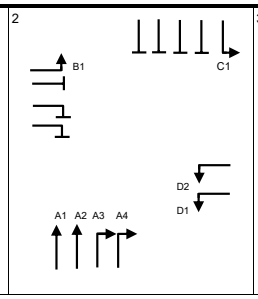

S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

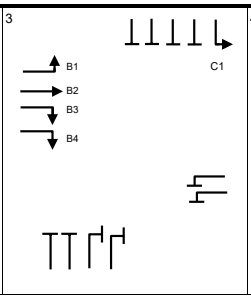
S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

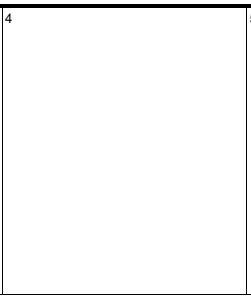
| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.369 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 105% | | | | | |

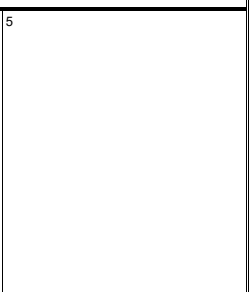
**NOTE:**



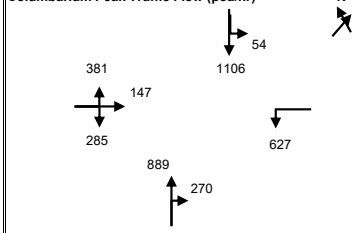

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road / Lok King Street | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 36 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | SA | A1 | 1,2 | 3.60 | | | | 1975 | 429 | 0.217 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1,2 | 3.60 | | | | 2115 | 460 | 0.217 | | | | | | |
| Fo Tan Road NB | RT | A3 | 2 | 3.60 | 15.0 | | 100 | 1923 | 135 | 0.070 | | | | | | |
| Fo Tan Road NB | RT | A4 | 2 | 3.60 | 15.0 | | 100 | 1923 | 135 | 0.070 | | | | | | |
| Tai Po Road EB | LT | B1 | 1,2,3 | 4.50 | 25.0 | | | 2065 | 381 | 0.185 | | | | | | |
| Tai Po Road EB | SA | B2 | 3 | 3.80 | | | | 2135 | 147 | 0.069 | | | | | | |
| Tai Po Road EB | RT | B3 | 3 | 3.80 | 14.0 | | 100 | 1928 | 144 | 0.075 | 0.075 | | | | | |
| Tai Po Road EB | RT | B4 | 3 | 3.80 | 11.0 | | 100 | 1879 | 141 | 0.075 | | | | | | |
| Fo Tan Road SB | LT | C1 | 1,2,3 | 4.50 | 22.0 | | 100 | 1933 | 54 | 0.028 | | | | | | |
| Fo Tan Road SB | SA | C2 | 1 | 3.60 | | | | 2115 | 278 | 0.131 | 0.131 | | | | | |
| Fo Tan Road SB | SA | C3 | 1 | 3.60 | | | | 2115 | 278 | 0.131 | | | | | | |
| Fo Tan Road SB | SA | C4 | 1 | 3.40 | | | | 2095 | 275 | 0.131 | | | | | | |
| Fo Tan Road SB | SA | C5 | 1 | 3.40 | | | | 2095 | 275 | 0.131 | | | | | | |
| Lok King Street WB | LT | D1 | 2 | 4.00 | 16.0 | | 100 | 1842 | 303 | 0.164 | 0.164 | | | | | |
| Lok King Street WB | LT | D2 | 2 | 4.00 | 16.0 | | 100 | 1970 | 324 | 0.164 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

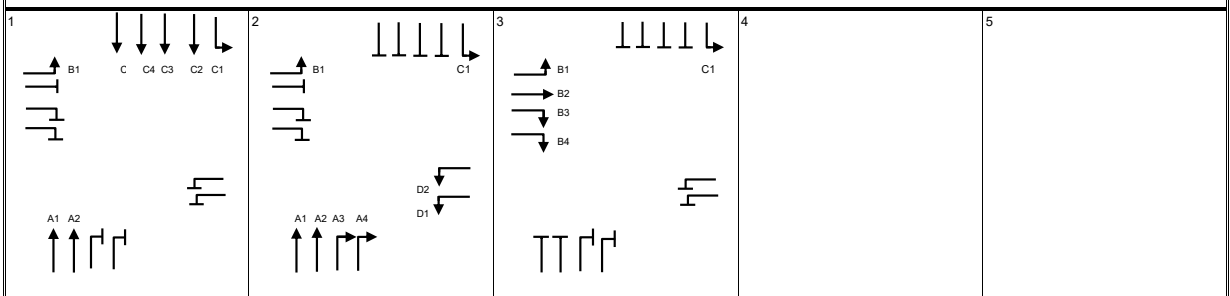



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3 | | | | | |
| Sum y | 0.370 | | | | | |
| L (s) | 20 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.756 | | | | | |
| R.C. (%) | 104% | | | | | |

**NOTE:**



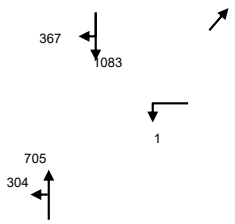

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 8 | G = | I/G = | 5 | G = | I/G = | 10 | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 37 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 304 | 0.155 | 0.155 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 235 | 0.112 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 235 | 0.112 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 235 | 0.112 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 523 | 0.265 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 560 | 0.265 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 184 | 0.096 | 0.096 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 183 | 0.096 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

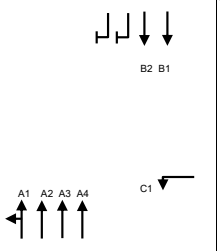
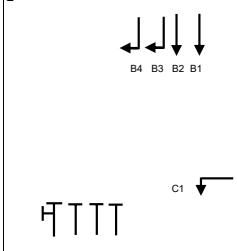



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.251 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 218% | | | | | |

**NOTE:**

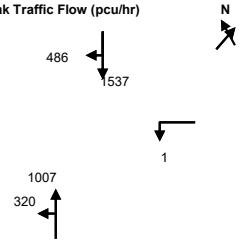
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 38 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 336 | 0.160 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 336 | 0.160 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 335 | 0.160 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 742 | 0.376 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 795 | 0.376 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 243 | 0.127 | 0.127 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 243 | 0.127 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

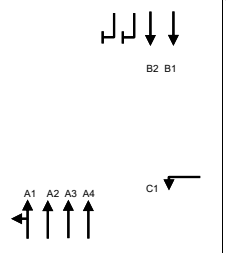
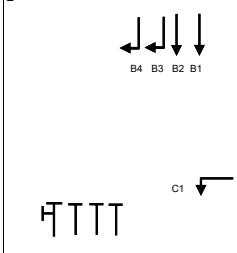



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.291 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 175% | | | | | |

**NOTE:**

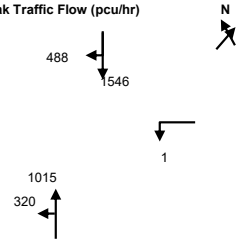
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 39 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 338 | 0.161 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 338 | 0.161 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 339 | 0.162 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 747 | 0.378 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 799 | 0.378 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 244 | 0.128 | 0.128 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 244 | 0.128 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

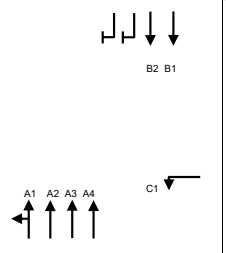
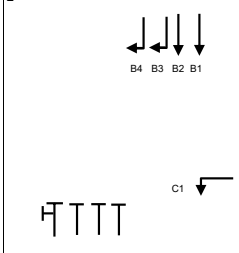



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.292 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 174% | | | | | |

**NOTE:**

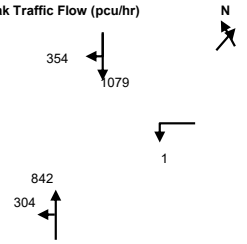
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 40 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 304 | 0.155 | 0.155 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 281 | 0.134 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 281 | 0.134 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 280 | 0.134 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 521 | 0.264 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 558 | 0.264 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 177 | 0.093 | 0.093 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 177 | 0.093 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

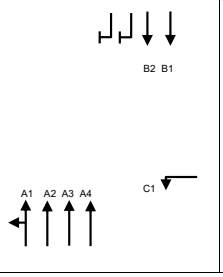
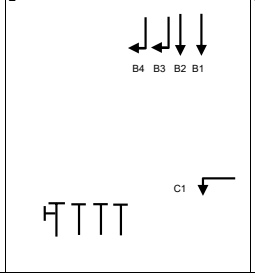



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.248 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 222% | | | | | |

**NOTE:**

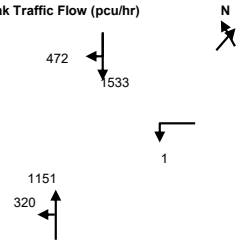
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 41 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 384 | 0.183 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 384 | 0.183 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 383 | 0.183 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 740 | 0.375 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 793 | 0.375 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 236 | 0.124 | 0.124 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 236 | 0.124 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

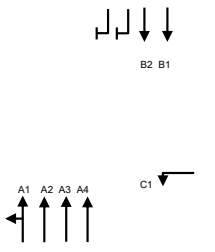
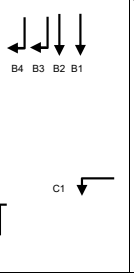



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.288 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 178% | | | | | |

**NOTE:**

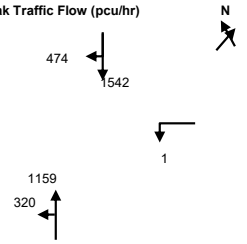
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  | | | |
|  |  | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = I/G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Po Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 42 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.40 | 14.0 | | | 1955 | 320 | 0.164 | 0.164 | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.40 | | | | 2095 | 386 | 0.184 | | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.40 | | | | 2095 | 386 | 0.184 | | | | | | |
| Fo Tan Road NB | SA | A4 | 1 | 3.40 | | | | 2095 | 387 | 0.185 | | | | | | |
| Tai Po Road EB | LT | C1 | 1,2 | 4.70 | 17.5 | | 100 | 1920 | 1 | 0.001 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 1975 | 745 | 0.377 | | | | | | |
| Fo Tan Road SB | SA | B2 | 1,2 | 3.60 | | | | 2115 | 797 | 0.377 | | | | | | |
| Fo Tan Road SB | RT | B3 | 2 | 3.60 | 14.0 | | 100 | 1910 | 237 | 0.124 | 0.124 | | | | | |
| Fo Tan Road SB | RT | B4 | 2 | 3.60 | 14.0 | | 100 | 1910 | 237 | 0.124 | | | | | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

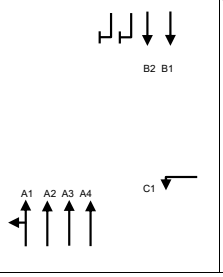
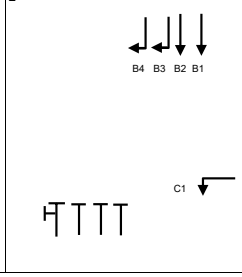



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2 | | | | | |
| Sum y | 0.288 | | | | | |
| L (s) | 14 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.799 | | | | | |
| R.C. (%) | 178% | | | | | |

**NOTE:**

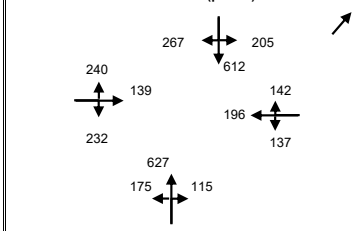
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   | | | |
| Col.Peak G = I/G = 8 | G = I/G = 8 | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |
| G = I/G = | G = I/G = | G = I/G = | G = I/G = | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 43 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 175 | 0.100 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 209 | 0.101 | 0.101 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 209 | 0.101 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 209 | 0.101 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 115 | 0.060 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 240 | 0.138 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 139 | 0.066 | 0.066 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 116 | 0.061 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 116 | 0.061 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 187 | 0.109 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 8 | 2090 | 227 | 0.109 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 230 | 0.109 | 0.109 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 23 | 2079 | 226 | 0.109 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 214 | 0.109 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 137 | 0.078 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 116 | 0.056 | 0.056 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 30 | 2037 | 114 | 0.056 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 108 | 0.056 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

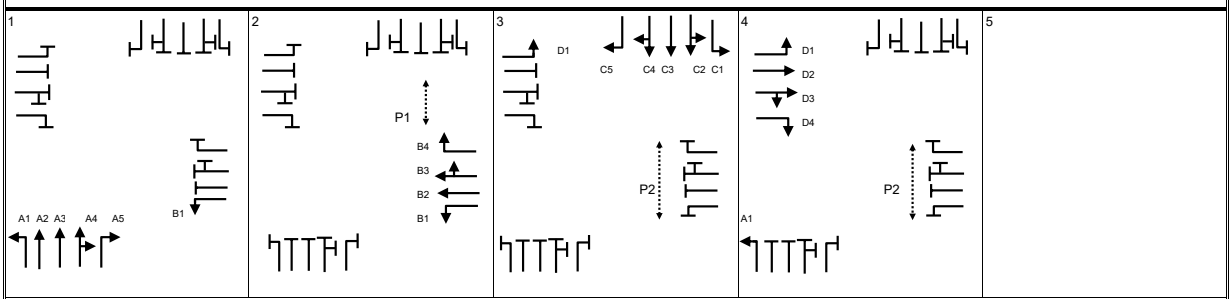



$S = 1940 + 100\ (W-3.25)$ $S_M = S / (1 + 1.5\ f/r)$

$S = 2080 + 100\ (W-3.25)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.327 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 127% | | | | | |

**NOTE:**



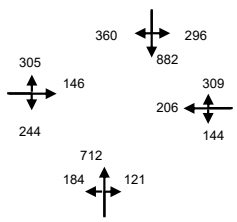

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 44 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 184 | 0.105 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 237 | 0.114 | 0.114 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 237 | 0.114 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 237 | 0.114 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 121 | 0.063 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 305 | 0.175 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 146 | 0.069 | 0.069 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 265 | 0.154 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 9 | 2087 | 322 | 0.154 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 326 | 0.154 | 0.154 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 20 | 2084 | 321 | 0.154 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 304 | 0.155 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 144 | 0.082 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 179 | 0.086 | 0.086 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 64 | 1985 | 170 | 0.086 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 166 | 0.086 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

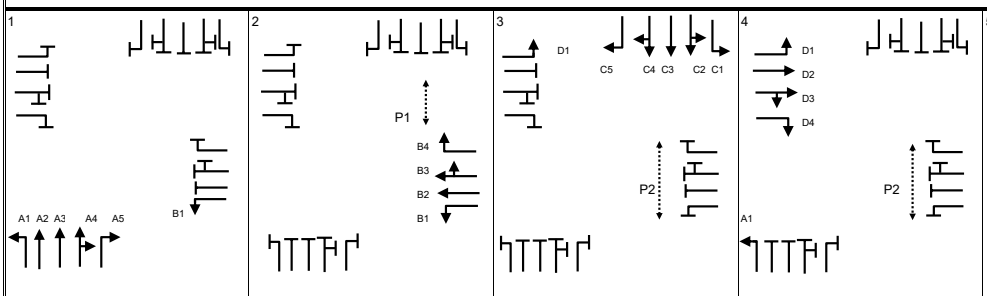



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.418 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 77% | | | | | |

**NOTE:**



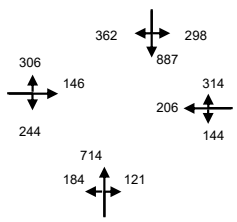

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 6 | G = | I/G = | 8 | G = | I/G = | 6 | G = | I/G = | 6 | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 45 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 184 | 0.105 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 238 | 0.115 | 0.115 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 238 | 0.115 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 238 | 0.115 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 121 | 0.063 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 306 | 0.176 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 146 | 0.069 | 0.069 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 122 | 0.064 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 266 | 0.155 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 8 | 2090 | 324 | 0.155 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 328 | 0.155 | 0.155 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 20 | 2084 | 323 | 0.155 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 306 | 0.156 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 144 | 0.082 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 181 | 0.087 | 0.087 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 68 | 1979 | 172 | 0.087 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 167 | 0.086 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

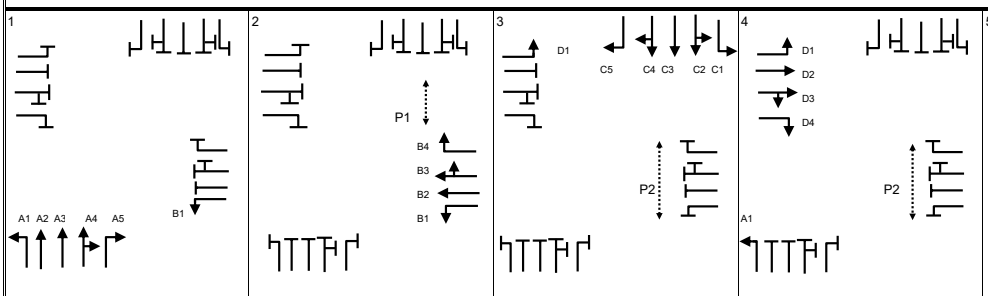



S = 1940 + 100 (W-3.25)
$S_M$ = S / (1 + 1.5 f/r)

S = 2080 + 100 (W-3.25)
$S_M$ = (S - 230) / (1 + 1.5 f/r)

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.420 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 77% | | | | | |

**NOTE:**



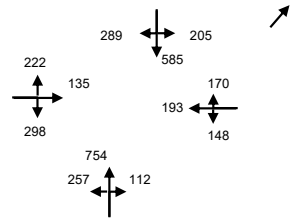

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 6 | G = | I/G = | 8 | G = | I/G = | 6 | G = | I/G = | 6 | G = | | | |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | | | |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | | | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 46 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 257 | 0.147 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 251 | 0.121 | 0.121 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 251 | 0.121 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 251 | 0.121 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 112 | 0.058 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 222 | 0.128 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 135 | 0.064 | 0.064 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 149 | 0.078 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 149 | 0.078 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 186 | 0.108 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 8 | 2090 | 227 | 0.109 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 229 | 0.108 | 0.108 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 34 | 2062 | 224 | 0.109 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 213 | 0.108 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 148 | 0.084 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 125 | 0.060 | 0.060 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 44 | 2015 | 121 | 0.060 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 117 | 0.061 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

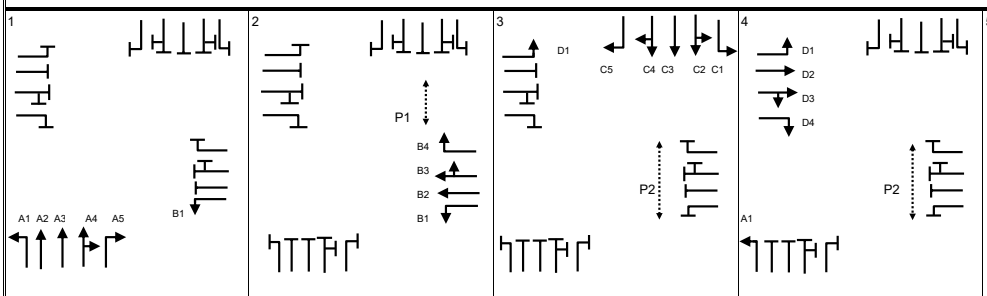



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.369 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 101% | | | | | |

**NOTE:**



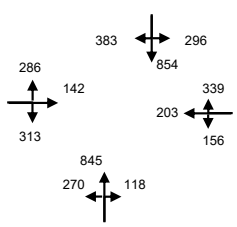

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 47 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 270 | 0.154 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 282 | 0.136 | 0.136 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 282 | 0.136 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 282 | 0.136 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 118 | 0.061 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 286 | 0.165 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 142 | 0.067 | 0.067 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 157 | 0.082 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 156 | 0.082 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 264 | 0.154 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 9 | 2087 | 321 | 0.154 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 326 | 0.154 | 0.154 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 29 | 2070 | 319 | 0.154 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 303 | 0.154 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 156 | 0.089 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 189 | 0.091 | 0.091 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 75 | 1968 | 178 | 0.090 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 175 | 0.091 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

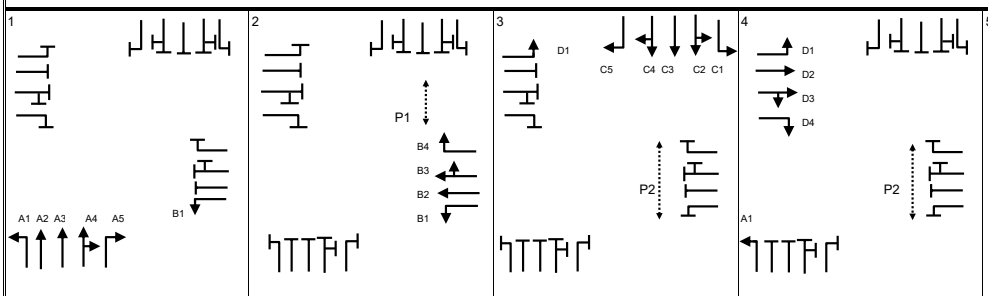



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.463 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 60% | | | | | |

**NOTE:**



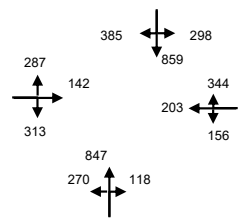

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Yeun Wo Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 48 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT | A1 | 1,4 | 3.20 | 14.0 | | 100 | 1748 | 270 | 0.154 | | | | | | |
| Fo Tan Road NB | SA | A2 | 1 | 3.20 | | | | 2075 | 282 | 0.136 | 0.136 | | | | | |
| Fo Tan Road NB | SA | A3 | 1 | 3.20 | | | | 2075 | 282 | 0.136 | | | | | | |
| Fo Tan Road NB | SA+RT | A4 | 1 | 3.20 | 20.0 | | 0 | 2075 | 282 | 0.136 | | | | | | |
| Fo Tan Road NB | RT | A5 | 1 | 3.20 | 20.0 | | 100 | 1930 | 118 | 0.061 | | | | | | |
| Yeun Wo Road EB | LT | D1 | 3,4 | 3.60 | 11.0 | | 100 | 1738 | 287 | 0.165 | | | | | | |
| Yeun Wo Road EB | SA | D2 | 4 | 3.60 | | | | 2115 | 142 | 0.067 | 0.067 | | | | | |
| Yeun Wo Road EB | SA+RT | D3 | 4 | 3.60 | 14.0 | | 100 | 1910 | 157 | 0.082 | | | | | | |
| Yeun Wo Road EB | RT | D4 | 4 | 3.60 | 14.0 | | 100 | 1910 | 156 | 0.082 | | | | | | |
| Fo Tan Road SB | LT | C1 | 3 | 3.60 | 10.0 | | 100 | 1717 | 266 | 0.155 | | | | | | |
| Fo Tan Road SB | LT+SA | C2 | 3 | 3.60 | 10.0 | | 9 | 2087 | 323 | 0.155 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.60 | | | | 2115 | 328 | 0.155 | 0.155 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.60 | 20.0 | | 28 | 2071 | 321 | 0.155 | | | | | | |
| Fo Tan Road SB | RT | C5 | 3 | 3.60 | 20.0 | | 100 | 1967 | 304 | 0.155 | | | | | | |
| Yuen Wo Road WB | LT | B1 | 1,2 | 3.30 | 14.0 | | 100 | 1757 | 156 | 0.089 | | | | | | |
| Yuen Wo Road WB | SA | B2 | 2 | 3.30 | | | | 2085 | 191 | 0.092 | 0.092 | | | | | |
| Yuen Wo Road WB | SA+RT | B3 | 2 | 3.30 | 19.0 | | 79 | 1963 | 180 | 0.092 | | | | | | |
| Yuen Wo Road WB | RT | B4 | 2 | 3.30 | 19.0 | | 100 | 1932 | 176 | 0.091 | | | | | | |
| Pedestrian Phase | | P1 | 2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P2 | 3,4 | | Min Crossing Time = | | 8 | sec GM + | | 11 | sec FGM = | | 19 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

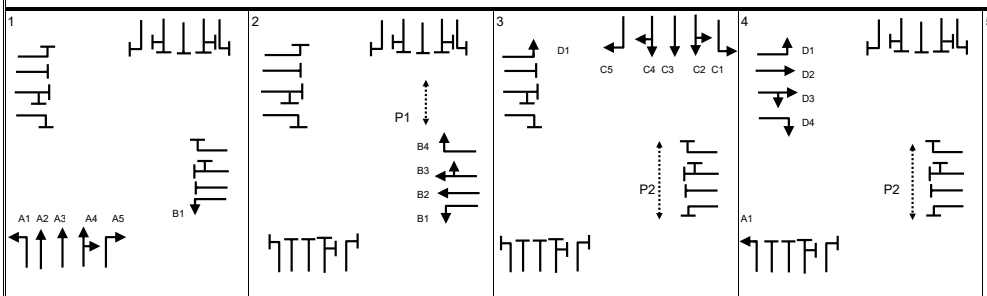



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.464 | | | | | |
| L (s) | 22 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.742 | | | | | |
| R.C. (%) | 60% | | | | | |

**NOTE:**




| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 6 | G = | | I/G = | 8 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | |

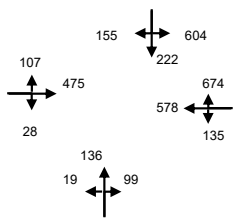
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Shadow Period | | | Page | 49 |
| Design Year: | 2021 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 24 | 1897 | 79 | 0.042 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 88 | 0.042 | 0.042 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 87 | 0.041 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 107 | 0.062 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 238 | 0.115 | 0.115 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 237 | 0.115 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 290 | 0.170 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 314 | 0.169 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 195 | 0.094 | 0.094 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 85 | 1934 | 182 | 0.094 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 135 | 0.067 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 193 | 0.094 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 193 | 0.094 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 192 | 0.093 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 338 | 0.177 | 0.177 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 336 | 0.176 | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 1,2,3 | Min Crossing Time = | 5 | sec GM + | 9 | sec FGM = | 14 | sec | |
| | P2 | 1,2 | Min Crossing Time = | 5 | sec GM + | 7 | sec FGM = | 12 | sec | |
| | P3 | 3,4 | Min Crossing Time = | 5 | sec GM + | 5 | sec FGM = | 10 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

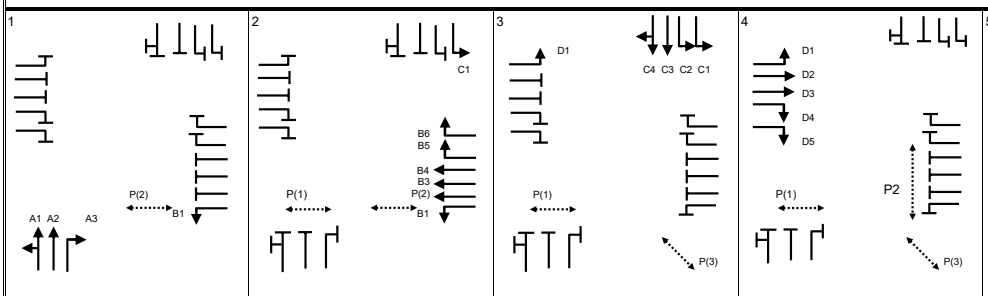



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak Check | Check | Check | | | |
|---|---|---|---|---|---|---|
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.428 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 75% | | | | | |

**NOTE:**



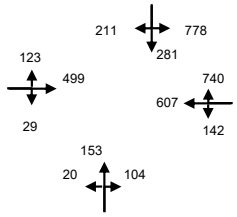

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | | I/G = | 7 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | | I/G = | 6 | G = | | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | |
| | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | I/G = | | G = | | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - Without the Proposed Columbarium | | | Page | 50 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 23 | 1899 | 86 | 0.045 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 95 | 0.045 | 0.045 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 96 | 0.046 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 123 | 0.071 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 250 | 0.121 | 0.121 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 249 | 0.121 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 373 | 0.219 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 405 | 0.219 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 255 | 0.123 | 0.123 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 87 | 1931 | 237 | 0.123 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 142 | 0.070 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 203 | 0.099 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 371 | 0.194 | 0.194 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 369 | 0.194 | | | | | | |
| Pedestrian Phase | | P1 | 1,2,3 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |
| | | P2 | 1,2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P3 | 3,4 | | Min Crossing Time = | | 5 | sec GM + | | 5 | sec FGM = | | 10 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

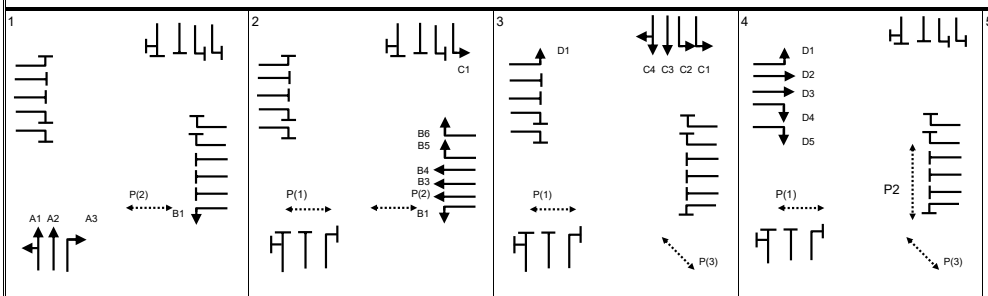



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.483 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 55% | | | | | |

**NOTE:**




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 7 | G = | I/G = | 6 | G = | I/G = | 6 | G = | I/G = | 6 | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |

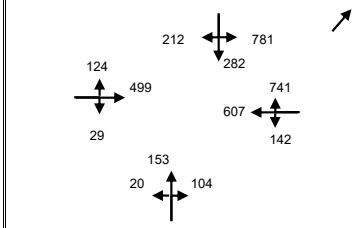
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Shadow Period - With the Proposed Columbarium | | | Page | 51 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 23 | 1899 | 86 | 0.045 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 95 | 0.045 | 0.045 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 96 | 0.046 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 124 | 0.071 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 250 | 0.121 | 0.121 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 249 | 0.121 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 374 | 0.219 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 407 | 0.220 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 256 | 0.123 | 0.123 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 87 | 1931 | 238 | 0.123 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 142 | 0.070 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 202 | 0.098 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 203 | 0.099 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 371 | 0.194 | 0.194 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 370 | 0.194 | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 1,2,3 | Min Crossing Time = | 5 | sec GM + | 9 | sec FGM = | 14 | sec | |
| | P2 | 1,2 | Min Crossing Time = | 5 | sec GM + | 7 | sec FGM = | 12 | sec | |
| | P3 | 3,4 | Min Crossing Time = | 5 | sec GM + | 5 | sec FGM = | 10 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

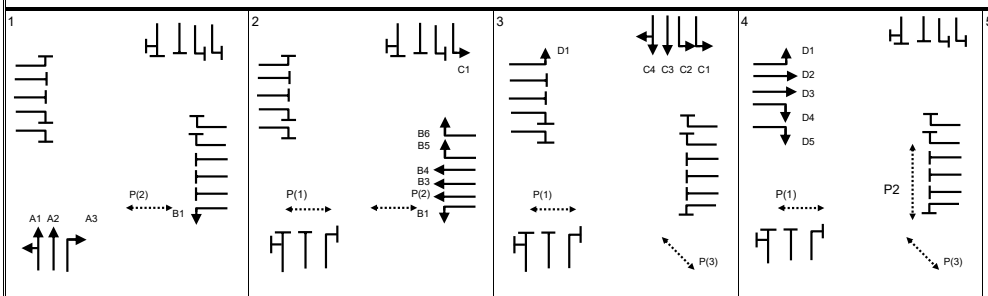



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.483 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 55% | | | | | |

**NOTE:**



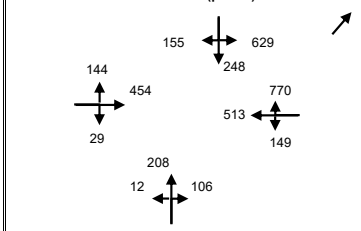

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = | 7 | G = | I/G = | 6 | G = | I/G = | 6 | G = | I/G = | 6 | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |
| | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = | I/G = | | G = |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2021 Ching Ming Festival Day | | | Page | 52 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 12 | 1930 | 102 | 0.053 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 112 | 0.053 | 0.053 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 112 | 0.053 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 144 | 0.083 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 227 | 0.110 | 0.110 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 227 | 0.110 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 14 | 0.007 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 302 | 0.177 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 327 | 0.177 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 208 | 0.100 | 0.100 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 79 | 1943 | 195 | 0.100 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 149 | 0.074 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 171 | 0.083 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 171 | 0.083 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 171 | 0.083 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 386 | 0.202 | 0.202 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 384 | 0.202 | | | | | | |
| Pedestrian Phase | | P1 | 1,2,3 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |
| | | P2 | 1,2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P3 | 3,4 | | Min Crossing Time = | | 5 | sec GM + | | 5 | sec FGM = | | 10 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

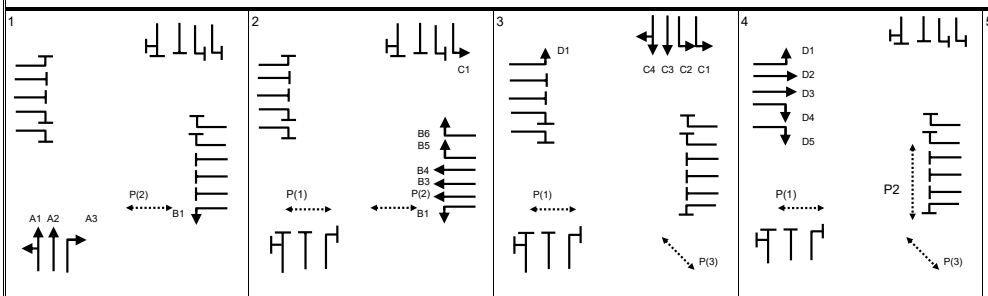



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.465 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 61% | | | | | |

**NOTE:**




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

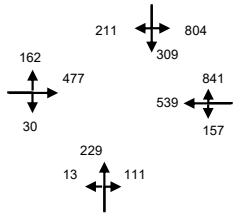
# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - Without the Proposed Columbarium | | | Page | 53 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 12 | 1930 | 111 | 0.058 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 121 | 0.057 | 0.057 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 121 | 0.057 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 162 | 0.093 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 239 | 0.116 | 0.116 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 238 | 0.115 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 385 | 0.226 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 419 | 0.226 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 269 | 0.130 | 0.130 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 82 | 1939 | 251 | 0.129 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 157 | 0.078 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 179 | 0.087 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 421 | 0.220 | 0.220 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 420 | 0.221 | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian Phase | P1 | 1,2,3 | Min Crossing Time = | 5 | sec GM + | 9 | sec FGM = | 14 | sec | |
| | P2 | 1,2 | Min Crossing Time = | 5 | sec GM + | 7 | sec FGM = | 12 | sec | |
| | P3 | 3,4 | Min Crossing Time = | 5 | sec GM + | 5 | sec FGM = | 10 | sec | |

**Columbarium Peak Traffic Flow (pcu/hr)** N

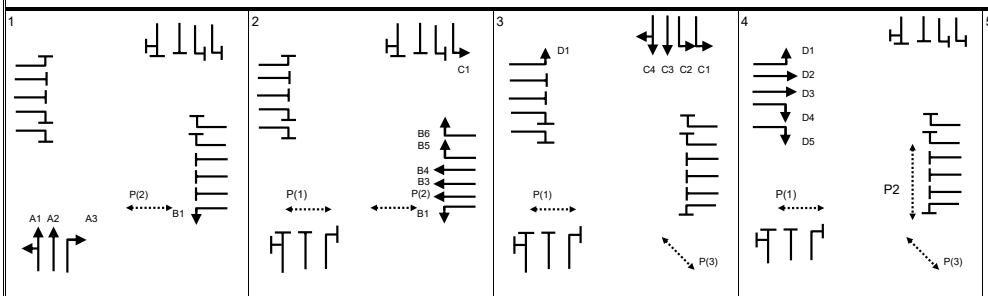



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.523 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 43% | | | | | |

**NOTE:**



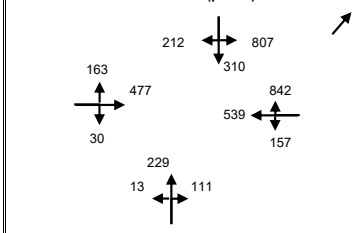

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

# Signal Junction Analysis

| | | | | | |
|---|---|---|---|---|---|
| Junction: | Fo Tan Road / Tai Chung Kiu Road | | | Job Number: | J7059 |
| Scenario: | 2026 Ching Ming Festival Day - With the Proposed Columbarium | | | Page | 54 |
| Design Year: | 2026 | Designed By: | LTF | Checked By: | WCH | Date: | 16 August 2021 |

| Approach | | Phase | Stage | Width (m) | Radius (m) | % Uphill Gradient | Columbarium Peak Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y | Turning % | Sat. Flow (pcu/hr) | Flow (pcu/hr) | y value | Critical y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fo Tan Road NB | LT+SA | A1 | 1 | 3.50 | 10.0 | | 12 | 1930 | 111 | 0.058 | | | | | | |
| Fo Tan Road NB | SA+RT | A2 | 1 | 3.50 | 22.0 | | | 2105 | 121 | 0.057 | 0.057 | | | | | |
| Fo Tan Road NB | RT | A3 | 1 | 3.50 | 22.0 | | 100 | 2105 | 121 | 0.057 | | | | | | |
| Tai Chung Kiu Road EB | LT | D1 | 3,4 | 3.10 | 14.0 | | 100 | 1739 | 163 | 0.094 | | | | | | |
| Tai Chung Kiu Road EB | SA | D2 | 4 | 3.10 | | | | 2065 | 239 | 0.116 | 0.116 | | | | | |
| Tai Chung Kiu Road EB | SA | D3 | 4 | 3.10 | | | | 2065 | 238 | 0.115 | | | | | | |
| Tai Chung Kiu Road EB | RT | D4 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Tai Chung Kiu Road EB | RT | D5 | 4 | 3.10 | 20.0 | | 100 | 1921 | 15 | 0.008 | | | | | | |
| Fo Tan Road SB | LT | C1 | 2,3 | 3.20 | 11.2 | | 100 | 1706 | 387 | 0.227 | | | | | | |
| Fo Tan Road SB | LT | C2 | 2,3 | 3.20 | 12.5 | | 100 | 1853 | 420 | 0.227 | | | | | | |
| Fo Tan Road SB | SA | C3 | 3 | 3.20 | | | | 2075 | 270 | 0.130 | 0.130 | | | | | |
| Fo Tan Road SB | SA+RT | C4 | 3 | 3.20 | 17.5 | | 82 | 1939 | 252 | 0.130 | | | | | | |
| Tai Chung Kiu Road WB | LT | B1 | 1,2 | 5.00 | 30.0 | | 100 | 2014 | 157 | 0.078 | | | | | | |
| Tai Chung Kiu Road WB | SA | B2 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B3 | 2 | 3.00 | | | | 2055 | 180 | 0.088 | | | | | | |
| Tai Chung Kiu Road WB | SA | B4 | 2 | 3.00 | | | | 2055 | 179 | 0.087 | | | | | | |
| Tai Chung Kiu Road WB | RT | B5 | 2 | 3.00 | 20.0 | | 100 | 1912 | 422 | 0.221 | 0.221 | | | | | |
| Tai Chung Kiu Road WB | RT | B6 | 2 | 3.00 | 19.0 | | 100 | 1905 | 420 | 0.221 | | | | | | |
| Pedestrian Phase | | P1 | 1,2,3 | | Min Crossing Time = | | 5 | sec GM + | | 9 | sec FGM = | | 14 | sec | | |
| | | P2 | 1,2 | | Min Crossing Time = | | 5 | sec GM + | | 7 | sec FGM = | | 12 | sec | | |
| | | P3 | 3,4 | | Min Crossing Time = | | 5 | sec GM + | | 5 | sec FGM = | | 10 | sec | | |

**Columbarium Peak Traffic Flow (pcu/hr)**

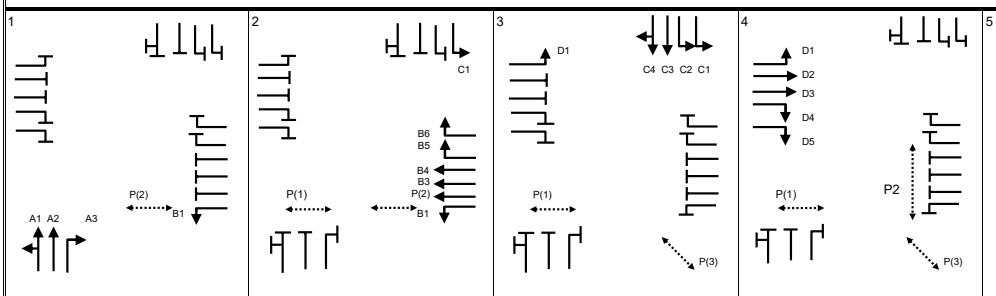



$S = 1940 + 100\ (W-3.25)$ $S = 2080 + 100\ (W-3.25)$

$S_M = S / (1 + 1.5\ f/r)$ $S_M = (S - 230) / (1 + 1.5\ f/r)$

| | Columbarium Peak | | | | | |
|---|---|---|---|---|---|---|
| | Check | Check | Check | | | |
| Stage | 1+2+3+4 | | | | | |
| Sum y | 0.525 | | | | | |
| L (s) | 21 | | | | | |
| C (s) | 125 | | | | | |
| Prac. y | 0.749 | | | | | |
| R.C. (%) | 43% | | | | | |

**NOTE:**




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Col.Peak | G = | I/G = 7 | G = | I/G = 6 | G = | I/G = 6 | G = | I/G = 6 | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |
| | G = | I/G = | G = | I/G = | G = | I/G = | G = | I/G = | G = | | |

# Annex B

# Replacement Pages for Management Plan

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information (Aug 2021)

## (5) 人流管理

**在掃墓高峰日子*或期間，本園就場內之人流管理所訂的人手調配計劃**

於高峰日子時段，只有已預約的客人於已預約的時間才可以進場拜祭，位於大門的職員會安排已預約的客人進入本園，而沒有預約的客人不能進入本園。

*高峰日子為清明節及重陽節的前後三星期的平日、六、日及公眾假期。

### i. 於高峰日子派員管理及協助訪客人流數目

員工數目: 8 人

一樓堂閣 2 名，負責堂閣內人流管理及協助客人。

地下堂閣 2 名，負責堂閣內人流管理及協助客人。

花園 2 名，負責進入堂閣人流管理及排隊等候區秩序。

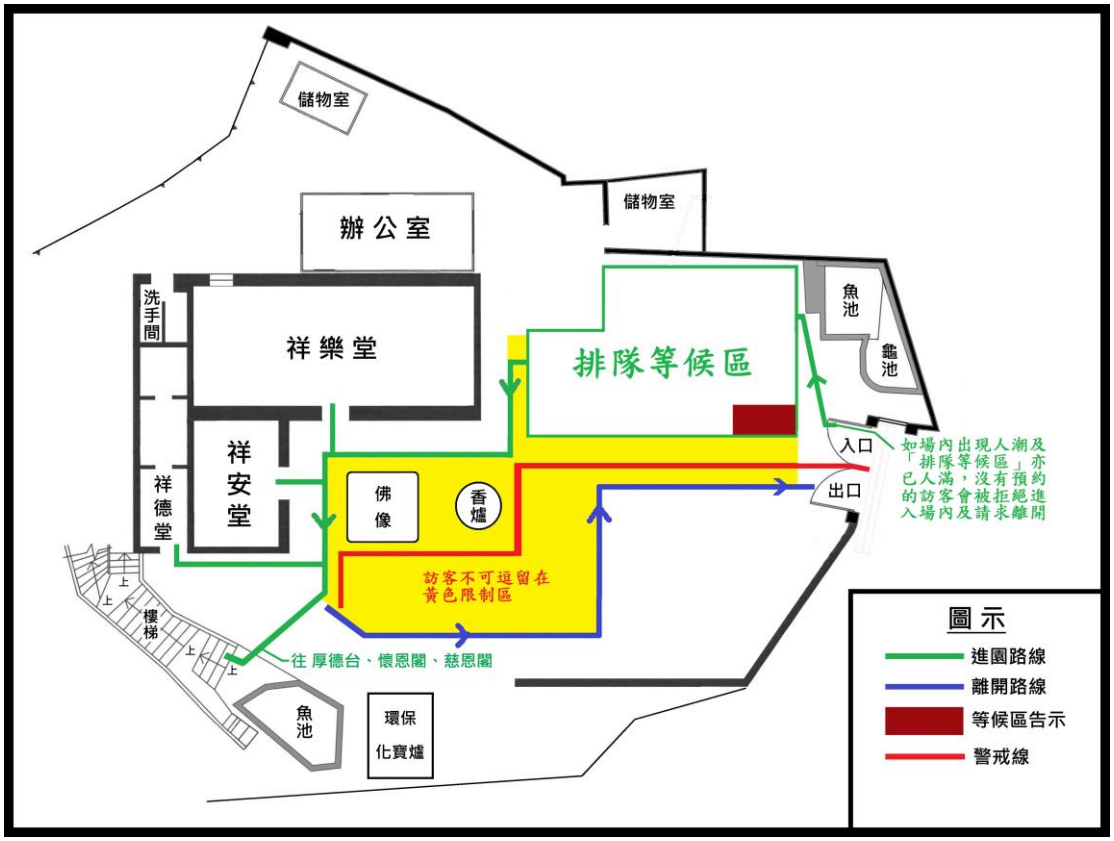
大門前 1 名，安排已預約人士按時入園。

大門前 1 名，負責控制及點算進園人數。

### ii. 定期向警方通報場內情況

每小時與警方聯絡，匯報場內情況，包括現場訪客人數等資料。此措施自本園 **2008** 年營運以來實施至今持之有效，期間從未發生任何意外事故。

### iii. 本園範圍之佈局與人流方向特別安排



**iv. 急救當值服務**

本園駐有一位受急救訓練合格的職員，隨時提供急救當值服務;在清明節及重陽節前後兩星期期間，本園會額外僱用合資格的臨時急救員於本園當值。

**v. 預約訪園的安排及具體執行**

**適用時間: 清明節及重陽節的前後三星期內的平日、週六、週日及公眾假期**

客人需要經本園的電話預約、網上或手機的應用程式 APPS 預約進入本園。於高峰日子時段，只有已預約的客人於已預約的時間才可以進場拜祭，位於大門的職員會安排已預約的客人進入本園，而沒有預約的客人不能進入本園。

電話：2145 4825
網址：http://memorialpark.hk/
手機應用程式 APPS：
iOS:
https://apps.apple.com/hk/app/%E5%AD%9D%E6%80%9D%E5%9C%92-memorial-park/id1478614161
Andriod:
https://play.google.com/store/apps/details?id=io.framework7.memorialparkapphkapp

**當管理方案和牌照獲得批准後，本園將會須書面通知所有"已出售龕位的買方"本園將會實行以上的訪客注意事項及排。**

# Attachment II

# Responses-to-Comments table addressing comments from the Public

Section 12A Planning Application No. Y/ST/47
Proposed Rezoning from “Village Type Development” and “Green Belt” zones to “Other Specified Uses” annotated “Columbarium (1)”
Further Information (August 2021)

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES ("the Application Site")**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| Public Comments | Response(s) |
|---|---|
| 1. Incompatible Land use<br><br>The application site is not suitable for columbarium use as it is surrounded by various residential developments (existing and those work in progress) and particularly close to Fo Tan Village. As such, it is not compatible to have the columbarium in the area.<br><br>It is inappropriate to place a columbarium in the area predominately occupied by residential developments, including public rental housing, subsidised housing and private housing, as it will affect the livelihood of local residents<br><br>MPHK is next to Fo Tan Nullah which is subject to a revitalization project aiming to promote water friendliness and improve community environment. As such, the application site is not suitable for columbarium development. | The Application Site is situated in a rather isolated location. It is separated from the high-rise and high-density residential and industrial developments by Fo Tan Road and Shing Mun River, and far away from the main village cluster (approximately 25m). With 6.19m of building height, i.e. 2 storeys, the proposed amendment is considered as a low-rise development, which fits well to the local village setting. Moreover, a large part of the Application Site is visually blocked by the flyover and adjacent trees. In view of the above, the proposed amendment is not incompatible to the surrounding land use. |

| Public Comments | Response(s) |
|---|---|
| 2. Urban Sprawl<br><br>It is important to preserve our precious land resources in "Green Belt" ("GB") zone. The existing green belt helps create a calming and tranquil ambience next to the urban area. Therefore, rezoning the "GB" to columbarium use is undesirable and unreasonable.<br><br>Rezoning the "Green Belt" would reduce the buffering effect to contain urban sprawl from the surrounding residential and industrial developments.<br><br>It is a gross neglect of the needs of Fo Tan residents to satisfy commercial interests at the expense of green space. | The Applicant has no plan to intensify the scale of Memorial Park Hong Kong ("MPHK") or further encroach onto the adjacent "Green Belt" ("GB") zone. The "GB" area within the Application Site is mainly made up of slopes which remain untouched throughout the years. The current application only includes a small portion of the green belt and hence the area of "GB" is largely safeguarded. In fact, the proposed amendment to permit a columbarium can maintain the tranquil and calming ambience of the area while functioning as the transitional area from "Village Type Development" zone to "GB" zone to contain urban sprawl. |
| 3. Overloaded pedestrian flow<br><br>The proposed development will attract a large influx / inflow of persons visiting and causing overpopulation. The livelihood of the Fo Tan residents has been adversely affected as MPHK significantly increases the pedestrian flow along Fo Tan Village.<br><br>The new large-scale residential development including Chun Yeung Estate, Yuk Wo Court, The Arles, Choi Wo Court in Fo Tan will contribute to the high population density and pedestrian flow of the area. | The pedestrian condition within the Fo Tan area is observed to be quiet on Sundays and public holidays, when most grave sweepers are expected to visit the proposed development.<br><br>The proposed development is relatively small with only 3,499 niches. Crowd management proposal has been implemented by the Applicant to reduce the number of pedestrians generated by the proposed development during the Ching Ming and Chung Yeung festival periods, and the Applicant will continue to implement these measures.<br><br>Hence, the proposed development is expected to have minimal pedestrian impact to the surrounding pedestrian and public transport network. |

| Public Comments | Response(s) |
|---|---|
| 4. Illegal Parking<br><br>Since MPHK does not provide any parking facilities, illegal / on-street parking emerges and worsens the problem of traffic congestion. Emergency services are also delayed as those cars block the exits illegally. | The Shatin Galleria Car Park located at 18 – 24 Shan Mei Street is about 420m away from the MPHK and is within walking distance allowing visitors by private car to park the vehicle off-street.<br><br>MPHK will continue to discourage the use of private car and taxi to access the Application Site, promote the use of nearby car park, and encourage the use of public transport to reduce the potential traffic impact associated with the visitors. |
| 5. Burdening the Public Transport System<br><br>New and existing residential development arise in Fo Tan, coupled with the visitors of the columbarium, heavy burden will be added onto the current public transport system.<br><br>The traffic in Fo Tan area is already very congested with insufficient public transport system and inadequate choice.<br><br>The East Rail Line has reduced its train configuration from 12 cars to 9 cars which further lower the transport capacity. | MPHK has implemented Visit-by-Appointment Arrangement requiring all visitors to register prior to visiting. The Applicant proposes to control the number of visitors visiting the Application Site to be no more than 150 persons per hour to avoid overcrowding within the MPHK. Hence, the number of visitors generated is controlled and to be kept minimal, and therefore, the additional demand on public transport services is negligible with no adverse impact.<br><br>Despite the changes in train configuration, according to information from the MTR, frequency of services can be increased to match the former hourly capacity with 12-car train service. |
| 6. Worsening Traffic within Fo Tan Area | |

| Public Comments | Response(s) |
|---|---|
| Fo Tan Road is the only access road to Fo Tan Village and a few estate developments. Roads in the area are congested due to parking on streets and high usage of vehicles. It is anticipated the columbarium will further worsen the traffic condition during the Ching Ming and Chung Yeung festival period as more visitors will come to the columbarium for commemoration.<br><br>The establishment of Chun Yeung Estate and Yuk Wo Court, coupled with large scale residential development, will inevitably induce congestion, particularly on holidays.<br><br>The only vehicular access to the site is via Fo Tan Road which is very congested already. With Fo Tan Industrial Area in the vicinity, the traffic condition at Fo Tan area are always congested. The proposed columbarium will further add up the burden.<br><br>The columbarium could potentially collapse the traffic network at Fo Tan Area, which is an industrial area with lots of heavy vehicles coming in and out on a daily basis. | Traffic condition within the Fo Tan area on Sundays and public holidays, when most grave sweepers are expected to visit the proposed development, is observed to be quiet.<br><br>Furthermore, the proposed development is relatively small with only 3,499 niches. Crowd management proposal has been implemented by the Applicant to reduce the amount of traffic generated by the proposed development during the Ching Ming and Chung Yeung festival periods, and the Applicant will continue to implement these measures.<br><br>Hence, the proposed development is expected to have minimal traffic impact to the surrounding road network. |
| 7. Lack of provision of car parking spaces<br><br>The car parking spaces in The Arles will only be available for the residents and tenants. | It is noted that some car parking spaces at the Arles are for retail use, which can be accessed by the general public.<br><br>Alternatively, the car park at Shatin Galleria at Shan Mei Street to the north of Fo Tan Village is a public car park within walking distance, which can be used by visitors of the Subject Site. |

| Public Comments | Response(s) |
|---|---|
| 8. Feng Shui<br><br>The columbarium is located within the area of Fo Tan Village, a traditional village which has a strong belief in Feng Shui. Apparently, the village development is carefully designed to meet with the Feng Shui requirements to ensure health and prosperity. However, the establishment of the columbarium has ruined the sophisticated Feng Shui setting and brought bad spirits to the village. | Examination of the Survey Sheet No. 129-SW-C (1957 edition) has revealed that the 2-storey L-shaped Building on the Application Site was marked on this 1957 Survey Sheet indicating its existence before the private land of the adjoining Fo Tan Village Expansion Area was resumed by the Government in about 1990 for building small houses on the Expansion Area around 1995.<br><br>Prior to establishment of MPHK, the Application Site was being used as a Buddhist worship hall known as "Hing Lung Buddhist Hall"(興隆佛堂). Since then, the Application Site has been continuously serving the community as a venue for half-monthly religious congregation and social gatherings in early and recent years, as well as bringing peace and harmony among the villagers and patrons.<br><br>The Application Site has separate entrance and is far away from the main village cluster (approximately 25m). In this connection, the adverse impact induced from the proposed amendment is generally minimised. |
| 9. Lease Contravene<br><br>It was the court order in 2018 that the columbarium should be shut down and returned niches to customers since human remains are not permissible at the application site. Therefore, the approval of the current application for rezoning the "Village Type Development" and "Green Belt" is utterly inconsistent with the judgement and set an | Court of Appeal ("CA") has delivered its judgement of MPHK's appeal on 9 March 2021. While CA has reconfirmed that cremated human ashes are human remains, MPHK may still proceed with its application for a licence under the Private Columbaria Ordinance ("PCO"). |

| Public Comments | Response(s) |
| --- | --- |
| undesirable precedent, as well as encouraging illegal occupation of Government Land.<br><br>The columbarium has been operating without any government permission. The approval of this application will allow such problematic malpractice of using the site illegally to continue and neglect the public opinions. | Based on the information, the columbarium has been operating since 2008, long before the effective date of the PCO. This application is submitted to fulfil the statutory planning requirements under the PCO to obtain relevant licence for the continuous operation of the current columbarium without disrupting the stakeholders and surrounding area. The application also aims to rectify and regulate the current land use. Should TPB accept the proposed amendment, relevant Government departments can have more holistic control on the development and operation of MPHK.<br><br>The current planning application includes three strips of Government lands which are disperse in different directions. Each of the Government land involves small area and is rather alienated. Upon TPB's acceptance of the proposed amendment, the Applicant will apply for the lease modification to rectify the columbarium use as well as the grant of a Short Term Tenancy through Lands Department to regularize the occupation of the Government land. |
| 10. Air impact<br><br>The site is situated within proximity to residential area, namely, Chun Yeung Estate, residents at Sui Wo Road and the residential development at Fo Tan Road that is under construction. The smoke, ashes and chemical emitted from burning offering and incense are blown to the residential area and significantly affect the air quality. The pollutants such as dusts and carbon monoxide also threaten people's health, particularly on children and elderlies. The smell is intimidating that residents can no longer open windows. A lot of ashes are found in the balcony and roof floor. It is inevitable | An integrated joss paper furnace cum dry-type air pollution control equipment (APCE) is currently used by MPHK to control the emission of smoke from joss paper burning activities. The treatment of flue gas involves the extraction of fine portion of fly ash and smoke through industrial grade, high-efficiency dry filters driven by an extraction fan. Larger pieces of fly ashes that cannot pass through the filters will then be collected at the bottom tray. The exhaust fan can provide the suction force to draw fresh air in through the charging portal of the furnace to enhance a complete and accelerated combustion. The APCE ejects the |

| Public Comments | Response(s) |
|---|---|
| that the proposed amendment of plan, which includes 1,650 unsold niches, will bring even more pollutants to the area, and affect the livelihood of the neighbourhood.<br><br>The pollutant emitted from MPHK will worsen the air quality in addition to air pollution occurred from Fo Tan Industrial Area. | treated flue gas vertically upward to assist dispersion in the atmosphere without hindrance. Therefore, emissions of dark smoke and ashes are not expected from the burning of joss paper and artifacts. The management of MPHK has dedicated trained staff to collect and put visitors' offerings into the joss paper furnace in a controlled manner and feeding rate. Wrapping materials, especially plastic ones are to be removed before they are burnt in the furnace. Hence, hazardous substances emitted during the burning of plastic materials are not expected from the joss paper burning activities. |
| 11. Noise impact<br><br>The hymns and prayers from running regular religious ceremony and funeral is disturbing and scary. | Musical instruments and outdoor public address (PA) system will not be used during the religious activities. The only low noise source on site is the integrated joss paper furnace cum air pollution control equipment (APCE). Without any mitigation, the predicted noise levels at nearby representative noise sensitive receivers (NSRs) are well below the established noise criteria for daytime operation. |
| 12. Visual Impact<br><br>The columbarium will affect the visual of the area, where the public open space and the leisure space of the local residents will be disrupted. | With 6.19m of building height, i.e. 2 storeys, the proposed amendment will remain as a low-rise development, which is similar to the local village setting. Viewing from the east of the Application Site, the proposed amendment will be visually blocked by the flyover and trees at the northeast of the Application Site, which provides a screening effect to shield the view from public roads. The proposed development is barely to be seen from the surroundings. |

| Public Comments | Response(s) |
|---|---|
| 13. Abundant Supply of Niches in Vicinity<br><br>A large-scale columbarium (Po Fok Hill Cemetery) and other small-scale columbaria such as Sai Lam Temple (西林寺) are situated in the Sha Tin area, indicating that there is sufficient supply of such facilities in the vicinity, where the addition of it is unnecessary.<br>A large-scale columbarium is to be constructed in Sandy Ridge and Shek Mun. These imply that the supply of niches will be sufficient for the future demand. | Despite the establishment of several public columbaria, the supply of public niches remains insufficient to cater the increasing number of deaths per year. With the complicated consultation process with the neighbouring residents and Districts Council members, existing private columbaria help meet the urgent demand for niches. In this connection, private columbaria remain crucial in serving the general public. Instead of searching new sites that will likely be unwelcomed by its surrounding neighbourhoods, MPHK can provide niches to moderately relieve the short-term pressure. |
| 14. Undesirable Precedence<br><br>Should the application be approved by the Town Planning Board, it will set an undesirable precedence for other similar applications which intended to rezone the “Village Type Development” and “Green Belt” zones for other uses. | This approval of this application will not set an undesirable precedent for similar applications as each site is to be considered on its own merits which will include the current background history, scale, site compatibility with the surrounding environment and the current policy initiatives. |
| 15. Psychological Impacts on Local Residents<br><br>Generally, columbaria represent bad spirits in traditional Chinese culture. It makes villagers fear to pass by the columbarium at night. Therefore, villagers do not welcome the columbarium as it has been affecting both physical and mental health of villagers. | Prior to establishment of MPHK, the Application Site was being used as a Buddhist worship hall known as “Hing Lung Buddhist Hall”(興隆佛堂). Since then, the Application Site has been continuously serving the community as a venue for half-monthly religious congregation and social gatherings in early and recent years, as well as bringing peace and harmony among the villagers and patrons. |

| Public Comments | Response(s) |
|---|---|
| | The Application Site has separate entrance and is far away from the main village cluster (approximately 25m). In this connection, the adverse impacts induced from the proposed amendment is generally minimised. |
| 16. Fire Safety<br><br>Due to the burning of offerings, fire hazard is possible to occur in the columbarium. However, the fire engines cannot assess to application site due to the limited headroom underneath the flyover. Therefore, the efficiency of firefighting is adversely affected, ultimately threatening the lives and properties of the local residents.<br><br>It is uncertain if the fire service installation at MPHK complies with the relevant regulations. | The Applicant has submitted the fire safety plan including evacuation route plan along with this planning application and the Fire Services Department has no objection. The Application Site is fully compliant with the fire safety requirements. |
| 17. Sewerage<br><br>Currently, wastewater from MPHK is collected and treated in septic and soakaway facilities. As septic tank requires regular removal of sludge, it creates unpleasant smell and affect the surrounding residents. It is known that there was sewerage improvement works carried out by the government before and hence the sewerage from MPHK should be connected to public sewer to reduce the adverse impact. | Since the septic tank is located within the site and small in size, and the sludge removal process will be kept as an enclosed system as far as possible, odour impact on the nearby residents is not anticipated from the infrequent sludge removal process. |

| Public Comments | Response(s) |
| --- | --- |
| 18. Management Plan<br><br>The maximum capacity of the waiting area should be 40 in accordance with the latest social gathering ban. | The maximum capacity as suggested in the Management Plan only applies to the normal condition without the pandemic. During the pandemic, MPHK strictly follows the social distancing measures and 4 persons group gathering restrictions, and has ceased organising the half-monthly religious congregation and social gatherings. MPHK will continue to ensure the total number of visitors adheres to the relevant regulations with sufficient social distance. |

Your Ref: TPB/Y/ST/47

Our Ref: LAS/AC/CK/TT (19-21788)

The Secretary
Town Planning Board
15/F North Point Government Offices
333 Java Road, North Point
Hong Kong

27 August 2021

**By Hand and Email (tpbpd@pland.gov.hk)**

Dear Sirs

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
**AT 93 FO TAN VILLAGE, FO TAN, SHA TIN, NEW TERRITORIES**
**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

We refer to the captioned planning application No. Y/ST/47.

Further to our original submission made to the Town Planning Board ("TPB") via letter dated 16 October 2020 and the further information submitted on 1 April 2021, 16 June 2021, 2 August 2021 and 16 August 2021 we enclose a copy of Responses-to-Comments table addressing comments from the Transport Department.

The above information is submitted to address departmental comments received and constitutes no material change to the application. We sincerely request to exempt the application from publication and recounting requirements.

27 August 2021
Town Planning Board
Attention: Secretary, Town Planning Board

Should there be any queries, please feel free to contact the undersigned or our Ms Tammy Tam at 2846 7483.

Yours faithfully
For and on behalf of
Knight Frank Petty Limited

**Calvin Kan** MHKIP RPP
Senior Manager, Planning & Development
Land Advisory Services
calvin.kan@hk.knightfrank.com
D +852 2846 7429

| | | |
|---|---|---|
| cc | Client | (By email) |
| | Sha Tin, Tai Po and North District Planning Office,<br>(Attn: Mr Derek Wong / Mr. Victor Ho) | (By email) |
| | Traffic Engineering (NTE) Division, Transport Department<br>(Attn: Mr. Thomas Man) | (By email) |

**APPLICATION FOR AMENDMENT OF PLAN**
**UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP 131)**
**REZONING FROM "VILLAGE TYPE DEVELOPMENT" AND "GREEN BELT"**
**TO "OTHER SPECIFIC USES" ANNOTATED "COLUMBARIUM (1)"**
**MEMORIAL PARK HONG KONG**
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**(LOT NOS. 551 S.A, 551 RP, 640, 644 S.A, 644 S.B AND 644 RP IN D.D.176 AND ADJOINING GOVERNMENT LAND)**
**(SECTION 12A PLANNING APPLICATION NO. Y/ST/47)**

| **Departmental Comments** | **Response(s)** |
|---|---|
| **<u>Transport Officer, Traffic Engineering (NTE) Division</u>**<br>**received on 27 August 2021**<br>**(Contact: Ms Yuen Nga Man\| Tel: 2399 2443)** | |
| 1. Table 2.12: The frequency of KMB 73A (both bound) is not correct. | Noted. Information is updated in Table 2.12 attached. |
| 2. Table 2.12: GMB 69K has no stop at Fo Tan Road. Please revise the nearest stop. | Noted. Information is updated in Table 2.12 attached. |
| 3. Table 2.12: Please amend the O/D of the GMB 811A. Bella Vista should be Pictorial Garden. | Noted. Information is updated in Table 2.12 attached. |

# Updated Table

# TABLE 2.12 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR MPHK [UPDATED]

| Route | Routing | Frequency (min) | Nearest Stop |
|---|---|---|---|
| CTB 989 | Munsang College, Tai On Street → Fo Tan Chun Yeung Estate | 4 per PM [1] | A |
| | Fo Tan Chun Yeung Estate → Munsang College, Tai On Street | 4 per AM [1] | B |
| KMB 48P | Tsing Lung Tau → Fo Tan Chun Yeung Estate | 1 AM +1 PM Service[1] | A |
| | Fo Tan Chun Yeung Estate → Tsing Lung Tau | 1 AM +1 PM Service[1] | B |
| KMB 73A | Wah Ming Estate → Yu Chui Court | 20 – 30 | A |
| | Yu Chui Court → Wah Ming Estate | 30 – 35 | B |
| KMB 80M | Kowloon Tong Railway Station → Sui Wo Court | 20 – 30 | A |
| | Sui Wo Court → Kowloon Tong Railway Station | 20 – 30 | B |
| KMB 81K | Sun Tin Wai Estate → Sui Wo Court | 7 – 15 | A |
| | Sui Wo Court → Sun Tin Wai Estate | 7 – 15 | B |
| KMB 85 | Kowloon City Ferry Pier → Shan Mei Street | 13 – 25 | A |
| | Shan Mei Street → Kowloon City Ferry Pier | 15 – 20 | B |
| KMB 88K | Hin Keng → Royal Ascot | 12 – 20 | D |
| | Royal Ascot → Hin Keng | 12 – 20 | E |
| KMB 88X | Ping Tin → Fo Tan Chun Yeung Estate | 20 – 30 | A |
| | Fo Tan Chun Yeung Estate→ Ping Tin | 20 – 30 | B |
| KMB 280X | Tsim Sha Tsui East (Mody Road) → Sui Wo Court | 15 – 25 | A |
| | Sui Wo Court → Tsim Sha Tsui East (Mody Road) | 15 – 30 | B |
| KMB 285 | Sha Tin Central → Fo Tan Chun Yeung Estate | 15 – 30 | A |
| | Fo Tan Chun Yeung Estate → Sha Tin Central (to Sha Tin) | 15 – 30 | B |
| KMB 285A | Fo Tan Chun Yeung Estate → Fo Tan Station Bus Terminus (Circular) | 3 per days[1] | C |
| NWFB 798 | Tiu Keng Leng Station → Fo Tan (Chun Yeung Estate) | 12 – 30 | A |
| | Fo Tan (Chun Yeung Estate) → Tiu Keng Leng Station | 10 – 20 | B |
| GMB 28K | Shatin (Pak Hok Ting Street)→ Tai Po Market Station | 6 – 9 | D |
| | Tai Po Market Station → Shatin (Pak Hok Ting Street) | 6 – 9 | E |
| GMB 28S | Sha Tin (Pak Hok Ting Street) → Pak Shek Kok (Providence Bay) | 30 – 45 | D |
| | Pak Shek Kok (Providence Bay) → Sha Tin (Pak Hok Ting Street) | 30 – 45 | E |
| GMB 60K | Sha Tin Station → Kwei Tei New Village | 4 - 6 | A |
| | Kwei Tei New Village → Sha Tin Station | 4 - 6 | B |
| GMB 60P | Sha Tin Station → Chun Yeung Estate | 2 – 3[2] | A |
| | Chun Yeung Estate → Sha Tin Station | 2 – 3[2] | B |
| GMB 61S | Mong Kok Station → Fo Tan | 30[3] | A |
| GMB 62K | Sha Tin Station → Shatin Lodge | 7 – 15 | A |
| | Shatin Lodge → Sha Tin Station | 7 – 15 | B |
| GMB 65K | Wong Nai Tau → Fo Tan Station | 10 – 20 | A |
| | Fo Tan Station → Wong Nai Tau (to Wong Nai Tau) | 10 – 20 | B |
| GMB 69K | Sha Tin Station (Pai Tau Street) → Ville De Jardin / Greenwood Terrace | 4 – 10 | F [#] |
| | Ville De Jardin / Greenwood Terrace → Sha Tin Station (Pai Tau Street) | 4 – 10 | G [#] |
| GMB 481 | Tsuen Wan Central → Fo Tan (Shan Mei Street) | 6 – 15 | A |
| | Fo Tan (Shan Mei Street) → Tsuen Wan Central | 6 – 15 | B |

Note:
(1) No services on Saturdays, Sundays and Public Holidays
(2) No services on Sundays and Public Holidays
(3) Overnight service.
(#) Services observed to serve Stops (A) and (B) at Fo Tan Village upon request by passengers.

KMB – Kowloon Motor Bus
CTB – Citybys
NWFB – New World First Bus
GMB – Green Minibus

| Nearest Stop | Location of Stop | Approx. Distance (m) | Approx. Walking Time (min) |
|---|---|---|---|
| A | Fo Tan Village (Fo Tan bound) | 125m | 1.5 min |
| B | Fo Tan Village (Shatin bound) | 125m | 1.5min |
| C | Fo Tan Station Bus Terminus | 250m | 3.0 min |
| D | Fo Tan Station (Northbound) | 400m | 4.5 min |
| E | Fo Tan Station (Southbound) | 450m | 5.0 min |
| F | Shan Mei Street (Near Universal Industrial Centre) | 500m | 5.5 min |
| G | Shan Mei Street (Near Shatin Galleira) | 500m | 5.5 min |

TABLE 2.12 ROAD-BASED PUBLIC TRANSPORT SERVICES OPERATING NEAR MPHK (CONT'D) [UPDATED]

| Route | Routing | Frequency (min) | Nearest Stop |
|---|---|---|---|
| GMB 811 | Yu Chui Court → Sui Wo Court | 8 | D |
| | Sui Wo Court → Yu Chui Court | 8 | E |
| GMB 811A | Pictorial Garden → Greenwood Terrace | 20 – 25 | D |
| | Greenwood Terrace → Pictorial Garden | 20 – 25 | E |
| GMB 811B | Yiu On → Fo Tan (Cheung Lek Mei Street) | 10 – 20 (1) | D |
| | Fo Tan (Cheung Lek Mei Street)→ Yiu On | 10 – 20 (1) | E |
| GMB 811P | City One → Royal Ascot | 8 | D |
| | Royal Ascot → City One | 8 | E |
| GMB 811S | Yiu On Estate → Sui Wo Court | 20 – 30 | D |
| | Sui Wo Court → Yiu On Estate | 20 – 30 | E |
| GMB 814 | Sha Tin (Pak Hok Ting Street) → Lai Ping Road | 15 | D |
| | Lai Ping Road → Sha Tin (Pak Hok Ting Street) | 15 | E |

Note:
(1) No services on Saturdays, Sundays and Public Holidays
(2) No services on Sundays and Public Holidays
(3) Overnight service.
(#) Services observed to serve Stops (A) and (B) at Fo Tan Village upon request by passengers.

KMB – Kowloon Motor Bus
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| Nearest Stop | Location of Stop | Approx. Distance (m) | Approx. Walking Time (min) |
|---|---|---|---|
| A | Fo Tan Village (Fo Tan bound) | 125m | 1.5 min |
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| C | Fo Tan Station Bus Terminus | 250m | 3.0 min |
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| E | Fo Tan Station (Southbound) | 450m | 5.0 min |
| F | Shan Mei Street (Near Universal Industrial Centre) | 500m | 5.5 min |
| G | Shan Mei Street (Near Shatin Galleira) | 500m | 5.5 min |

## 4 The Proposed Amendment of OZP & Current Condition at the Application Site

### 4.1 The Proposed Amendment of OZP

To rationalize the current 'Columbarium' use within the Application Site, an amendment to the current zoning will be required. Considering the planning intentions of various zonings in the OZP and the unique nature of the current use at the Application Site, an "OU (Columbarium (1))" zoning appears to be the most appropriate. Notes of the proposed "OU (Columbarium (1))" zone is detailed in **Figure 12**.

OTHER SPECIFIED USES

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

For "Columbarium (1)" Only

Columbarium

Planning Intention

The zone is primarily for land intended for columbaria use.

Remarks

(a) On land designated "Other Specified Uses" annotated "Columbarium (1)",

(i) 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 of 292.674m$^2$**,** a maximum site coverage of 39.073% and a maximum building height of 6.19m; and

(ii) the total numbers of niches for columbarium use shall not exceed 3,499 (single niches: 3,050; double niches: 449).

(b) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the gross floor area and/or site coverage and/or building height and/or total number of niches restrictions stated in paragraphs (a) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

**Figure 12**. **Notes of the proposed "OU(Columbarium (1))" zone**

**Appendix III of RNTPC**
**Paper No. Y/ST/47A**

## Detailed Comments of Chief Building Surveyor/New Territories West, Buildings Department (CBS/NTW, BD)

(a) According to Building (Planning) Regulations 27, no building shall be built to abut against a cutting, including a toe wall supporting a cutting and sufficient intervening space should be provide between the building and the cutting;

(b) if the existing structures are New Territories Exempted House under the Buildings Ordinance (Application to the New Territories) (Cap.121 or previous. Cap 322) or existing structure is erected on unleased Government Land, DLO/ST, LandsD should be in a better position to comment on the captioned application;

(c) if the existing structures are erected on leased land, enforcement action may be taken by the BD to effect their removal in accordance with BD's enforcement policy against unauthorised building works (UBW) as and when necessary. The granting of any planning approval should not be construed as an acceptable of any existing building works or UBW on the Site under the BO;

(d) if the proposed use under application is subject to the issue of a license, please be reminded that any existing structures on the Site intended to be used for such purposes are required to comply with the building safety requirements as may be imposed by the licensing authority;

(e) apart from the BO, the use and operation of a columbarium is also subject to the control of various other legislations on town planning, environmental hygiene, traffic control, fire safety etc. and the land lease restrictions under the jurisdiction of the respective Government departments. In addition to complying with the requirements of the BO, the applicant should also seek agreement/approval from the relevant departments and licensing authorities where applicable;

(f) the Site shall be provided with means of obtaining access thereto from a street and emergency vehicular access in accordance with Regulations 5 and 41D of the Building (Planning) Regulation (B(P)R) respectively;

(g) if the Site does not abut on a specified street having a width of not less than 4.5m, its permitted development intensity shall be determined under Regulation 19(3) of the B(P)R at the building plan submission stage;

(h) before any new building works are carried out on land, prior approval and consent from the BA should be obtained, otherwise they are UBW. An authorised person must be appointed to coordinate all new building works in accordance with BO; and

(i) detailed comments will be given at building plans submission stage.

致:
城市規劃委員會秘書處
香港北角渣華道 333 號
北角政府合署 15 樓

1877

敬啟者 :

有關規劃申請編號 Y/ST/47
新界沙田火炭香港孝思園[“孝思園”]

本人先人的骨灰安放於孝思園。

孝思園呈交有關經修訂的環境評估、交通影響評估及靈灰安置所管理方案的進一步資料都符合部門的標準及要求。

孝思園推行網頁及 Apps 預約訪客到園時間，控制人流，沒有擠迫情況出現。

本人支持孝思園的規劃申請。

涂玉珍

(姓名 : 涂玉珍 )

電話號碼 : [redacted]

日期 : 2021 年 7 月 10 日

RECEIVED
15 JUL 2021
Town Planning Board

☐ Urgent ☐ Return receipt ☐ Sign ☐ Encrypt ☐ Mark Subject Restricted ☐ Expand personal&public groups

**DHK's comment on Y/ST/47**
28/12/2020 15:36

From: Samuel Wong <samuel@designinghongkong.com>
To: "tpbpd@pland.gov.hk" <tpbpd@pland.gov.hk>
FileRef:

1 attachment

20201228 Y_ST_47 Fo Tan Rezone V&GB to OU(Columbarium).pdf

Dear Sir/Madam,

Our comment on the following application is attached:

1. Y/ST/47

Thank you for your attention.

Yours faithfully,
For and on behalf of Designing Hong Kong Limited
Samuel Wong | Project Officer
T: +852 3104 2767 | E: samuel@designinghongkong.com

創建
DesigningHongKong
香港 .com

28 December 2020
Chairman and Members
Town Planning Board
15/F, North Point Government Offices
333 Java Road, North Point, Hong Kong
Fax: 2877 0245;
Email: tpbpd@pland.gov.hk

**To rezone the application site from "Village Type Development" and "Green Belt" to "Other Specified Uses" annotated "Columbarium(1)"**
**(Application No. Y/ST/47)**

Dear Chairman and Members,

Designing Hong Kong Limited **objects** the captioned for the following reasons:

- Part of the proposed area is zoned as **"Village Type Development (V)"**. The planning intention of this zone is primarily for designating both existing recognized villages and areas of land considered suitable for village expansion. Land within this zone is primarily intended for development of Small Houses by indigenous villagers. It is also intended to concentrate village type development within this zone for a more orderly development pattern, efficient use of land and provision of infrastructures and services.

- **The other part of the proposed area** is zoned as **"Green Belt"**. The planning intention of this zone is primarily for defining the limits of urban and sub-urban development areas by natural features and to contain urban sprawl as well as to provide passive recreational outlets. There is a general presumption against development within this zone.

- The proposed area is surrounding by village clustering and dense vegetation. The rezoning from "Village Type Development" and "Green Belt" to "Other Specified Uses" annotated "Columbarium (1)" does not compatible with the existing landscape of the area.

- The approval of the application would set an undesirable precedent for other applications within the "Green Belt (GB)" zone, and lead to a general degradation of the rural environment and landscape of the area.

Here we submit our concerns for your consideration.

Yours,
**Designing Hong Kong Limited**

1441

沙田鄉事委員會
電話：2691 1465 傳真：2699 2717
新界沙田排頭街 13 號

SHATIN RURAL COMMITTEE
Tel.No.2691 1465 Fax No.2699 2717
No.13 Pai Tau Street, Shatin, N.T.

本會檔號：STRC2021-21
敬啓者：

新界沙田火炭丈量約份第 176 約地段第 551 號 A 分段、第 551 號餘段、第 640 號、第 644 號 A 分段、第 644 號 B 分段及第 644 號餘段和毗連政府土地把申請地點由「鄉村式發展」及「綠化地帶」地帶改劃為「其他指定用途」註明「靈灰安置所（1）」地段（申請編號：Y/ST/47-申請人提交的進一步資料）

就標題規劃諮詢，改劃用地涉及鄉村範圍及綠化地帶，火炭村兩位村代表及大部分村民反對項目，強烈反對在村內經營骨灰龕場，由於改劃位置接近民居，不但影響居民日常作息，甚至破壞村中風水，增加區內人流及交通負荷，故此，要求政府正視村民意見，否決申請，停止損害村民利益，綜合各方意見，提出反對理由如下：

1、 位置接近民居，引起居民不滿和恐懼，心理上難以接受，對居民造成一定心理壓力；當中焚香燒冥鏹拜祭，釋放大量有害氣體及散佈灰燼，造成環境污染，影響居民健康等，附近居民投訴龕場點燃香燭及燃燒冥鏹產生大量煙灰隨風漂浮，導致村民的天台及露台均佈滿黑色的灰燼，時常沾污晾曬衣服等，影響居民家居衛生。

2、 交通方面硬件措施不足，前來拜祭的車輛停泊於附近鄉村範圍，違泊影響村民正常出入，眾所周知火炭區交通擠塞問題嚴重，火炭路是車輛進出火炭工業邨的必經之路，也是火炭村、禾寮坑村、黃竹洋村、桂地村與及多個大型屋邨回家必經之路，汽車流量大，事實上現時路面情況已經不勝負荷，根本不足以應付額外的車流，尤其街邊太多違泊車輛，平日塞車令人非常頭疼，一直是該區民生一道難題，預計適逢春秋二祭，大量拜祭人士駕車前往將會令當區交通進一步惡化，癱瘓該區交通後果不堪設想；人流驟增，破壞村中寧靜環境，嚴重滋擾村民生活。

3、 破壞風水佈局，新界地方的宗教文化向來十分重視風水，故該村建村時曾聘請風水師勘察地形環境、佈局風水陣，有三間祠堂、兩座伯公作守護神，因此長期以來，火炭村均能風調雨順，村民安居樂業。如今「骨灰龕」設置，實與該村原有風水局相沖，當區居民皆不歡迎此類龕館，眾人避之則，心生疑慮恐懼不安。

4、 鄉村範圍綠化地帶不適宜興建骨灰龕，與現時環境出現不協調，亦減少該綠

1441

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化地帶作為附近屋村與現有場所的緩衝作用。

另外，法庭在 2018 年頒下判詞，指申請人非法經營骨灰龕場違反地契，裁定申請人敗訴要將現存骨灰移走，向客戶全數退款、停止銷售龕位及停止宣傳，事實上申請人網站依然有相關宣傳，招攬市民前來投資購買龕位。申請人不但沒有承擔責任，還向城規會闖關爭取經營權，這是與法庭判令背道而馳，質疑申請人逃避法律責任，欺騙市民繼續違法經營圖利，目的昭然若揭，申請人違反租契條款是不爭事實，敬祈 貴署謹慎考慮，調查處理涉及相關違規行為，還公眾一個合法合理的處理結果，讓公眾信服。

此致
城市規劃委員會

沙田鄉事委員會主席 莫錦貴

2021-04-26

1441

沙田鄉事委員會
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綜合以上意見本會反對是次申請，要求政府正視居民意見，否決上述規劃申請，為當區居民辦實事解決居民的後顧之憂。

此 致
規劃署城市規劃委員會

沙田鄉事委員會
主席：莫錦貴

2021 年 4 月 26 日

**就規劃申請/覆核提出意見 Making Comment on Planning Application / Review**

| | |
|---|---|
| 參考編號<br>**Reference Number:** | 210504-164202-52763 |
| 提交限期<br>**Deadline for submission:** | 07/05/2021 |
| 提交日期及時間<br>**Date and time of submission:** | 04/05/2021 16:42:02 |
| 有關的規劃申請編號<br>**The application no. to which the comment relates:** | Y/ST/47 |
| 「提意見人」姓名/名稱<br>**Name of person making this comment:** | 先生 Mr. 麥梓健 |

意見詳情
**Details of the Comment :**

致 城規會：

本人接獲火炭村居民反映，極力反對孝思園的規劃申請（申請編號：Y/ST/47）。此規劃不但嚴重影響火炭村居民的日常生活，亦違反2018年高等法院對孝思園的裁判。理據如下：

（一）孝思園與火炭村相近
《報章通知》裏列明「申請地點的位置是獨立自成一角的，並和位於孝思園北面的火炭村分開……孝思園的拜訪者不會闖入屋村範圍」，此等說明並不正確。據了解，孝思園地點在火炭村範圍內，地點為火炭村99號，而鄰近150米範圍內有村民居住，故孝思園與火炭村相近，並非「自成一角」，拜訪者亦須進入火炭村範圍，才可進入孝思園。

（二）孝思園嚴重影響村民生活
由於孝思園與火炭村相近，孝思園將影響村民的日常生活。第一，孝思園改劃用途後，將增加1650個龕位，可見將來會有更多拜訪者，火炭村的人流定必不勝負荷。在特別日子如清明節，附近交通的需求亦會提升，明顯阻礙村民日常出行。第二，孝思園誦經或播放宗教歌曲的活動，將造成噪音滋擾。第三，孝思園燒衣紙的煙霧，亦會飄至鄰近村屋，造成空氣污染，影響健康。由此可見，在嚴重影響村民生活下，孝思園改劃土地用途根本不可行。

（三）孝思園是違法骨灰龕場
孝思園早前被指非法經營骨灰龕場，於2017年向高院申請司法覆核，要求法庭聲明在其並無違反地契。2018年法庭頒下判詞，裁定孝思園敗訴，須將現存骨灰移走。故此，孝思園在法律上是一間違法骨灰龕場，城規會理應拒絕其規劃申請。

從上述可見，孝思園是一間違法及影響居民的骨灰龕場，城規會應考慮村民的意見，撤回孝思園的規劃申請。

敬祝
身體健康

沙田穗禾區區議員麥梓健
2021年5月4日

新界沙田火炭丈量約份第176約地段第551號A分段、第551號餘段、第640 號、第644號A分段、第644號B分段及第644號餘段和毗連政府土地 把申請地點由『鄉村式發展』及『綠化地帶』地帶改劃為『其他指定用途』註明『靈灰安置所（１）』地帶

（申請編號：Y/ST/47）

敬啓者：

申請人呈交的進一步資料，沙田火炭村原居民和其親屬提供意見如下：

㈠ 我們於2020年12月24日反對上述申請信中的內容提及孝思園拜訪者駕駛車輛前來闖入本村範圍的問題，申請人呈交的進一步資料，只是向城規會表明孝思園區內外均沒有泊車設施，所以鼓勵訪客乘搭公共交通工具往來，從而減少訪客乘坐私家車或的士往來孝思園，以助減低區內行車道路之負荷。申請人沒有回應孝思園訪者將車輛停泊在本村緊急車輛通道閘口前阻塞着入口，妨礙緊急車輛如救護車和消防車進入本村救急，完全漠視本村村民的生命安危。

㈡ 孝思園呈交的進一步資料的環境評估中提及2018年1月完工的環保化寶爐已投入服務，訪客所有寶帛、衣紙、冥嫌、紙扎祭品在設置之環寶爐內焚化，每小時化寶量達7公斤。除了春秋二祭，最為嚴重的還有農曆七月開始的盂蘭節整個七月，訪客陸續攜帶大量拜祭物品前來燃燒，使到空氣污染問題更加嚴重，大量的黑色灰燼隨風飄浮到村民的天台及露台上，要用大量的水頻密清洗，晒出來的衣服和室外的盆栽也沾上很多飛灰。

孝思園設置的環保化寶爐是乾式化寶爐，出現這種情況是超出化寶爐的負荷，再加上化寶速度較低，不完全燃燒產生更多一氧化碳等毒氣，令到污染物直接被排至大氣中，造成環境污染。孝思園現在只售出1849個龕位，還有1650個龕位未售出已經嚴重滋擾村民生活，如果全部售完後果更加嚴重。

㈢ 7SE-A/C 352斜坡維修責任是由D.D. 176 LOT 644 R.P業主負責。申請人呈交岩土工程規劃檢討進一步資料，其結論是根據A至I附件，資料均是在2021年前的記錄，有些甚至是於2006年或更前的報告、資料或圖片。

申請人沒有把自己的土地用於住宅的用途，而擅自更改為骨灰龕，在此土地上的活動嚴重干擾了村民的生活，而這些妨擾行為貝有持續性、嚴重性和構成實際影响，危害到村民的生命、安全、健康和舒適。申請人在靈灰安置所管理方案中也提及他們會致力達到所訂下的服務承諾和目標，但有時或受控制能力以外之因素影响，而未能達標。

RECEIVED
- 4 MAY 2021
Town Planning Board

改劃用地涉及鄉村範圍及綠化地帶，改劃的土地位置接近民居，火炭村原居民及親屬懇請城規會不給予和拒絕批准是次規劃申請。

我們的聯絡地址：[redacted] 鄭業昌先生

此致

城市規劃委員會

日期：2021 年 5 月 4 日

關於孝思園提交的進一步資料（申請編號：Y/ST/47）

提供意見者的簽名：

鄭紀琼　鄭皓仁
鄭志健　鄭先桑伽
Wally鄭聲彩　鄭小枝
鄭劉玉蓮　鄭仲麟
鄭紫霞　鄭雪美慈
鄭子文
鄭錦標　鄭錦圖
鄭兆麟　鄭錦英　鄭結珍
鄭連梅蘭　鄭楊有嬌　鄭煜輝
鄭佩珊　鄭佩琼　鄭業昌
鄭錦偉　鄭雪琴

日期：2021年5月4日

致城市規劃委員會秘書：

專人送遞或郵遞：香港北角渣華道 333 號北角政府合署 15 樓

傳真：2877 0245 或 2522 8426

電郵：tpbpd@pland.gov.hk

**To: Secretary, Town Planning Board**

By hand or post: 15/F., North Point Government Offices, 333 Java Road, North Point, Hong Kong

By Fax: 2877 0245 or 2522 8426

By e-mail: tpbpd@pland.gov.hk

有關的規劃申請編號 **The application no. to which the comment relates**

**Y/ST/47 Received on 01/04/2021**

意見詳情 (如有需要，請另頁說明)

Details of the Comment (use separate sheet if necessary)

就申請編號：Y/ST/47 把「鄉村式發展」地帶改劃為「其他指定用途」註明「靈灰安置所」地帶，御龍山業主立案法團認為，地帶改劃及靈灰龕位安置，相信會帶來以下的負面影響：

(1)骨灰安置所的現址為「鄉村式發展」的用地，若改劃作靈灰安置所地帶，此改動會限制土地用途，而日後該地帶只可用作靈灰安置所用地；

(2) 在現有的公共設施配套下，火炭未來交通配套不足，火炭區未來將會有住宅物業相繼入伙。由於此區域為住宅區，若把該地帶改為興建 3,499 骨灰龕，對出入該地帶的市民及附近交通，帶來顯著的影響，火炭居民進出該地帶有困難，擔心日後參拜人士眾多，特別是春秋二祭時，該地帶交通不勝負荷；

(3) 骨灰龕影響風水及景觀，該地帶為住宅區，相信興建骨灰龕必定剝奪了公眾享用該地帶的景色及休閒景緻的公共空間，骨灰龕對區內影響景觀及郊區外，靈車出入亦對居民構成心理陰影、安寧，導至民不聊生；

(4) 興建骨灰龕後，祭祠的人會燒衣紙，影響空氣造成環境污染，影響住宅區之居民，對樓價帶來負面影響。

因此，本業主立案法團強烈反對規劃申請編號：Y/ST/47 的規劃申請。

「提意見人」姓名/名稱 Name of person/company making this comment 御龍山業主立案法團

簽署 Signature 御龍山業主立案法團 日期 Date 27/04/2020

The Incorporated Owners of The Palazzo
御龍山業主立案法團

1771

就規劃申請/覆核提出意見 Making Comment on Planning Application / Review

| | |
|---|---|
| 參考編號<br>**Reference Number:** | 210713-210957-52319 |
| 提交限期<br>**Deadline for submission:** | 16/07/2021 |
| 提交日期及時間<br>**Date and time of submission:** | 13/07/2021 21:09:57 |
| 有關的規劃申請編號<br>**The application no. to which the comment relates:** | Y/ST/47 |
| 「提意見人」姓名/名稱<br>**Name of person making this comment:** | 先生 Mr. L |

意見詳情
**Details of the Comment :**

反對孝思園更改土地用途, 反對孝思園繼續經營。

1. 政府不應批準其經營骨灰場。
孝思園本來就違法建成。孝思園一直違反地契，2018年法庭已下令其需將骨灰移走，考思園違法經營多年, 欺騙市民謀取利益,考思園更聲稱是因為政府沒有執法,將責任全歸政府。如果政府批準其經營權,等於認同其欺騙市民多年的行為。相關部門應該嚴正執法，勒令孝思園關閉，但多年來一直無視孝思園的違規行為。政府不應批準其經營骨灰場。

2. 嚴重影響居民、交通流量、人流更多聚集。
隨著駿洋邨、旭禾苑落成，火炭交通已極度擠塞。大型私人樓宇亦已開售，未來火炭交通將會更加擠，嚴重影響居民出入。孝思園必會影響假日交通流量。加上現在疫情嚴重,拜祭的人流卻更多聚集。

3. 火炭村本應是個適合居住的地方, 然而多年來每天都被孝思園影響!
火炭村及附近居民，長期忍受孝思園拜祭所造成的煙灰。孝思園拜祭所造成的煙灰隨風飄散，經常吹入民居，對附近居民生活造成極大困擾，空氣質素亦見差劣。
如考思園擴建,火炭村居民將受更嚴重影響。其實一直以來,考思園燒香拜祭的煙灰經常直接吹到火炭村居民家中,天台經常滿地燒衣的灰,及從窗口吹入家中,故此導致經常不能開窗。影響家中小孩成長及引致老人不適。有鼻敏感者更感不適經常病發。火炭村居民生活於此,本應是個適合居住的地方, 然而多年來每天都被孝思園影響!

基於以上種種因素，本人強烈反對孝思園申請更改土地用途, 反對孝思園繼續經營。