

**For discussion
on 2 April 2001**

**LEGISLATIVE COUNCIL
PANEL ON PLANNING, LANDS AND WORKS**

**PWP Item No. 277CL – Tseung Kwan O development, phase II,
Remaining engineering works
Grade Separated Interchange T1/P1/P2**

PURPOSE

This paper seeks members' support to the construction of a grade-separated interchange at the junction of Tseung Kwan O Tunnel Road (T1)/Wan Po Road (P1)/Po Shun Road (P2).

BACKGROUND

2. At present, the junction of Roads T1/P1/P2 to the north of Tseung Kwan O (TKO) Town Centre is an at-grade interchange in the form of a roundabout. The location of the interchange is shown on the plan at Enclosure 1. This interchange links East Kowloon via Tseung Kwan O Tunnel Road with all development areas in TKO.

3. With the on-going population intake associated with the planned developments in TKO, we estimate that the population in TKO will increase from the present population of 270 000 to 390 000 in 2006, and will further increase to 490 000 in 2011. The existing roundabout junction will not be able to cope with the traffic demand generated from the planned developments in the area.

4. We engaged consultants to undertake detailed design and investigation work for the proposed works in September 1997. The consultants have completed the detailed design and drawings in March 2001. We now propose to seek funds to start the construction works.

PROJECT SCOPE AND NATURE

5. The project scope comprises -
- (a) construction of a 352 metres long 2-lane vehicular bridge connecting the westbound carriageway of Road P2 and the northbound carriageway of Road T1 (denoted as Bridge A);
 - (b) construction of a 29 metres long 2-lane northbound and 3-lane southbound vehicular bridge connecting Road T1 and Road P1 (denoted as Bridge B);
 - (c) construction of a 159 metres long single lane vehicular bridge connecting the southbound carriageway of Road T1 with the westbound carriageway of Road P2 (denoted as Bridge C);
 - (d) widening of an existing 34 metres long vehicular bridge to provide an additional lane for the northbound traffic of Road T1 over Wan Lung Road (denoted as Bridge D);
 - (e) widening, realignment and reconstruction of Road T1, Road P1, Road P2 and associated slip roads leading to/from Road T1;

- (f) construction of a pedestrian subway and extension of two existing pedestrian/cycle subways across Road P2;
- (g) provision of noise mitigation measures including low noise road surfacing, 120 metres of full enclosure (10 metres high) and 1 045 metres of cantilever noise barriers (5 metres to 5.5 metres high excluding canopy); and
- (h) associated works including construction of footpaths, cycle tracks, drainage and landscaping works, and provision of traffic control and surveillance facilities.

Details of the proposed works are shown at Enclosures 2, 3 and 4. The estimated cost of the above works is \$456 million in money-of-the-day prices. We plan to start the works in October 2001 for completion in October 2004.

JUSTIFICATION

6. The proposed works can help to relieve the traffic congestion and queuing problem at the T1/P1/P2 junction. According to the traffic impact assessment study conducted for this project and the latest traffic forecast, the roundabout is at present operating at its capacity and will be heavily overloaded in 2011 despite the opening of the MTR Tseung Kwan O Extension in 2002. The projected design flow/capacity (DFC) ratio¹ of the existing roundabout during peak hours is given in the following table and the effects elaborate in paragraph 7 below -

1 Design flow/capacity (DFC) ratio is a indicator which reflects the performance of a roundabout junction. A DFC ratio equal to or less than 1.0 means that the roundabout junction has sufficient capacity to cope with the volume of vehicular traffic and the traffic will flow smoothly. A DFC ratio above 1.0 indicates the onset of congestion; above 1.2 indicates more serious congestion with traffic speeds progressively deteriorating with further increases in traffic.

	DFC ratio
Year	Without proposed roadworks
2001	1.08
2006	1.00 ²
2011	1.44

7. The problem of the junction at present is reflected by the queuing on the westbound lane of Road P2 and the northbound lane of Road P1, where vehicles have difficulty to enter the roundabout from the approach roads. The problem is expected to further deteriorate with growth in traffic. With the proposed work, the vehicular movement can be greatly improved as the traffic to/from Kowloon can flow freely via the proposed vehicular bridges A, B and C.

8. After the completion of the grade-separated interchange, the performance of the junction can be measured by the volume/capacity (v/c) ratio³. The projected v/c ratio of the worst leg of the grade-separated interchange T1/P1/P2 during peak hours, based on the latest traffic forecast, are set out below-

	v/c ratio
Year	With proposed roadworks
2006	0.93
2011	0.70 ⁴

2. The projected DFC ratio would improve as a result of the opening of the MTR Tseung Kwan O Extension in 2002.

3. Volume/capacity (v/c) ratio is an indicator which reflects the performance of a road. v/c ratio equal to or less than 1.0 means that the road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the traffic will flow smoothly. A v/c ratio above 1.0 indicates the onset of congestion; above 1.2 indicates more serious congestion with traffic speeds progressively deteriorating with further increases in traffics.

4. The projected v/c ratio assumes the completion of Western Coast Road by 2011.

PUBLIC CONSULTATION

9. We consulted the Traffic and Transport Committee (T&TC) of the then Sai Kung Provisional District Board (SKPDB) on the proposed works on 25 August 1999. The Committee supported the proposal and urged Government to implement the works as soon as possible.

10. We briefed the Tseung Kwan O (South) Area Committee on the proposed works on 23 February 2000 together with the representatives from On Ning Garden, Chung Ming Court and King Lam Estate. Some members were concerned about the location, design and environmental impacts of Bridge C. We explained the details of the project and the proposed environmental mitigation measures to the members. We also informed that the temporary traffic management scheme will include measures to ensure that all existing pedestrian subways and adjacent footpaths will remain open during construction of the works.

11. We gazetted the road scheme under Roads (Works, Use and Compensation) Ordinance on 3 February 2000. During the gazettal period, objections were received concerning the possible environmental impacts of the proposed works, in particular about the noise generated from the proposed roads and the closeness of Bridge C to On Ning Garden. To address these concerns, we carried out a supplementary noise impact assessment (NIA) study in September 2000. The study recommended further noise mitigation measures including the provision of additional noise barriers along the central median of Wan Po Road and upgrading of the noise barriers along the southbound verge of Wan Po Road and along Bridge C.

ENVIRONMENTAL IMPLICATIONS

12. The project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance. In October 1999, the EIA report for the project was approved under the EIA Ordinance which concluded that the environmental impacts of the project could be controlled to within the requirements of the EIA Ordinance and its Technical Memorandum. The key mitigation measures as recommended in the approved EIA report include -

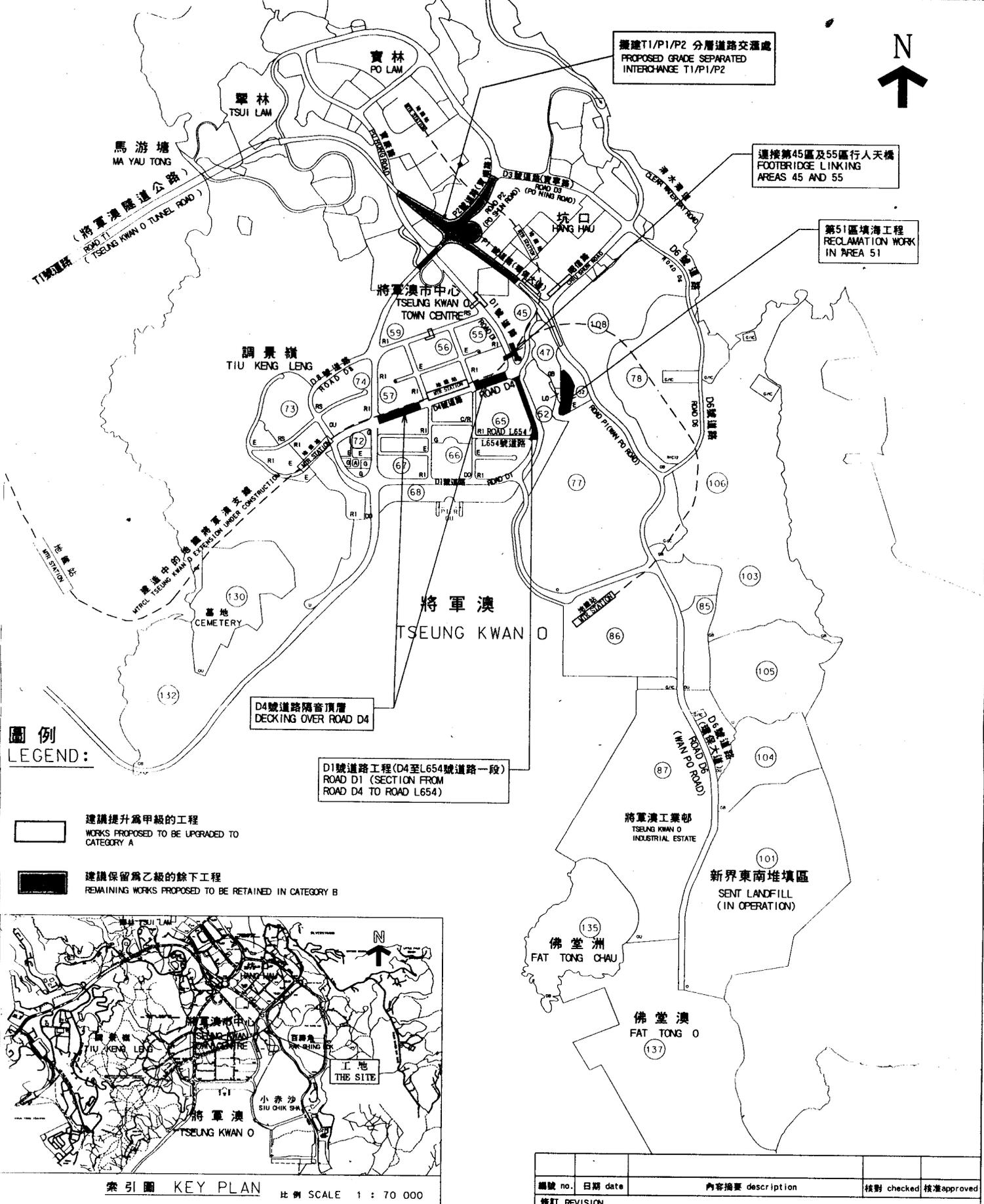
- (a) noise enclosure/barriers and low noise road surfacing at appropriate sections of new roads of the project.
- (b) dense tree and shrub planting, re-instatement of street planting and consideration to enhance the visual and landscape quality through design and choice of materials; and
- (c) an environmental monitoring and audit programme.

13. We will incorporate into the relevant contract standard measures to control pollution arising during construction. These measures will include frequent watering of the site, the provision of wheel-washing facilities and covering of materials on trucks to reduce emission of dust, the use of silenced construction plant and siting of equipment and mobile noise barriers for controlling construction noise and other procedures as recommended in Environmental Protection Department's Recommended Pollution Control Clauses. We have included the costs of landscaping works and noise mitigation measures in the overall project estimate.

WAY FORWARD

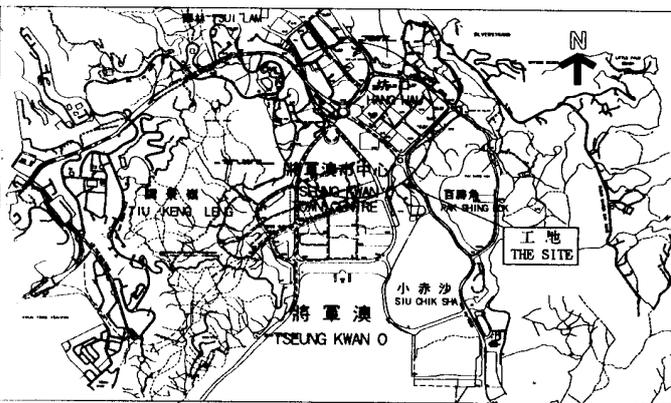
14. Subject to Members' support, we plan to seek the Public Works Sub-Committee's endorsement and the Finance Committee's approval for upgrading this project to Category A in April and May 2001 respectively.

**Territory Development Department
March 2001**



圖例
LEGEND:

- 建議提升為甲級的工程
WORKS PROPOSED TO BE UPGRADED TO CATEGORY A
- 建議保留為乙級的餘下工程
REMAINING WORKS PROPOSED TO BE RETAINED IN CATEGORY B

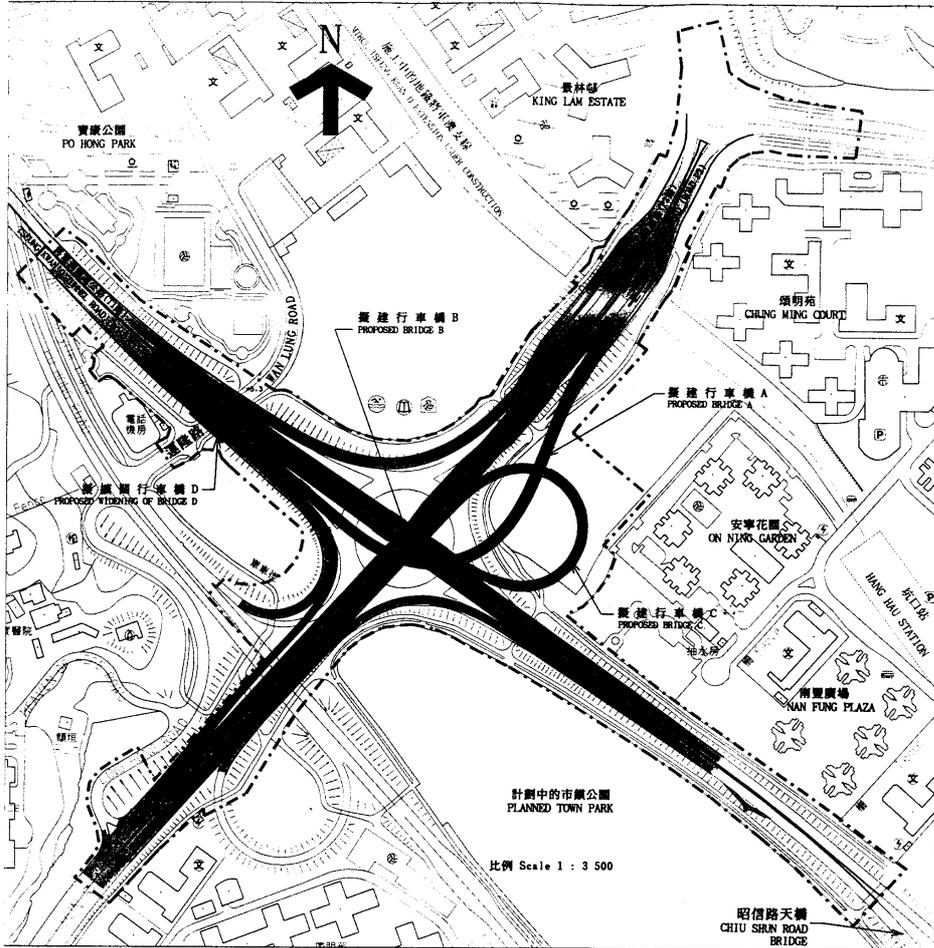


索引圖 KEY PLAN 比例 SCALE 1 : 70 000

編號 no.	日期 date	內容摘要 description	核對 checked	核准 approved

二〇〇一年至二〇〇二年年度規劃, 地政及工程事務委員會文件		PANEL ON PLANNING, LANDS AND WORKS SUBMISSION 2001-2002		項目編號 ITEM No. 277CL	
圖則名稱 drawing title		繪圖 drawn	簽署 initial	日期 date	比例 scale
將軍澳發展計劃 第 II 期餘下工程		H W SHIU	HW	16.3.2001	1:21 000
TSEUNG KWAN O DEVELOPMENT, PHASE II - REMAINING ENGINEERING WORKS		核對 checked	簽署 initial	日期 date	
		C POON	CP	16.3.2001	圖則編號 drawing no.
		核准 approved	簽署 initial	日期 date	TKZ0212
		K C NG	KCN	16.3.2001	
		辦事處 office		新界東拓展處 NT EAST DEVELOPMENT OFFICE	
		拓展署 TERRITORY DEVELOPMENT DEPARTMENT			

附件 1 Enclosure 1



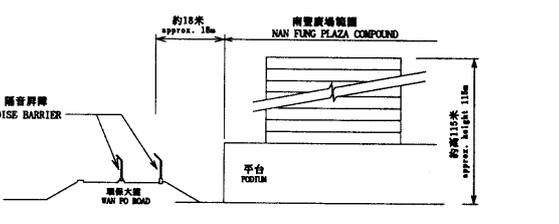
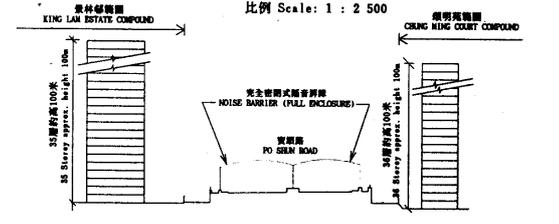
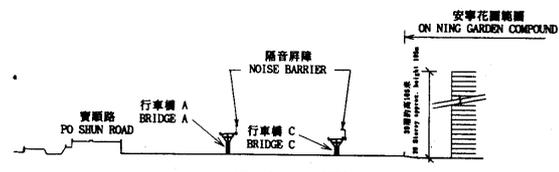
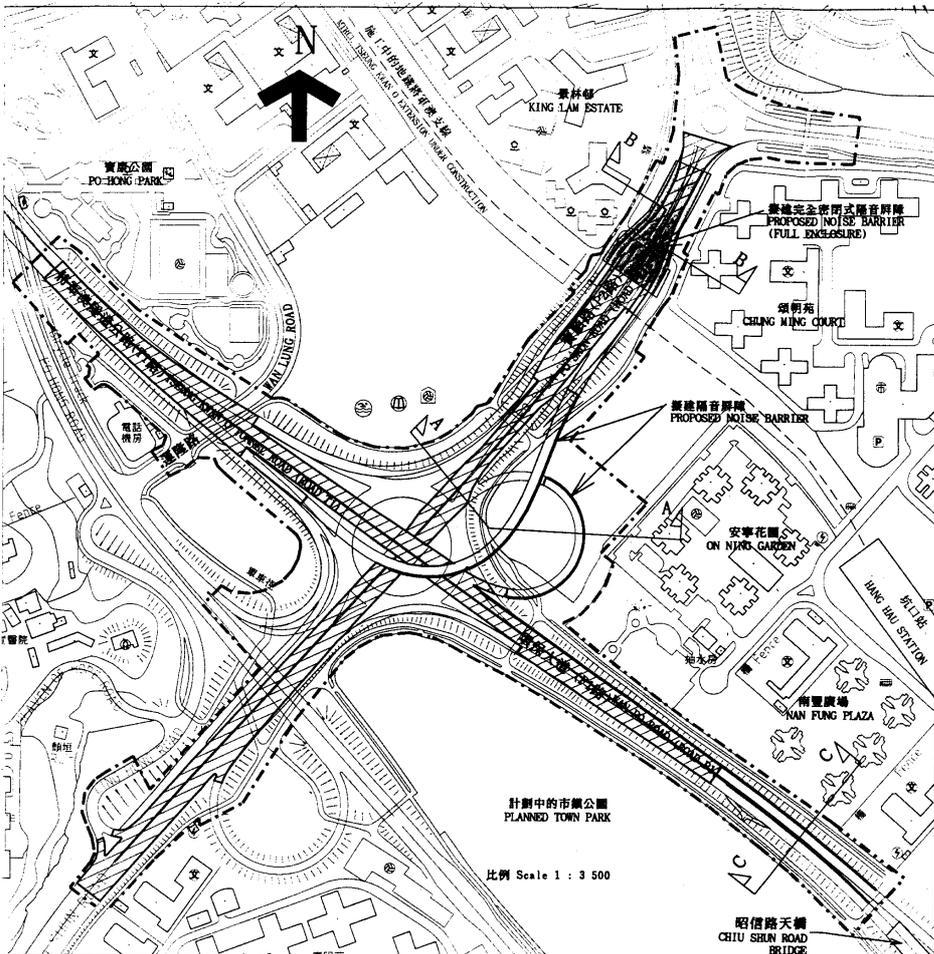
圖例 LEGEND :

- 施工範圍
LIMIT OF WORKS AREA
- 擬建架空道路
PROPOSED ELEVATED CARRIAGEWAY
- 擬建地面行車路
PROPOSED AT-GRADE CARRIAGEWAY
- +11.0 主水平基準以上的路面水平
ROAD LEVEL IN MFD
- 行車線及交通方向
TRAFFIC LANE AND TRAFFIC DIRECTION
- 學校
SCHOOL
- 巴士總站
BUS TERMINUS
- 停車場
CAR PARK
- 街市
MARKET
- 運動場
SPORT GROUND
- 電力站
ELECTRIC SUB-STATION
- 小巴站
MINIBUS TERMINUS
- 公園
PARK
- 教堂
CHURCH
- 游泳池
SWIMMING POOL
- 圖書館
LIBRARY LIBRARY
- 室內體育館
INDOOR STADIUM

二〇〇一年至二〇〇二年年度規劃、地政及工程事務委員會文件 PANEL ON PLANNING, LANDS AND WORKS SUBMISSION 2001-2002

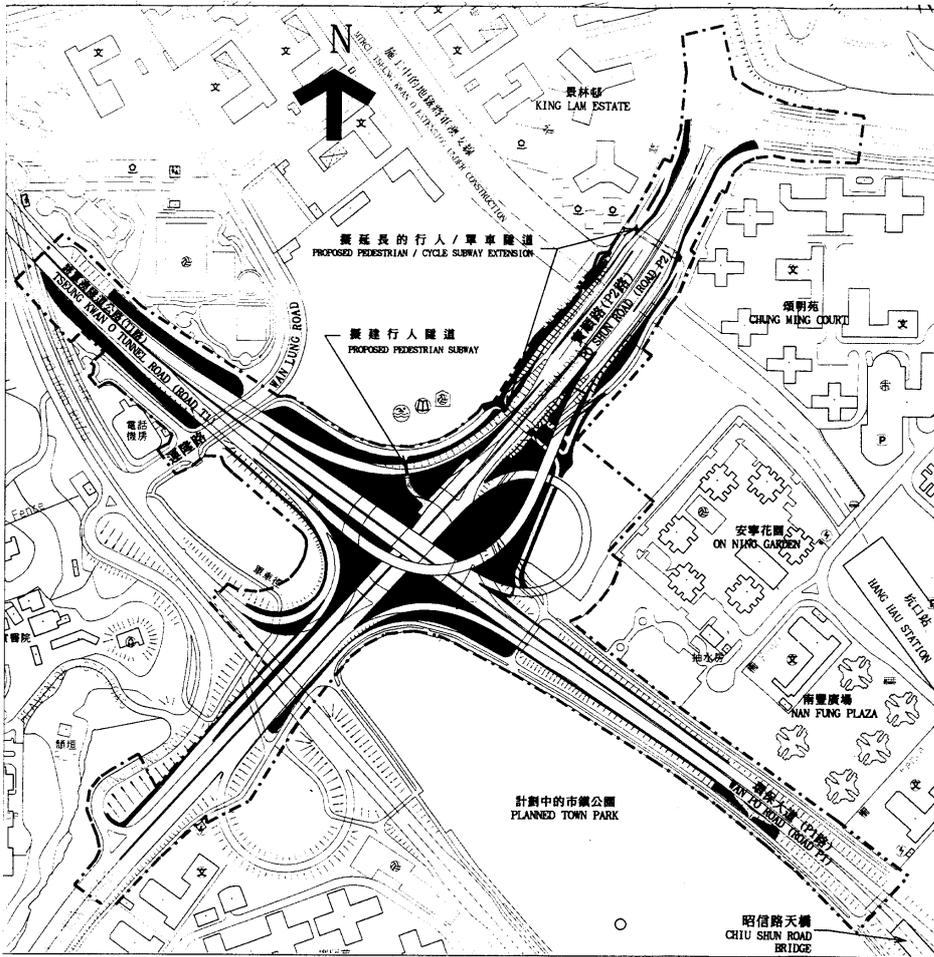
圖則名稱 drawing title
將軍澳T1/P1/P2分層道路交匯處
工地平面圖
GRADE-SEPARATED INTERCHANGE T1/P1/P2, TSEUNG KWAN O
SITE PLAN

繪圖 drawn H W SHIU	簽署 initial H	日期 date 16.3.2001	比例 scale As shown	項目編號 ITEM No. 277CL
核對 checked C POON	簽署 initial C	日期 date 16.3.2001	繪圖編號 drawing no. TKZ0213	辦事處 office 新界東拓展處 NT EAST DEVELOPMENT OFFICE
核准 approved K C NG	簽署 initial K	日期 date 16.3.2001		拓展署 TERRITORY DEVELOPMENT DEPARTMENT



- 圖例 LEGEND :
- 施工範圍 LIMIT OF WORKS AREA
 - ▨ 擬建行車路鋪設低噪音路面 PROPOSED CARRIAGEWAY WITH LOW NOISE ROAD SURFACING
 - ▬ 擬建垂直式隔音屏障 PROPOSED VERTICAL NOISE BARRIER
 - ▬ 擬建懸臂式側翼L形隔音屏障 PROPOSED INVERTED L-SHAPED NOISE BARRIER WITH CANTILEVER/CANOPY
 - ▭ 擬建完全密閉式隔音屏障 PROPOSED NOISE BARRIER (FULL ENCLOSURE)

二〇〇一年至二〇〇二年年度規劃, 地政及工程事務委員會文件 PANEL ON PLANNING, LANDS AND WORKS SUBMISSION 2001-2002			項目編號 ITEM No. 277CL	
繪圖 drawn H W SHIU	簽署 initial [Signature]	日期 date 16.3.2001	比例 scale As shown	辦事處 office 新界東拓展處 NT EAST DEVELOPMENT OFFICE
核對 checked C POON	簽署 initial [Signature]	日期 date 16.3.2001	繪圖編號 drawing no. TKZ0214	拓展署 TERRITORY DEVELOPMENT DEPARTMENT
核准 approved K C NG	簽署 initial [Signature]	日期 date 16.3.2001		



圖例 LEGEND :

- 施工範圍
LIMIT OF WORKS AREA
- 擬建單車徑
PROPOSED CYCLE TRACK
- 擬建行人/單車隧道
PROPOSED PEDESTRIAN/CYCLE SUBWAY
- 擬建行人路
PROPOSED FOOTPATH
- 擬建綠化地帶
PROPOSED LANDSCAPE AREA
- 現有/擬建斜坡
EXISTING/PROPOSED SLOPE
- 學校
SCHOOL
- 巴士總站
BUS TERMINUS
- 停車場
CAR PARK
- 街市
MARKET
- 運動場
SPORT GROUND
- 電力站
ELECTRIC SUB-STATION
- 小巴士
MINIBUS TERMINUS
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圖則名稱 drawing title
將軍澳T1/P1/P2分層道路交匯處
擬建附屬工程
 GRADE-SEPARATED INTERCHANGE T1/P1/P2, TSEUNG KWAN O
 PROPOSED ANCILLARY WORKS

繪圖 drawn H W SHIU	簽署 initial [Signature]	日期 date 16.3.2001	比例 scale 1 : 3500	項目編號 ITEM No. 277CL
核對 checked C POON	簽署 initial [Signature]	日期 date 16.3.2001	繪圖編號 drawing no. TKZ0215	辦事處 office 新界東拓展處 NT EAST DEVELOPMENT OFFICE
核准 approved K C NG	簽署 initial [Signature]	日期 date 16.3.2001		拓展署 TERRITORY DEVELOPMENT DEPARTMENT