

For discussion  
on 28 February 2003

**Legislative Council Panel on Transport**  
**Supplementary Information on**  
**Noise Barriers at Widening of Tolo Highway**  
**Section between Ma Liu Shui Interchange**  
**and Island House Interchange**

**INTRODUCTION**

At the meeting of the Legislative Council Panel on Transport held on 24 January 2003, Members considered LC Papers No. CB(1)773/02-03(06), in which the Administration reviewed the provision of noise barriers along the Tolo Highway. Members requested the Administration to provide further information to facilitate their consideration. In addition, Members suggested a site visit which was subsequently held on 14 February 2003 and attended by nine Members together with representatives from the District Councils concerned and the Administration.

**THE ADMINISTRATION'S RESPONSE**

**The Proposal**

2. In Paper No. CB(1)773/02-03(06), the Administration proposed to modify a 3,400 m length of noise barriers to align with the programme for the planned future developments. The estimated cost for the modification works is about \$8.0 million.

**Projected noise levels at existing and planned Noise Sensitive Receivers**

3. A set of monochrome plans showing the location of the original noise barrier provisions and the present proposed modifications is at **Annex A**. A detailed breakdown of the projected noise levels at the Noise Sensitive Receivers (NSRs) before and after the proposed modifications, together with the number of affected dwellings are at **Annex B**.

4. As regards conducting noise level measurements so as to draw comparisons with the projected noise levels in the Environmental Impact Assessment (EIA) study, we consider that it would not be meaningful to do so at

this stage as the widened carriageway has not yet been opened fully to traffic. Furthermore, the proposed noise mitigation measures to be implemented in accordance with the recommendations of the EIA study are designed to cater for a future situation when the highway is forecast to reach its operational capacity.

5. Present available information indicates that the planned developments in Tai Po Area 39 (represented by NSRs F15-F19) and in the Chinese University of Hong Kong (NSR F24) will not take place at least for some time. Therefore, we will review the scale of noise mitigation required for these planned developments when their implementation scope and programme is firmed up. The completed foundations will facilitate the erection of necessary noise barriers in future.

### **Financial implications of the proposed modifications**

6. The proposed modifications are additional works under the Tolo Highway Widening Contract and will incur extra costs. Our estimated cost for the modification works is about \$8 million. Apart from the cost of the modification works, the Contractor may claim for additional costs due to contract prolongation and/or loss of profit. There are standard provisions under the terms of the contract to deal with claims of this nature. The amount is subject to the Contractor providing substantiation and any award will have to be based on the Engineer's assessment. As we are now in the process of negotiation with the Contractor on ways to complete this contract, we are not able to ascertain the final cost due to the modifications at this point in time. However, we will endeavour to take the estimated cost of \$8 million for the proposed modification works as the ceiling in our negotiation.

7. Deferring the provision of the noise barriers for the planned developments will not incur any direct savings as all materials for the noise barriers (both steel frames and noise panels) have been purchased under the Contract, but this may benefit other projects since we are considering re-using these materials in the provision of noise barriers for other projects. The cost for subsequent reinstatement in Tolo Highway depends on the actual implementation scope and programme of the planned developments. Based on the contract rates in the current Tolo Highway Widening Contract, our preliminary estimate for the reinstatement works in full is about \$24.5 million, of which \$13 million would be material costs for new panels and steel posts to replace those removed from the present proposed modifications as it is assumed that they would have been used in other projects already.

8. As the contract is still ongoing, we do not anticipate there will be major additional staff and consultant costs, apart from fees for extra noise

assessments due to the modifications, but the total amount, which is subject to negotiation, should be minimal.

9. Replacing the upper half of the remaining noise barriers (4 755 m) by transparent panels is legally unacceptable as the modifications will result in the predicted noise levels at certain existing NSRs exceeding the statutory limit due to reflection of noise. If the upper half of the noise barriers were to be replaced by transparent panels and in order to comply with the statutory noise limit, the height of the barriers would have to be further increased, which would be very costly as the existing foundation and posts of the noise barriers involved would need to be reconstructed. We estimate that the additional costs for the replacement works would be around \$19 million, of which \$11 million would be material costs.

10. For those noise barriers which could be modified into monochrome and still achieving the noise mitigation effect within the statutory noise limit, the costs involved would be about \$7 million. A table summarizing the estimated costs for the various proposed modification works is at [Annex C](#).

### **Re-using the removed noise barriers**

11. If our proposed modification is agreed to be pursued, the area of absorptive panels to be removed is about 9 000 m<sup>2</sup>. We will consider the best way to re-use these materials. One option is to re-use these barriers in other projects. However, we have to study the technical feasibility in doing so. If the noise barriers are to be used on existing noisy roads, we would accord priority according to the number of people affected and the extent of the noise nuisance.

### **Noise barriers at the median and for the Conservation Centre at Island House**

12. At Members' request during the site visit, we have reviewed further the possibility of complete or partial removal of the noise barriers at the median which are to protect existing and planned developments. We have found that it would be possible, without exceeding the statutory noise limit, to trim down the height of the barriers at the median further by 0.5 m to 1 m at certain sections if the full height and upper 2.5 m canopy sections of the barriers along the kerbside of the north-bound carriageway can be maintained. The sections involved are at Tai Po Area 39 opposite to the Science Park and in the southern end of Tolo Highway near the Ma Liu Shui Interchange.

13. As regards the Conservation Centre which is essentially an outdoor classroom for organizing plant-themed environmental education activities, hence

outdoor educational activities are to be conducted, the statutory noise level of 65dB(A) for educational institutions would be exceeded without the noise barriers.

### **Road Safety**

14. We can assure Members that the design of the widened Tolo Highway complies in all aspects with the traffic and engineering requirements. In particular, there are openings along the median barriers for ease of access by fire engines and ambulances, which is in accordance with the requirements of the Transport, Planning and Design Manual. As to the present design of the noise barriers at Tolo Highway, there is no concrete evidence to suggest that the provision of the noise barriers will affect road safety by creating visual interest and diverting drivers' attention, and thus causing traffic accidents

### **ADVICE SOUGHT**

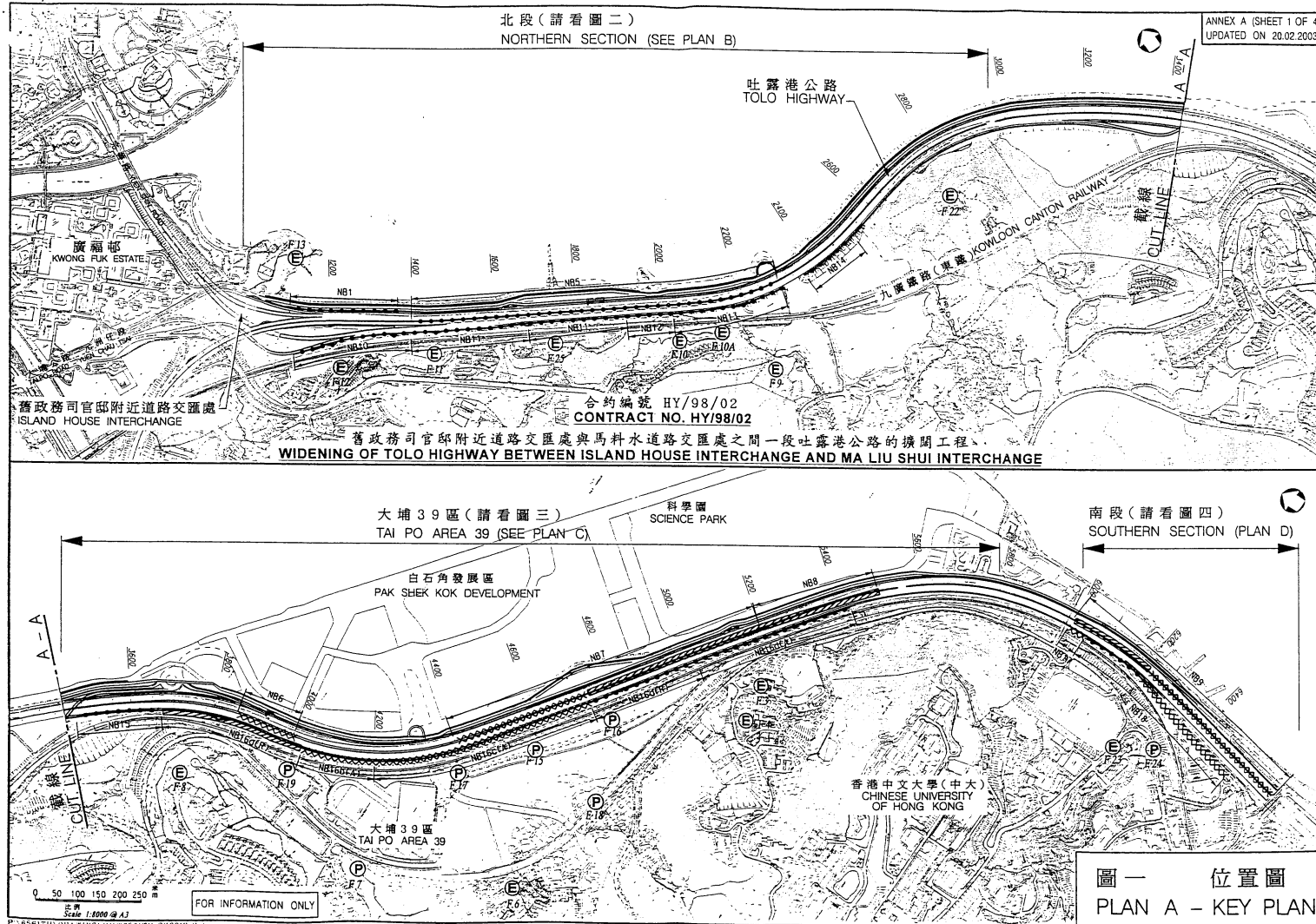
15. Members are invited to note the supplementary information in this paper and comment on the proposed modifications to the noise barriers in the Tolo Highway Widening project.

Environment, Transport and Works Bureau

February 2003

ETWB(T)4/6/185

(d:\panel\ToloHy-(eng)(supp)280203.doc)



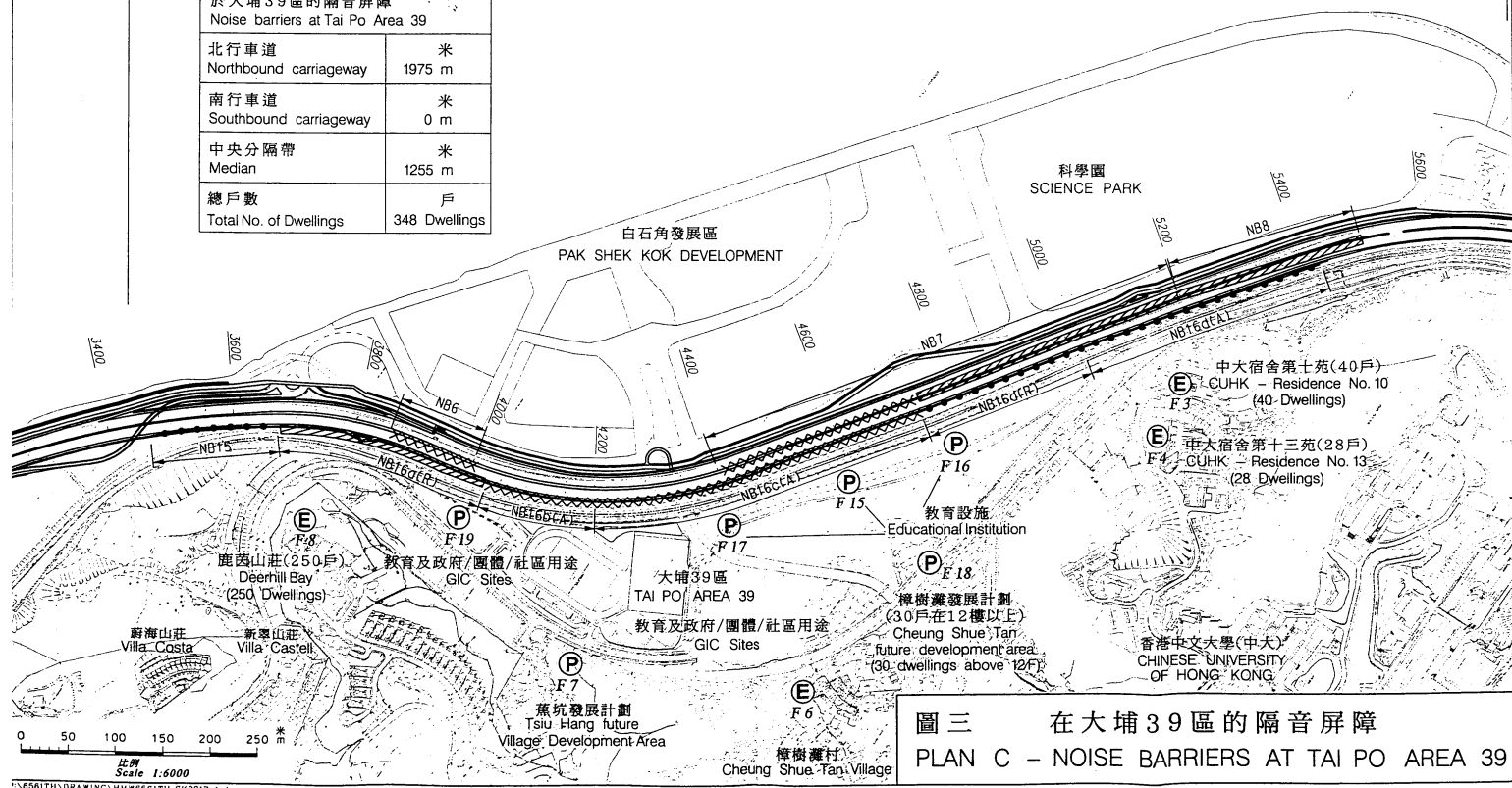


圖例  
 LEGEND

- 將會保留的隔音屏障  
 NOISE BARRIER TO REMAIN
- ×××××× 將會被拆除的隔音屏障  
 NOISE BARRIER TO BE REMOVED
- ▨▨▨▨▨▨ 頂部將會被拆除的隔音屏障  
 TOP PORTION OF BARRIER TO BE REMOVED
- (E) 現有易受噪音影響的地方  
 EXISTING NOISE SENSITIVE RECEIVERS  
 F 22
- (P) 將來易受噪音影響的地方  
 PLANNED NOISE SENSITIVE RECEIVERS  
 F 18

大埔39區  
 TAI PO AREA 39

於大埔39區的隔音屏障 Noise barriers at Tai Po Area 39	
北行車道 Northbound carriageway	1975 米 m
南行車道 Southbound carriageway	0 米 m
中央分隔帶 Median	1255 米 m
總戶數 Total No. of Dwellings	348 戶 Dwellings



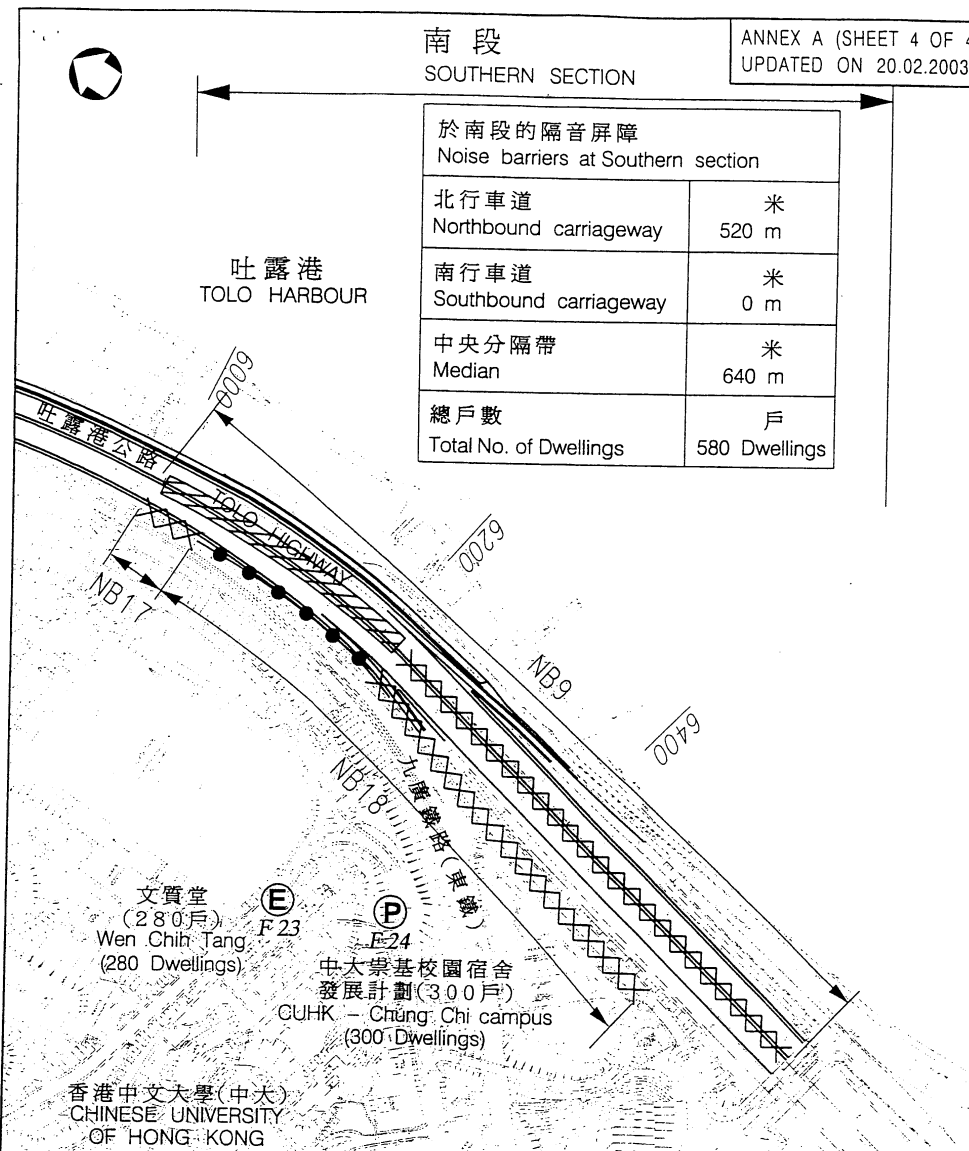
圖三 在大埔39區的隔音屏障  
 PLAN C - NOISE BARRIERS AT TAI PO AREA 39

比例  
 Scale 1:6000  
 1:6561TH\DRAWING\HW#6561TH-SK0017 A.dgn

南段  
SOUTHERN SECTION

ANNEX A (SHEET 4 OF 4)  
UPDATED ON 20.02.2003

於南段的隔音屏障 Noise barriers at Southern section	
北行車道 Northbound carriageway	520 米
南行車道 Southbound carriageway	0 米
中央分隔帶 Median	640 米
總戶數 Total No. of Dwellings	580 Dwellings

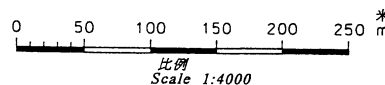


圖例

LEGEND

- 將會保留的隔音屏障  
NOISE BARRIER TO REMAIN
- ×××××× 將會被拆除的隔音屏障  
NOISE BARRIER TO BE REMOVED
- ▨▨▨▨▨▨ 頂部將會被拆除的隔音屏障  
TOP PORTION OF BARRIER TO BE REMOVED

- Ⓔ F 22 現有易受噪音影響的地方  
EXISTING NOISE SENSITIVE RECEIVERS
- Ⓕ F 18 將來易受噪音影響的地方  
PLANNED NOISE SENSITIVE RECEIVERS



圖四 在吐露港公路南段的隔音屏障  
PLAN D - NOISE BARRIERS AT SOUTHERN SECTION  
OF TOLO HIGHWAY



### Widening of Tolo Highway Section between Island House Interchange and Ma Liu Shui Interchange

Noise levels with affected number of dwellings at Existing and Planned Noise Sensitive Receivers along Tolo Highway  
(without the barriers, with original barriers and modified barriers)

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
<b>NORTHERN SECTION</b>								
F13 (E) World Wide Fund for Nature Hong Kong Conservation Centre at Island House (Educational Institute)	17.2	<u>NB1</u> 4.0m vertical barrier, along kerbside of SB carriageway 265m (CH1105 to CH1370)	<u>NB1</u> No change	66	67	64	No Change	Noise Criterion in the EIAO-TM for educational facilities is 65dB
	20.2			67	67	65	No Change	
F12 (E) Care Village (310 Dwellings)	6.5	<u>NB10</u> 5.5m vertical barrier, along kerbside of NB carriageway 260m (CH1150 to CH1400)	<u>NB10</u> No change	72	73	65	No Change	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for existing NSR F11
	9.5			73	75	66	No Change	
	12.5			74	77	68	No Change	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F11 (E) KCRC Club Hostel (67 Dwellings)	15	<u>NB10</u> 5.5m vertical barrier, along kerbside of NB carriageway 260m (CH1150 to CH1400)	<u>NB10</u> No change	74	78	63	No Change	
	21	<u>NB11</u> 5.5m vertical barrier, & 2.5m canopy along kerbside of NB carriageway 260m (CH1400 to CH1660)	<u>NB11</u> No change	76	79	66	No Change	
	24	<u>NB5</u> 4.0m vertical barrier, along central median 900m (CH1400 to CH2300)	<u>NB5</u> No change	77	79	68	No Change	
	27			77	79	69	No Change	
	30			77	79	70	No Change	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F25 (E) KCRC Staff Quarters (100 Dwellings)	13.5	<u>NB11</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 260m (CH1400 to CH1660)	<u>NB11</u> No change	65	65	64	No Change	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for existing NSRs F11, F10 and F10A
	19.5	<u>NB11</u> 5.5m vertical barrier & 4.0m canopy, along kerbside of NB carriageway 260m (CH1660 to CH1920)	<u>NB11</u> No change	80	81	66	No Change	
	22.5	<u>NB12</u> 5.5m vertical barrier, along kerbside of NB carriageway 135m (CH1920 to CH2035)	<u>NB12</u> No change	80	83	66	No Change	
	25.5	<u>NB5</u> 4.0m vertical barrier, along central median 900m (CH1400 to CH2300)	<u>NB5</u> No change	81	83	67	No Change	
	28.5	<u>NB5</u> 4.0m vertical barrier, along central median 900m (CH1400 to CH2300)	<u>NB5</u> No change	80	83	67	No Change	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F10, F10A (E) Seaview Villas (30 Dwellings)	44.8	<u>NB11</u> 5.5m vertical barrier & 4.0m canopy, along kerbside of NB carriageway 260m (CH1660 to CH1920)	<u>NB11</u> No change	77	78	66	No Change	
	47.8	<u>NB12</u> 5.5m vertical barrier, along kerbside of NB carriageway 135m (CH1920 to CH2035)	<u>NB12</u> No change	77	79	67	No Change	
	44.8	<u>NB13</u> 5.0m vertical barrier, along kerbside of NB carriageway 310m (CH2035 to CH2315)	<u>NB13</u> No change	77	80	69	No Change	
	47.8	<u>NB5</u> 4.0m vertical barrier, along central median 900m (CH1400 to CH2300)	<u>NB5</u> No change	77	81	70	No Change	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F9 (E) Constellation Cove and Nearby Developments (300 Dwellings)	33.9	<u>NB13</u> 5.0m vertical barrier, along kerbside of NB carriageway 310m (CH2035 to CH2315)	<u>NB13</u> No change	70	71	64	No Change	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for existing NSRs F10 and F10A
	36.9	<u>NB14</u> 1.5m vertical barrier, along kerbside of NB carriageway 160m (CH2315 to CH2515)	<u>NB14</u> No change	71	71	65	No Change	
	39.9	<u>NB5</u> 4.0m vertical barrier, along central median 900m (CH1400 to CH2300)	<u>NB5</u> No change	71	71	65	No Change	
	42.9			71	72	65	No Change	
	45.9			71	72	66	No Change	
F22 (E) Development near St Christopher's Head (1 Dwelling)	50.1	Not required	-	63	67	-	-	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
<b>SECTION NEAR TAI PO AREA 39</b>								
F8 (E) Deerhill Bay (250 Dwellings)	48.9	<u>NB15</u> 5.5m vertical barrier, along kerbside of NB carriageway 240m (CH3465 to CH3675)	<u>NB15</u> No change	66	66	59	63	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for planned NSR F19.
	51.9	<u>NB16a(R)</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 340m (CH3670 to CH4010)	<u>NB16a(R)</u> 2.5m canopy to be removed	67	68	61	65	
	57.9	<u>NB6</u> 5.0m vertical barrier, along central median 155m (CH3840 to CH4000)	<u>NB6</u> To be removed	69	70	62	68	
	60.9			71	72	63	70	
	63.9			72	73	64	70	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F19 (P) GIC Sites in Tai Po Area 39	6.5	<u>NB16a(R)</u> 5.5m vertical barrier, & 2.5m canopy, along kerbside of NB carriageway 340m (CH3670 to CH4010)	<u>NB16a(R)</u> 2.5 canopy to be removed	Not Measured	79	61	79	Foundation completed, Noise barriers can be erected in future if required
	12.5	<u>NB16b &amp; c</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 730m (CH4010 to CH4740)	<u>NB16b &amp; c</u> To be removed	Not Measured	81	63	81	
	15.5	<u>NB6</u> 5.0m vertical barrier, along central median 155m (CH3840 to CH4000)	<u>NB6</u> To be removed	Not Measured	81	64	81	
	18.5			Not Measured	82	66	82	
	21.5			Not Measured	82	67	82	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F17 (P) Educational Institution in Tai Po Area 39	6.6	<u>NB16b &amp; c</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 730m (CH4010 to CH4740)	<u>NB16b &amp; c</u> To be removed	Not Measured	79	60	79	Noise Criterion in the EIAO-TM for educational facilities is 65dB  Foundation completed, Noise barriers can be erected in future if required
	12.6	<u>NB7</u> 5.0m vertical barrier, along central median 340m (CH4400 to CH4740)	<u>NB7</u> To be removed	Not Measured	82	62	82	
	15.6			Not Measured	82	63	82	
	18.6			Not Measured	82	64	82	
	21.6			Not Measured	82	65	82	



Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F15 (P) Educational Institution in Tai Po Area 39	6.7	<u>NB16b &amp; c</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 730m (CH4010 to CH4740)	<u>NB16b &amp; c</u> To be removed	Not Measured	79	60	79	Noise Criterion in the EIAO-TM for educational facilities is 65dB  Foundation completed, Noise barriers can be erected in future if required
	12.7	<u>NB16d(R)</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 280m (CH4740 to CH5020)	<u>NB16d(R)</u> No change	Not Measured	81	62	81	
	15.7	<u>NB7</u> 5.0m vertical barrier, along central median 340m (CH4400 to CH4740)	<u>NB7</u> To be removed	Not Measured	81	63	81	
	18.7			Not Measured	81	63	81	
	21.7			Not Measured	82	65	82	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F16 (P) Educational Institution in Tai Po Area 39	6.7	<u>NB16b &amp; c</u> 5.5m vertical barrier, & 2.5m canopy, along kerbside of NB carriageway 730m (CH4010 to CH4740)	<u>NB16b &amp; c</u> To be removed	Not Measured	79	59	72	Noise Criterion in the EIAO-TM for educational facilities is 65dB  Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for planned NSR F15  Foundation completed, Noise barriers can be erected in future if required
	12.7	<u>NB16d(R)</u> 5.5m vertical barrier, & 2.5m canopy, along kerbside of NB carriageway 280m (CH4740 to CH5020)	<u>NB16d(R)</u> No change	Not Measured	81	61	73	
	15.7	<u>NB16d(A)</u> 5.5m vertical barrier, & 2.5m canopy, along kerbside of NB carriageway 385m (CH5020 to CH5435)	<u>NB16d(A)</u> No change	Not Measured	81	62	74	
	18.7	<u>NB7</u> 5.0m vertical barrier, along central median 340m (CH4400 to CH4740)	<u>NB7</u> To be removed	Not Measured	82	63	75	
	21.7			Not Measured	82	63	75	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F7 (P) Tsiu Hang Future Village Development Area	11	Not required	-	Not Measured	70	54	70	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for planned NSRs F17 and F19.
	14			Not Measured	70	54	70	
	17			Not Measured	70	54	70	
F6 (E) Cheung Shue Tan Village	11	Not required	-	58	69	52	69	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for planned NSR F17.
	17			58	69	53	69	
F18 (P) Cheung Shue Tan Future Development Area (30 Dwellings above 12/F)	9.1	<u>NB16b &amp; c</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 730m (CH4010 to CH4740)	<u>NB16b &amp; c</u> To be removed	Not Measured	68	50	68	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for planned NSRs F15 and F16.  Foundation completed, Noise barriers can be erected in future if required
	15.1			Not Measured	69	51	69	
	21.1	<u>NB16d(R)</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 280m (CH4740 to CH5020)	<u>NB16d(R)</u> No change	Not Measured	70	51	70	
	39.1			Not Measured	70	52	70	
	45.1			<u>NB7</u> 5.0m vertical barrier, along central median 340m (CH4400 to CH4740)	<u>NB7</u> To be removed	Not Measured	71	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F3 (E) CUHK – Residence No. 10 (40 Dwellings)	35	<u>NB16d(A)</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 385m (CH5020 to CH5435)	<u>NB16d(A)</u> No change	77	79	61*	65*	* Benefited from increased barrier height to cater for 24 hour Border Opening
	41	<u>NB7</u> 5.0m vertical barrier, along central median 210m (CH4990 to CH5200)	<u>NB7</u> To be trimmed down to 3.5m high	77	79	62*	65*	
	47	<u>NB8</u> 4.0m vertical barrier, along central median 300m (CH5200 to CH5500)	<u>NB8</u> To be trimmed down to 3.5m high	77	79	62*	66*	
	53			77	79	63*	67*	
	62			77	79	63*	69*	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F4 (E) CUHK – Residence No. 13 (28 Dwellings)	46	<u>NB16d(R)</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 280m (CH4740 to CH5020)	<u>NB16d(R)</u> No change	67	73	57*	57*	* Benefited from increased barrier height to cater for 24 hour Border Opening
	52	<u>NB16d(A)</u> 5.5m vertical barrier & 2.5m canopy, along kerbside of NB carriageway 385m (CH5020 to CH5435)	<u>NB16d(A)</u> No change	72	74	57*	60*	
	58	<u>NB7</u> 5.0m vertical barrier, along central median 250m (CH4740 to CH4990)	<u>NB7</u> To be trimmed down to 2.5m high	73	75	57*	60*	
	76	<u>NB7</u> 5.0m vertical barrier, along central median 210m (CH4990 to CH5200)	<u>NB7</u> To be trimmed down to 3.5m high	73	75	58*	63*	
	82			73	75	59*	64*	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
<b>SOUTHERN SECTION NEAR CUHK</b>								
F23 (E) CUHK – Wen Chih Tang (280 Dwellings)	37	<u>NB17</u> 2.0m vertical barrier, along kerbside of NB carriageway 60m (CH6000 to CH6060)	<u>NB17</u> To be removed	63	64	50	62	Under the arrangement of the original noise mitigation measures, NSRs are benefited from barriers for planned NSR F24.
	40	<u>NB18</u> 7.0m vertical barrier, along kerbside of NB carriageway 160m (CH6060 to CH6220)	<u>NB18</u> No change	65	68	55	64	
	43	<u>NB9</u> 5.0m vertical barrier, along central median 230m (CH6000 to CH6230)	<u>NB9</u> To be trimmed down to 1.0m high	68	70	57	65	
	46			70	72	57	66	
	49			71	73	57	68	

Existing(E)/Planned(P) Noise Sensitive Receivers	Level Above Ground Level in mPD	Original Noise Mitigation Measures recommended in EIA (included in EP)	Proposed Modification	Existing Noise Level with no widening work dB(A)L <sub>10</sub> (1-hr)	Anticipated Noise Level in 2011 dB(A) L <sub>10</sub> (1-hr)			Remark
					Without Noise Mitigation Measures	With Original Noise Mitigation Measures	With Modified Noise Mitigation Measures	
F24 (P) CUHK - Chung Chi Campus (300 Dwellings)	37	<u>NB18</u> 7.0m vertical barrier, along kerbside of NB carriageway 160m (CH6060 to CH6220)	<u>NB18</u> No change	Not Measured	74	66	68	Foundation completed, Noise barriers can be erected in future if required
	40	<u>NB18</u> 7.0m vertical barrier, along kerbside of NB carriageway 300m (CH6220 to CH6520)	<u>NB18</u> To be removed	Not Measured	75	68	70	
	43	<u>NB9</u> 5.0m vertical barrier, along central median 230m (CH6000 to CH6230)	<u>NB9</u> To be trimmed down to 1.0m high	Not Measured	76	69	71	
	46	<u>NB9</u> 5.0m vertical barrier, along central median 410m (CH6230 to CH6640)	<u>NB9</u> To be removed	Not Measured	76	69	72	
	49	<u>NB9</u> 5.0m vertical barrier, along central median 410m (CH6230 to CH6640)	<u>NB9</u> To be removed	Not Measured	77	70	73	

**Estimated Costs for Different Modifications  
to the Noise Barriers Along Tolo Highway**

	<b>Modification</b>	<b>Length of barriers (metres)</b>	<b>Estimated Cost (\$ million)</b>
1.	Modification to noise barriers for both planned as well as planned and existing developments <ul style="list-style-type: none"><li>● Removal/trimming down</li><li>● Subsequent reinstatement</li></ul>	3 400	8.0 24.5 <sup>1</sup>
2.	Modification of noise barriers for existing developments into monochrome	4755m	7.0

---

<sup>1</sup> Including \$13 million material costs for new panels and steel posts, the original of these is assumed to have been used in other projects.