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MAJOR WORKS PROJECT MANAGEMENT OFFICE
路政署主要工程管理處

AGREEMENT NO. CE 18/86
KENNEDY ROAD IMPROVEMENTS AND QUEEN'S LINES LINK
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堅尼地道改善計劃及皇后軍營連接路

ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FINAL EXECUTIVE SUMMARY
環境影響評估研究
決策摘要報告

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**Highways Department
Major Works Project Management Office
Kennedy Road Improvements and Queen's Lines Link**

**Environmental Impact Assessment Report
Final Executive Summary**

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INTRODUCTION

The existing hazardous bend in front of the Electric House reduces road capacity and induces road safety problems along the section of Kennedy Road between Monmouth Terrace and Borrett Road. The Kennedy Road Improvement and Queen's Lines Link project (the Project) is to straighten this hazardous bend and to provide a new road linking Kennedy Road to Justice Drive as an alternative route for traffic between Mid-Levels and Central. Figure 1 shows the layout of the Project.

In view of the close proximity of the noise sensitive receivers (NSRs) to the proposed road improvement works and the extensive tree felling in the study area to make way for the roadwork, the Environmental Protection Department (EPD) called for an Environmental Impact Assessment (EIA) to address primarily the noise and ecological issues and to propose necessary mitigation measures.

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PROPOSED ROAD IMPROVEMENT SCHEME

The proposed road improvement works comprise the construction of (a) a 4-lane bridge about 135 m in length to realign Kennedy Road in front of the Electric House, (b) a dual 2-lane road connection of about 400 m in length between Kennedy Road and Justice Drive (Queen's Lines Link), and (c) associated roadworks, drainage works, slope works and landscaping works. Figure 1 shows the layout of the Project. Figure 2 gives the preliminary construction programme for the road improvement works, which are scheduled for completion in 26 months, commencing from February 1998.

A comprehensive traffic survey has been conducted for Kennedy Road, Kennedy Road Bridge, Victoria Barracks Link, Justice Drive, Supreme Court Road and Borrett Road. According to the traffic prediction, 2015 will be the year when the traffic reaches the highest flow within a period of 15 years after opening of the Project. Traffic growth after this year will saturate. Also, the daily traffic peak in the Study Area occurs in the AM period. As such, the subsequent noise impact assessment has been based on the AM peak hour traffic in 2015. Figure 3 shows the breakdown of traffic flow for 2015.

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IMPACT ASSESSMENT

3.1

Construction Noise

Construction of the Project will inevitably produce construction noise from the use of powered mechanical equipment on site and the haulage traffic on- and off-site. The construction noise levels are predicted to exceed the non-statutory daytime noise limit of 75dB(A)Leq (30 min) by 1 to 5dB(A) at residential dwellings DH-A, 2MMT, MST, MMP, SUT, RC-A, 21MP, 21SS, NMMT, STT1, STT2, CMFA, BWP, 10BW and FT as shown in Figure 4. With regard to the educational establishments, NSRs CIS and WEEC, the highest predicted noise levels is 77 dB(A) Leq (30 min) of 7 dB(A) above the noise criterion. As a result, construction noise impacts are considered to be

significant and appropriate mitigation measures are required to alleviate the impacts.

3.2 Construction Dust

The improvement works will also generate construction dust from various earth moving activities, stockpiling and haulage of construction materials. Large dust particles tend to fall out within 10 to 30 metres of the construction sites, but finer particles can be easily dispersed to over 100 metres from the site, causing more dust nuisances and environmental health problems to the Air Sensitive Receivers (ASRs). Given that most of the ASRs are located on higher ground than the roads, the impacts are unlikely to be adverse because of dust fallout.

There are a few isolated ASRs which are below the levels of the road works. For example, the lower floors of Dragon House, STT1 and STT2 are below the level of Kennedy Road, but these receivers are over 70m away from the road works and the dust particles should have fallen out before reaching these receivers. Regent on the Park is close to the road works, but this receiver does not rely on open windows for ventilation, thus the impact is likely to be minimal.

3.3 Site Run-off

The discharge of untreated sewage or surface run-off from the site could contaminate surface water, if uncontrolled. Accidental spillage of fuel oil and chemicals, e.g. solvent, can contaminate run-off. Likely impacts include discoloration, turbidity plumes, and depletion of dissolved oxygen and other aesthetic effects on the receiving water bodies.

3.4 Operational Traffic Noise

According to the monitoring and noise modelling results, it is apparent that the existing noise sensitive developments along Kennedy Road are likely to suffer from high traffic noise levels. NSRs situated further away from Kennedy Road (e.g. NSRs at Bowen Drive and Borrett Road), however, enjoy a quieter noise environment.

The predicted traffic noise levels in peak hour traffic flow of Year 2015 at the existing NSRs, as indicated in Figure 4, range from 53 to 73 dB(A) L10 (1 hr), representing noise exceedances up to 3 dB(A) from the noise criteria at NSRs RC-B, RC-C, MC-A, SAC and 62KR. The impacts are mainly due to high peak hour traffic flows (i.e. 2599 veh/hr) on the existing Kennedy Road in 2015.

Given that the predicted noise levels at the identified NSRs are in excess of the HKPSG criteria, noise mitigation measures should be considered to remedy the adverse noise environment.

With regard to the representative planned NSR P1 in the design year 2015, the predicted traffic noise level at P1 is 74 dB(A) L10 (1 hr), which is in excess of the HKPSG criterion by 4 dB(A).

3.5 Existing Trees

The project involves the straightening of a winding section of Kennedy Road with a new section of the road on structure, and provision of a road link between Justice Drive and Kennedy Road. The Project will involve extensive felling of trees in the secondary woodland between Kennedy Road and Justice Drive.

The vertical and horizontal alignment of all elements of each of the separate elements of the scheme, together with the proposed structural form of the bridge and retaining structures, have been examined in detail to minimise the effect on the existing trees, with the very tight physical constraints of the existing site.

A total of 514 no. of trees surveyed could be retained in position on site. However, in an attempt to retain as many trees as possible on site, some of these will require special works to be undertaken including crown pruning for 21 nos., root pruning for 20 nos. and root over filling for 46 nos.

A total of 407 no. of trees will be affected by the proposed works, lying either within the area of the new carriageway, directly under the elevated bridge structure, or would have the majority of their root systems disturbed by the excavation works to build the highway and retaining structures.

As most of the trees affected are situated on steep slopes it would not be possible for them to be successfully transplanted and only some 29 no. of trees which currently lie alongside Kennedy Road and Justice Drive are suitable for transplanting. These include three very large banyan trees located at the top of Justice Drive.

The remaining 378 no. of trees will need to be felled. In addition 10 no. of dead trees unaffected by the works will also be removed.

3.6 Potential Ecological Impact

A series of surveys conducted in the site during the winter and spring seasons in 1996 and 1997 have revealed that patches of mature woodland on the site provide feeding and roosting habitat for birds, bats and squirrels. No other fauna of conservation or regulatory interest was recorded on the site.

The identified ecological impacts of the project are loss of woodland fauna habitat and roosting sites for insectivorous bats due to tree felling, building demolition and road construction.

4 MITIGATION MEASURES

4.1 Construction Noise

As discussed in Section 3.1, most of the NSRs are likely to be exposed to construction noise impacts exceeding the daytime construction criteria. Suitable noise mitigation measures such as use of quieter alternative, minimisation of powered mechanical equipment on-site, and use of temporary noise screening structures, etc. should be provided to protect the affect NSRs throughout the construction period in order that the non-statutory daytime noise limit will be met at all NSRs.

While it is not feasible to dictate the methods and exact schedule of construction to be employed by the Contractor, noise control requirements can be incorporated in the Contract Documents, specifying the noise standards to be met and requirements of noise monitoring on the site. A set of recommended pollution control clauses has been provided in Final Report for incorporation into the Contract Documents. Also, details of the proposed noise monitoring and audit (EM&A) requirements are contained in the EM&A Manual.

4.2 Construction Dust

While it is not envisaged that construction dust impacts would be adverse, appropriate dust control measures such as wheel-washing periodic watering of the site, use of side boards and tarpaulin sheets, should be included as much as practical.

4.3 Site Run-off

Provisions for water pollution control should be included in the Contract. The following measures are recommended:

- All stormwater run-off from the site during the construction should be routed through oil/grit separators and/or sediment basins/raps before being allowed to discharge into the nearby receiving waters.
- All stockpiles areas should be covered e.g. with tarpaulin and intercepting drains provided to prevent site run-off from washing across exposed surfaces or stockpiled areas.

In addition, any effluent generated by the site workforce should be treated before disposal. All sewage discharges from the site should meet the Technical Memorandum on Effluent Standards and approval from EPD through the licensing process would be required.

4.4 Operation Traffic Noise

Apart from a few existing NSRs as described below, all predicted noise levels in 2015 are within the HKPSG criteria for noise sensitive developments and therefore no mitigation measures are necessary.

NSRs RC-B, RC-C, MC-A, SAC and 62KR are exposed to high noise levels from the existing Kennedy Road in 2015. Direct technical remedies of the new roads are considered ineffective because the dominant noise contribution at these receivers are from existing roads.

As the dominant noise source of the planned NSR P1, near the junction of Borrett Road and Kennedy Road, is from the existing roads, no direct technical remedies of the new roads could effectively mitigate the traffic noise impacts. Therefore, development constraints such as building setback and the use of carport underneath podium should be considered during the design stage of the development.

4.5 Existing Trees

The loss of native trees due to the Project and associated potential for effects on wildlife will be mitigated by the compensation tree planting proposals which have been prepared as part of the overall landscape proposals for the scheme as presented in details in the Tree Survey Report. In addition to trees to be transplanted back into the final layout, some 211 no. of new Standard and Heavy Standard size trees and 1590 no. of seedlings and whip size trees and tall shrubs will be planted within the scope of the works in compensation for those lost and to help screen the road and re-establish the existing woodland landscape pattern. Figure 5 shows the proposed tree planting plan for the Project.

4.6 Ecological Impact

Short-term impacts of woodland loss will be partially mitigated by transplanting some trees and planting new large trees, to provide some mature woodland canopy in the short-term. The long-term impacts of woodland loss and associated fauna habitat loss will be mitigated through replanting of appropriate native species on and around the road improvement area.

As a short to medium term mitigation measure for insectivorous bats, the provision of bat boxes will be installed on trees within the site in areas which will not be disturbed by construction. Figure 6 indicates some of the possible locations for bat boxes. In the long-term, these bats should be able to colonise new tree plantings, and possibly the Kennedy Road Bridge if suitable crevices are available.

For mitigation of impacts to other fauna, the Compensation Tree Planting Plan is considered to be adequate, pending the addition of tree and palm species which have been shown to be important to wildlife using the site.

4.7 Residual Impacts and Indirect Mitigation

As discussed above, the noise impacts at NSRs to the east of the Project site (e.g. Royal Court, Monticello Court, Sakura Court and 62 Kennedy Road) arise mainly from traffic on the existing Kennedy Road. It is apparent that even with the installation of substantial noise screening structures (e.g.

partial or full enclosures) on the new roads, noise levels are unlikely to be reduced to acceptable levels. As such, consideration should be given to indirect mitigation of Royal Court, Monticello Court, Sakura Court and 62 Kennedy Road.

EPD's eligibility criteria have been applied to determine whether the above-mentioned NSRs are qualified for consideration of indirect technical remedies through the provision of acoustic insulation and room air conditioners. However, no dwellings are eligible because the dominant noise source is the existing Kennedy Road.

The only residual ecological impact of the project will be a small area of woodland which cannot be compensated on site due to space limitations. This residual impact is not considered serious enough to warrant off-site mitigation.

5 CUMULATIVE NOISE IMPACTS

The redevelopment of the Electric House (into an office building) has been scheduled to be commenced in January 1997 and completed by July 1998. As the redevelopment and the Project will be constructed concurrently, cumulative construction noise impacts due to these two projects have therefore been assessed. According to the noise calculation results, the potential for cumulative impacts is negligible.

No cumulative operational noise impact is envisaged as no concurrent road projects are identified in the Project area.

6 ENVIRONMENTAL MONITORING AND AUDIT

An environmental monitoring and audit (EM&A) programme performs three functions. It ensures that noise from the construction of the project is kept within acceptable levels; it establishes procedures for checking the application and effectiveness of mitigation measures; and it provides the means by which compliance can be checked, exceedances documented, and corrective action recorded.

In view of the close proximity of the Kennedy Road Improvement and Queen's Lines Link to the identified NSRs, an EM&A programme is considered necessary during the construction period. The proposed EM&A programme for this Project which forms a part of this EIA is contained and described in a stand-alone document, Environmental Monitoring and Audit (EM&A) Manual.

Detailed monitoring schedules and audit requirements should be incorporated into the construction contract for the improvement of Kennedy Road and Queen's Lines Link. The clauses containing these schedules and requirements should be formulated in consultation with EPD.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Construction of the Project has been shown to cause significant noise impacts on the noise sensitive receivers in the Study Area. The predicted maximum anticipated construction noise levels are up to 81 dB(A) at the identified NSRs. However, the impacts can be mitigated through proper implementation of appropriate noise control measures and environmental monitoring programme during the construction of the Project.

Based on the projected traffic figures for 2015, it has been predicted that the traffic noise levels at many of the existing NSRs are within the HKPSG noise criteria and therefore no mitigation measures are required. However, a few existing NSRs to the east of the Study Area are predicted to be exposed to noise levels exceeding the HKPSG criteria by 1-3 dB(A). As the main noise contribution at these NSRs comes from the existing Kennedy Road, no effective direct technical remedies can be provided within the scope of the Project. Moreover, these affected NSRs are not eligible for indirect technical remedies according to eligibility criteria.

The planned NSR P1 in the Study Area is predicted to be adversely affected by the road traffic noise from the existing roads. Noise levels are expected to exceed the HKPSG criteria by as much as 4 dB(A). No effective direct technical remedies can be provided for this site within the scope of the Project. For future development on this site, development constraints have been proposed for guidance to the future developer.

Cumulative noise impacts from concurrent projects have been identified and considered. Cumulative construction noise impacts due to the construction of the Project and redevelopment of the Electric House have been assessed to be insignificant. No other road projects in the close vicinity have been identified and thus no cumulative operations impact is anticipated.

The identified ecological impacts of the project are loss of some woodland and fauna habitat. Short-term impacts will be partially mitigated by additional tree plantings and transplantings. Long-term impacts of woodland loss and associated fauna habitat loss will be mitigated through replanting of appropriate native species on and around the road improvement area. The potential loss of roosting sites for insectivorous bats due to tree felling and building demolition will be mitigated in the short to medium terms through provision of bat boxes on the site. In the long term, these bats should be able to colonise new tree plants and possibly the Kennedy Road Bridge. The only residual impact of the Project will be the loss of a small area of woodland which cannot be compensated on site due to space limitations. This residual impact is not considered serious enough to warrant off-site mitigation.

7.2

Recommendations

The following recommendations are made:

- Inclusion of pollution control clauses as recommended in Appendix C of the EIA Report to the Contract Documents to control construction noise from the improvement works.
- Implementation of the EM&A programme as detailed in the EM&A Manual.
- Reduction in number of manhole covers and valve chambers in the carriageway.
- Inclusion of development constraints in the development of the R2 site at junction of Borrett Road and Kennedy Road.
- Implementation of the proposed Tree Felling Plan and Compensation Tree Planting Scheme.
- Provision of bat boxes within the site as a short to medium terms mitigation measure.

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1. 引言

堅尼地道香港電燈公司前的一個急彎不單只減低交通容量，更會觸發堅尼地道界乎萬茂台與波老道一段的道路安全問題。堅尼地道改善工程及興建皇后軍營連接路(下文簡稱「工程」)旨在拉直這危險急彎，並且為半山及中區地方另闢路徑連接堅尼地道與正義道。圖一表示工程位置所在。

鑑於工程地盤接近噪音感應強的地方，而工程完成後預期帶來更高交通流量，此外工程施工期間亦將會大量砍伐樹木，故此環境保護署認為有需要進行一項環境影響評估研究，及早提議一些紓緩措施。

2. 道路改善工程計劃

道路改善工程包括(a)在香港電燈公司前興建一條長約135公尺四線行車天橋，(b)在堅尼地道與正義道之間興建一條長約400公尺雙線雙程行車道(皇后軍營連接路)，及(c)相關的道路工程，渠務工程，斜坡工程和園藝工程(見圖一)。工程期於一九九八年二月動工，為期廿六個月(見圖二)。

顧問公司曾就堅尼地道，堅尼地道天橋，皇后軍營連接路，正義道和波老道進行一項道路交通研究。根據研究結果，2015年的交通流量將會是工程完成通車後十五年內最高的一年，到時交通流量亦將會飽和。此外，每日的交通繁忙時間將會在早上時段出現。故此，交通噪音影響評估是根據2015年早上時段的交通流量作為評估基礎。圖三表示2015年的交通流量。

3. 影響評估

3.1 建築噪音

建築期間使用的地盤機動設備和地盤車輛必定產生噪音。如沒有紓緩措施，建築工程在DH-A、2MMT、MST、MMP、SUT、RC-A、21MP、21SS、NMMT、STT1、STT2、CMFA、BWP、10BW和FT所代表的住宅所產生的噪音聲級將超出日間建築噪音指引[75分貝(A)Leq(30分鐘)]達1至5分貝。至於學校方面(CIS和WEEC)，最高的噪音聲級仍超出指引達7分貝。圖四表示噪音感應強的地方的位置。由於建築噪音影響嚴重，承建商必須執行適當措施來消減噪音。

3.2 建築塵埃

工程活動如挖土、傾瀉泥土和運送建築物料都會產生建築塵埃。較大的塵埃粒子一般在10公尺至30公尺左右便停止懸浮，而較幼細的粒子則輕易擴散至100公尺以外地方，影響空氣質素和環境健康。由於大部份受工程影響的地方位於高處，故此它們受建築塵埃影響的機會很微。

另一方面，有些地方的位置較道路水平低，如STT1和STT2 (Dragon House 低層住宅) 是低於堅尼地道。不過由於它們距離工程範圍70公尺以外，故此塵埃粒子並不輕易達到。雖然御花園接近工程範圍，但由於整座大廈已裝置中央空調系統，故此影響不嚴重。

3.3 地盤流水

如不加以控制，建築地盤所排放未經處理的污水及流水將污染地面水。意外洩漏的燃油和化學劑亦會污染流水。主要的影響包括令水體色度改變，混濁，溶解氧消耗及其他視覺上影響等。

3.4 交通噪音

根據評估結果，沿堅尼地道的現有噪音感應強的地方會受到較大的行車噪音影響，而遠離堅尼地道較遠的地方例如寶雲徑及波老道則較為寧靜。

在2015年，現有噪音感應強的地方如圖4表示將受到介乎53至73分貝的交通噪音影響，在RC-B、RC-C、MC-A、SAC和62KR的地方將會超出標準3分貝，主要噪音來源是高交通流量(每小時2599架次)行走於現有的堅尼地道。

由於交通噪音水平超出標準，故此有需要考慮提供紓緩措施。

至於未來噪音感應強的地方(P1)，在2015年時的噪音水平將會是74分貝，超出標準4分貝。

3.5 樹木

此項工程計劃涉及提供一條行車天橋及行車道連接正義道及堅尼地道。從而拉直現有堅尼地道的彎位。因而需要砍伐部份位於堅尼地道及正義道之林木。

道路之定線與建議中的行車天橋和護土牆的結構形式，均根據工程工地本身的限制以詳細考究，從而減低對林地內現有林木之影響。

此項工程計劃曾進行了一項樹木測量，鑑定了合共514棵樹木可原位保留，但其中21棵需要修剪樹冠，20棵需要修剪樹根及46棵需要在根上進行填土。

位於新建道路內及行車天橋橋底或位於道路及護土牆之挖掘工程範圍內，合共407棵樹木將受到建議中的項目所影響。

因大部份樹木位於較斜的斜坡上，移植樹木並不可行。只有29棵位於堅尼地道及正義道路旁方可進行移植，其中包括位於正義道上端的三棵大榕樹亦將被移植到附近地點。

餘下的378棵樹木需要被除去。並有10棵不受此項工程項目影響的枯萎樹木，亦將被除去。

3.6 生態影響

於一九九六年冬季及一九九七年春季進行一連串的生態研究顯示出，在研究範圍內的成熟樹木能夠提供食物和棲身地方給雀鳥、蝙蝠和松鼠，但並無發現其他具保育價值的動物。

由於砍伐樹木，拆卸建築物和興建道路，影響動物和蟲食性蝙蝠的棲身地方。

4. 紓緩措施

4.1 建築噪音

改善建築噪音的方法包括使用低噪音型機械設備、減少機械設備數量、採用臨時隔音屏障等，藉此令建築噪音水平降至75分貝或以下。

雖然當局未能控制承建商所使用的建築方法，但仍能夠將噪音標準和所需的噪音監察規格，以及噪音消滅條款列入投標合約文件。關於環境監察及審查規格的詳細資料已包括在環境監察及審查手冊內。

4.2 建築塵埃

雖然工程帶來的建築塵埃影響不大，但仍需執行適當措施控制塵埃擴散，如清洗地盤車輛輪胎同定時將車輛出入的通道灑水，使用擋風屏障和帆布等。

4.3 地盤流水

污水消滅條款列入合約文件。承建商需執行以下措施：

- 流經地盤內的雨水需先分隔油污和砂石，才能排放到附近的水體。
- 所有儲存物料及土方的地方應使用帆布覆蓋，並應防止地盤流水流經此等地方。

另外，地盤污水需經處理才能排放，而排出的污水必須符合技術備忘錄內所訂定的標準，並且得到環境保護署所發出的牌照。

4.4 交通噪音

除下述少數現有噪音感應強地方外，根據2015年交通流量預計的交通噪音水平將不會超越噪音標準，故此無需執行噪音紓緩措施。

噪音感應強的地方RC-B、RC-C、MC-A、SAC和62KR會受到交通噪音影響。由於主要的噪音來源是現有的堅尼地道，故此在新建道路上提供直接技術補救措施亦未能有效地紓緩噪音。

至於未來噪音感應強的地方(P1)位於堅尼地道及波老道交界點，亦主要受到現有堅尼地道影響，故此在新建道路上提供直接技術措施未能有效紓緩噪音。有見及此，一些發展限制如增加住屋與道路之間距離和在平台花園下提供停車間等，應該在發展項目設計階段列入考慮範圍。

4.5 樹木

就此項工程計劃所導致之土生樹木的減少及其對生態模式的連帶影響，將以種植新樹及遷移樹木的方法來補償，而該補償方案已納入整體的園林佈置計劃中及刊載於樹木測量報告內。除卻遷移被影響之樹木，此項工程計劃範圍內亦包括種植211棵標準及超標準尺寸之新樹及1590棵幼樹及高樹叢，用以補償被砍伐的樹木及屏隔道路，並重新建立原有之園林境像。建議之樹木種植計劃已刊載於附圖五。

4.6 生態影響

移植某些樹木和種植大樹將可在短期內提供成熟樹冠，藉此對失去林地所造成的短期影響作出舒緩。為舒緩因失去林地所造成的長期影響，可於工程範圍內和周圍地方重新種植適當樹木品種。

為了舒緩對蟲食性蝙蝠造成的影響，在工程範圍內不受影響的樹木上放置蝙蝠箱。圖六表示放置蝙蝠箱的可行地方。長遠來說，這些蝙蝠應該能夠棲息於新植樹木上。

對其他動物的舒緩措施，如加種植已被證明對棲息於工程範圍內野生動物有重要作用的新樹木和棕櫚，那麼樹木種植補償計劃已是足夠的舒緩方法。

4.7 剩餘影響及間接技術補夠措施

工程地盤範圍東面的噪音感應強的地方，如皇朝閣，滿峰台，金櫻閣及堅尼地道62號，噪音來源主要是現有的堅尼地道，故此即使在新建道路上興建隔音設施，噪音水平亦未能減至合乎標準。有見及此，有需要考累為這些受影響單位提供間接技術補夠措施。

顧問公司曾就環境保護署訂定三項準則來評審受影響居所是否合資格獲得考慮提供隔音裝置。由於它們主要受到現有堅尼地道影響，故此並未合資格獲得提供隔音裝置。

至於生態方面，由於地方所限，某些被砍伐的樹木未能補償，不過這問題並不嚴重，故此未有需要在地盤以外地方重新種植樹木。

5. 累加噪音影響

香港電燈公司大樓重建計劃預期於一九九七年一月動工，並於一九九八年七月完工。由於重建工程與道路改善工程將在某段時期同時進行，故此顧問公司曾就這兩項工程所帶來的累加噪音作出評估。結果顯示累加噪音影響並不嚴重。

至於交通噪音方面，由於研究範圍並沒有其他道路工程同時進行，故此未有累加交通噪音。

6. 環境監察及審查

環境監察及審查計劃能夠確保建築噪音合乎標準，亦能確保所建設的改善措施能夠有效地執行。

鑑於堅尼地道監察及皇后軍營連接路與噪音感應強的地方非常接近，故此環境監察及審查有需要在建築期間執行。作為此環境影響評估一部份，顧問公司建議的環境監察及審查計劃會以獨立報告書呈交有關部門。

有關詳細的監察程序及審查要求應該列入建築合約文件，其條款內容亦應該向環境保護署諮詢。

7. 結論及建議

7.1 結論

建築期間，工程對附近一帶的噪音感應強的地方帶來很大的影響，最高的建築噪音水平達至81分貝。不過如果能夠徹實執行適當的改善措施和環境監察及審查計劃，噪音水平將會消減至指引或以下。

在2015年，大部份現有噪音感應強的地方都符合交通噪音標準，故此不需要舒緩措施。不過少數位於研究範圍東面的噪音感應強的地方將會面對超出標準1至3分貝的交通噪音影響。由於主要的交通噪音來源是現有的堅尼地道，故在新建道路上提供直接技術補救措施都未能有效舒緩噪音。此外，根據環境保護署訂定的準則，受影響住屋亦未能合乎資格獲得隔音裝置。

未來噪音感應強的地方(P1)主要受到現有道路影響，噪音水平將超出標準4分貝，並且沒有直接技術補救措施能夠有效地舒緩噪音，故此顧問公司建議一些發展限制給發展商參考。

因重建香港電燈公司大樓帶來的累加建築噪音並不嚴重，而附近並沒有其他道路工程進行，所以未有任何累加交通噪音。

因工程進行帶來的生態影響主要是林木和動物棲身地方的損失。短期影響可藉著移植樹木和重新種植樹木來舒緩，而長期影響則需要在工程範圍內及附近地方重新種植合適樹木品種。為舒緩對蟲食性蝙蝠的影響，將會在工程範圍內放置蝙蝠箱，長遠來說，這些蝙蝠應能棲息於新植樹木上。由於地方所限，某些被砍伐的樹木未能補償，不過這問題並不嚴重，故此未有需要在地盤以外地方重新種植樹木。

7.2 建議

- 將噪音消減條款列入承建商合約文件以管制建築噪音。
- 建築期間，執行環境監察及審查計劃。

- 減少行車道上進入井蓋及水制室的數量。
- 為波老道及堅尼地道交界的未來住宅用地加入發展限制考慮事項。
- 執行建議的樹木砍伐計劃和樹木補償計劃。
- 在工程範圍內放置蝙蝠箱。

FIGURES

附圖

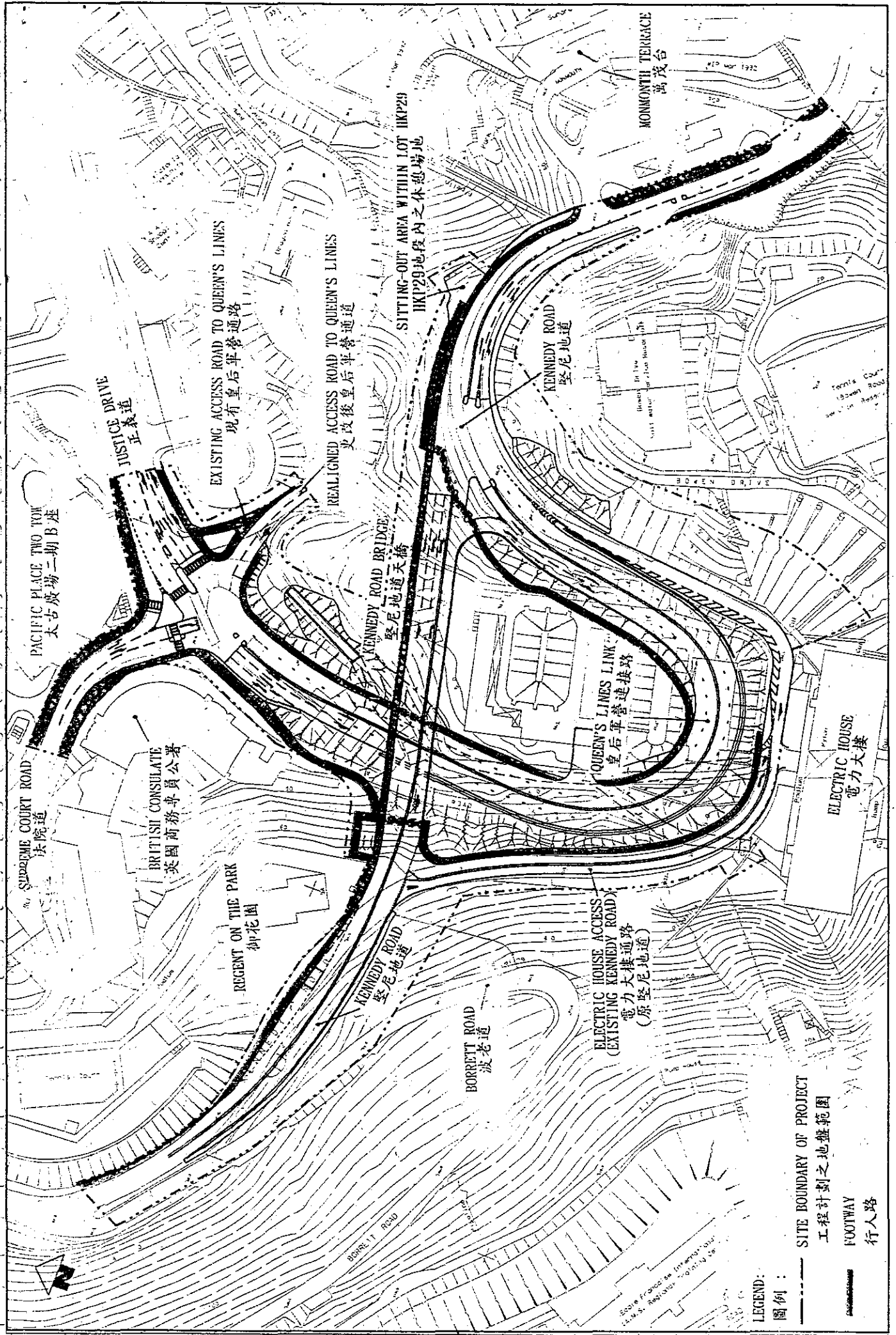


FIGURE 1 WORKS LIMIT OF PROPOSED ROAD IMPROVEMENT WORKS
 附圖一 道路改善工程建議之工作範圍

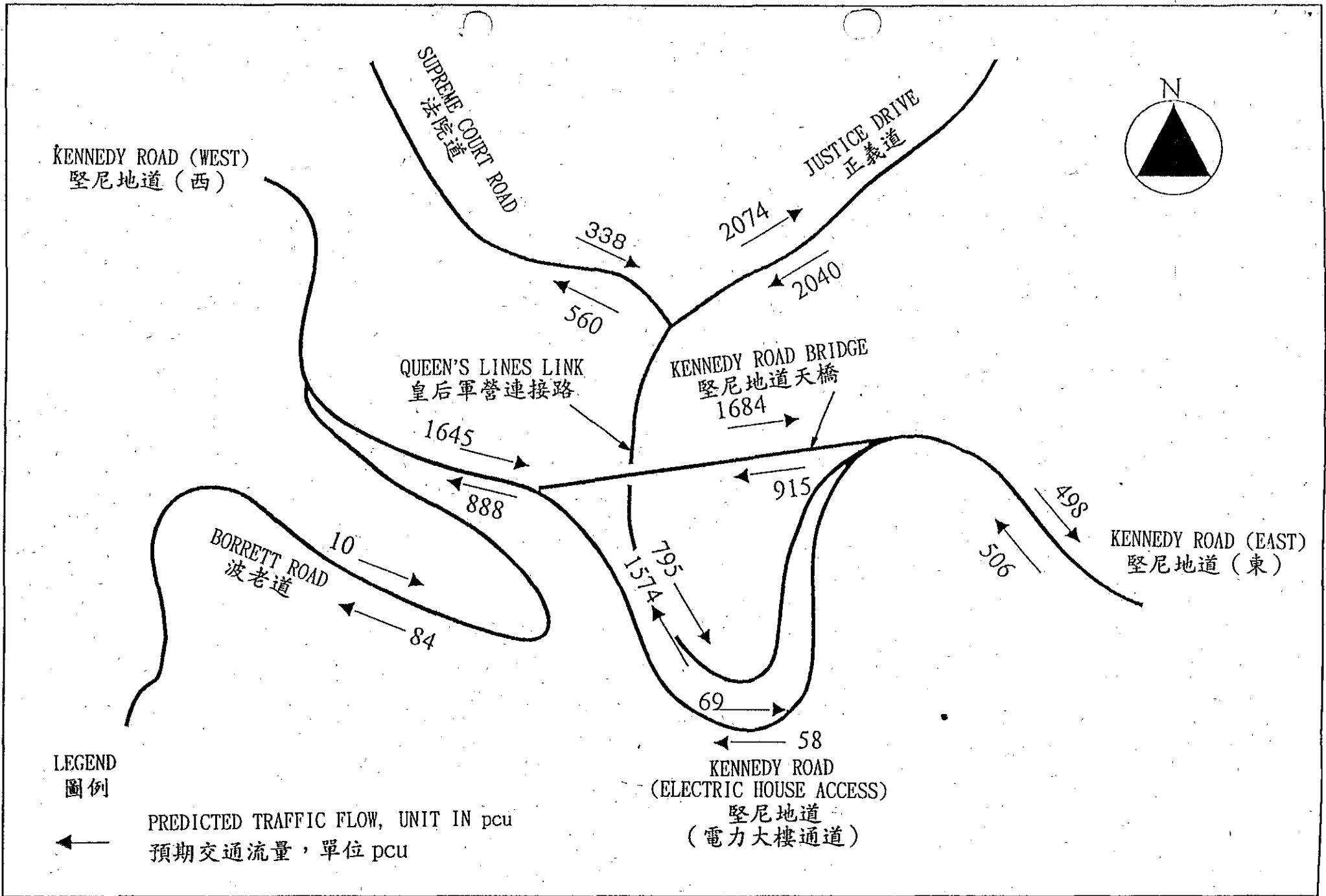


FIGURE 3
附圖三

2015 TRAFFIC FIGURES
二零一五年之交通流量

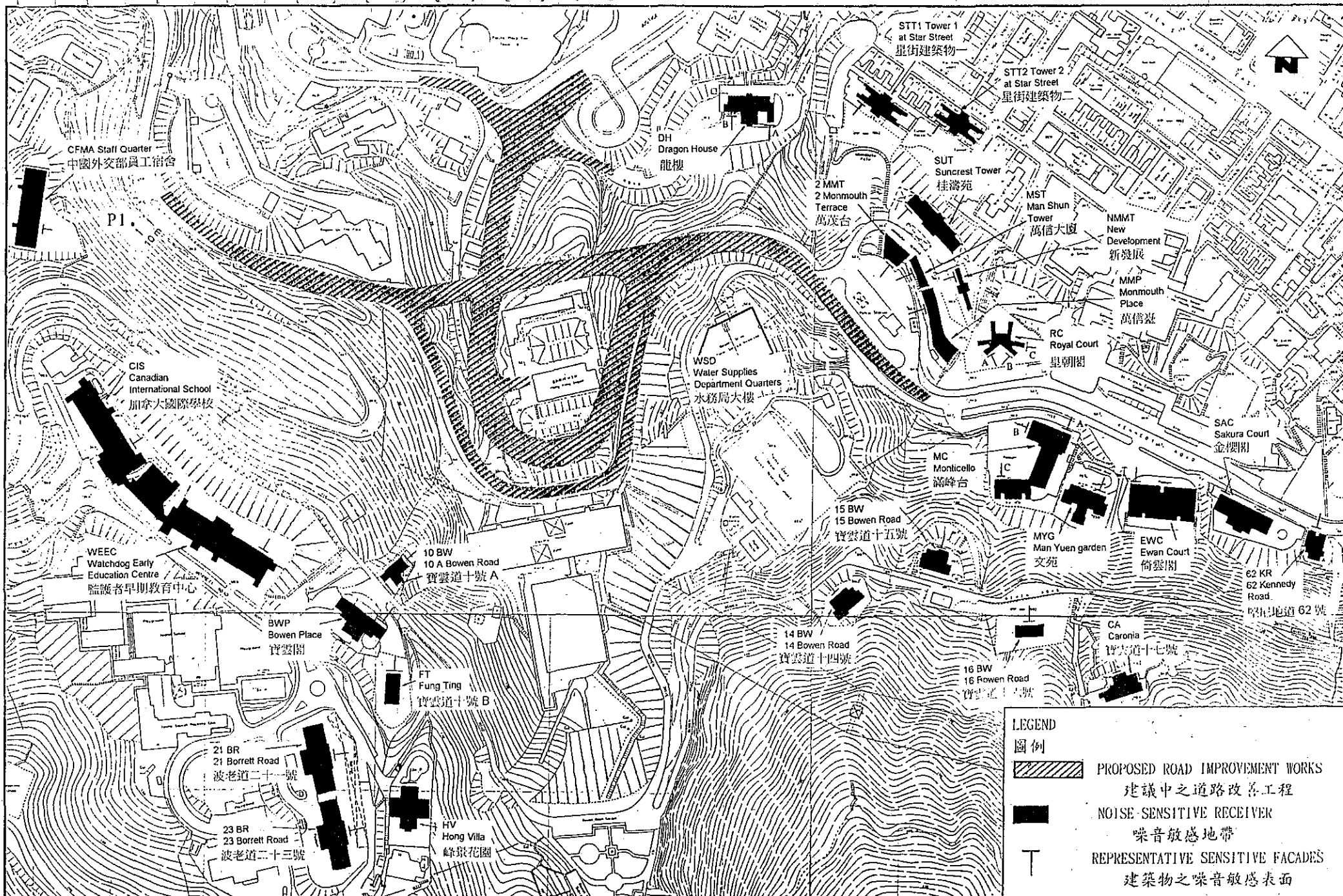
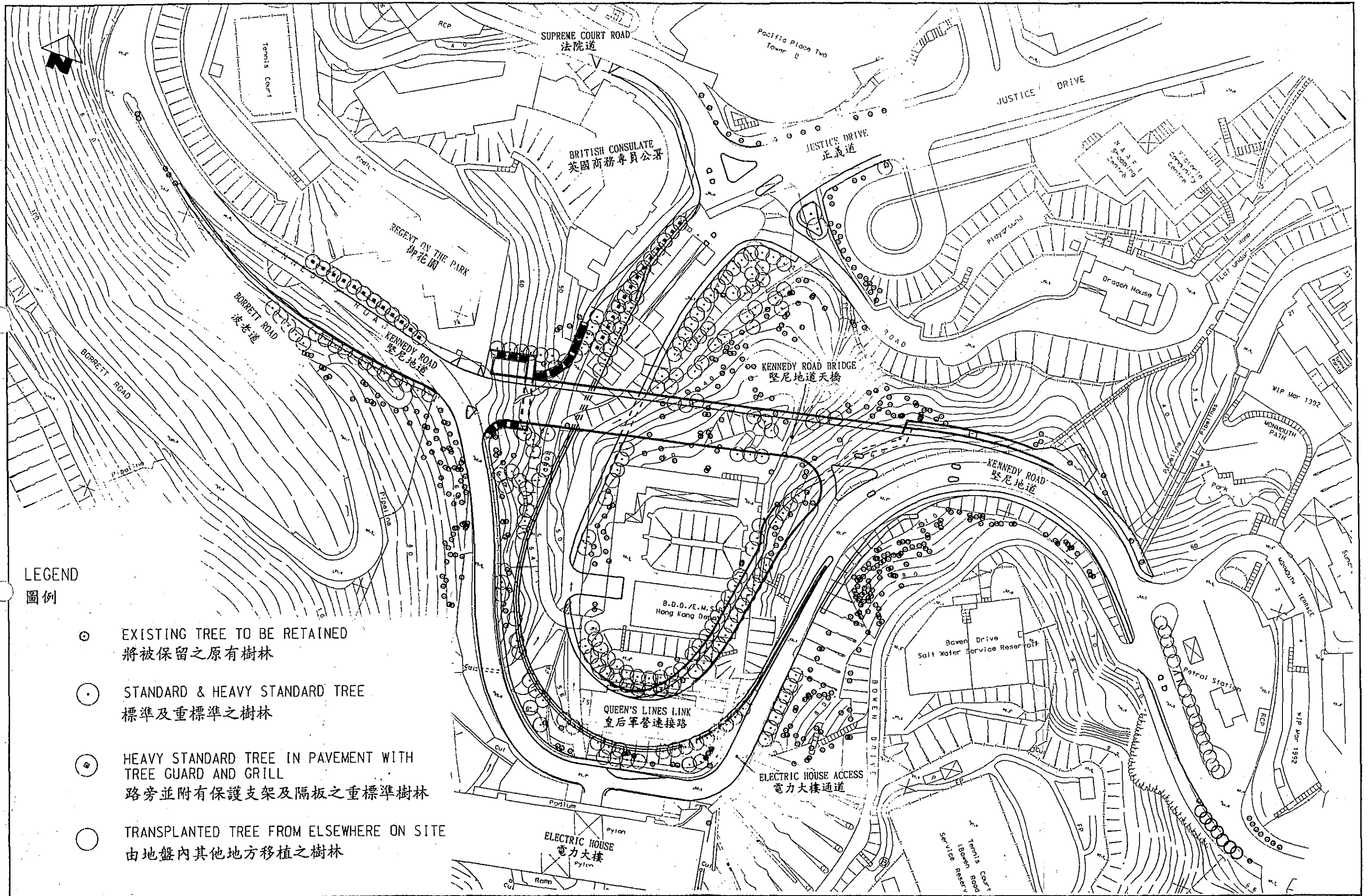


FIGURE 4 NOISE SENSITIVE RECEIVERS AND REPRESENTATIVE SENSITIVE FACADES
附圖四 噪音敏感地帶及其代表之建築物



LEGEND
圖例

- ⊙ EXISTING TREE TO BE RETAINED
將被保留之原有樹林
- STANDARD & HEAVY STANDARD TREE
標準及重標準之樹林
- ⊙ HEAVY STANDARD TREE IN PAVEMENT WITH TREE GUARD AND GRILL
路旁並附有保護支架及隔板之重標準樹林
- TRANSPLANTED TREE FROM ELSEWHERE ON SITE
由地盤內其他地方移植之樹林

FIGURE 5 TREE PLANTING PLAN
附圖五 種植樹林之平面圖



FIGURE 6
 附圖六

POSSIBLE SITES FOR INSTALLING BAT ROOST BOXES
 放置蝙蝠箱之可行地方

