

Agreement No. CE50/98

Agreement No. CE50/98
Design and Construction Assignment for
Route 8 (previously known as Route 9)
Between Cheung Sha Wan and Sha Tin

LANDSCAPE PROPOSAL – MAIN PORTION

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Comments and responses (No change under revision 4 and not enclosed).

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No change under Revision 4
and not enclosed

We hereby submit the landscape proposals as required under Clause 2.4 of the permit conditions cited within the Environmental Permit No. EP-103/2001.

Background

An Environmental Permit (EP) for the works was issued on 17 September 2001 and placed in the EIA Ordinance Register, based on the following approved EIA documents:

- (1) *Route 16 Investigation Assignment*
 - *Environmental Impact Assessment Final Assessment Report (January 1998) (Register No. EIA-135/BC) [Hereinafter referred to as the "1998 EIA Report"]*
 - *Environmental Monitoring & Audit Manual (January 1998) [Hereinafter referred to as the "1998 EM&A Manual"]*
- (2) *Route 16 Investigation Assignment*
 - *Alternative Alignment Environmental Impact Assessment Final Assessment Report (August 1999)(Register No. AEIAR-022/1999)[Hereinafter referred to as the "1999 EIA Report"]*
 - *Environmental Monitoring & Audit Manual (August 1999)[Hereinafter referred to as the "1999 EM&A Manual"]*
- (3) *The Director's letter of approval of the 1999 EIA Report dated 5 November 1999 ref (25) in Ax(1) to EP2/N1/A/24 Pt.3*
- (4) *Application documents including all attachments submitted by the Permit Holder on 20 August 2001 [Hereinafter referred to as the "the Application"]*

The EIA documents refer to the whole of the **Route 8 (previously known as Route 9)** corridor from Cheung Sha Wan to Sha Tin, although the EP is for the construction and operation of the Main Portion only, from Cheung Sha Wan to the Toll Plaza Area, including specifically all civil works for the road section from the Lai Wan Interchange to Butterfly Valley, the Eagle's Nest Tunnel, its Portal Buildings and Ventilation Building (but excluding the site formation works at the Toll Plaza); the architectural works of the portal buildings of the Sha Tin Heights Tunnel and all E&M works for the whole **Route 8 (previously known as Route 9)** between Cheung Sha Wan and Sha Tin.

The formation of area of the proposed Toll Plaza and Pak Shek, and the compensation planting on the newly formed slopes is considered within the Entrusted Portion of the Works

Conditions of Environmental Permit

Clause 1.7 of the Part C (Permit Conditions) of the Permit requires

The Permit Holder shall ensure that the Project is designed, constructed and operated in accordance with the information and all recommendations described in the 1998 EIA Report (Register No. EIA-135/BC), the 1999 EIA Report (Register No. AEIAR-022/1999), the 1998 EM&A Manual, the 1999 EM&A Manual, and the Application (Application No. AEP-103/2001); or mitigation measures described in this Permit, or mitigation measures to be recommended in submissions that shall be deposited with or approved by the Director as a result of permit conditions contained in this Permit, or mitigation measures to be recommended under on going surveillance and monitoring activities during all stages of the Project. Where recommendations referred to in the documents of the Register are not expressly referred to in this Permit, such recommendations are nevertheless to be implemented unless expressly excluded or impliedly amended in this Permit.

Clause 2.4 of the Part C (Permit Conditions) of the Permit requires

The Permit Holder, at least 8 weeks before commencement of any construction work causing any loss of woodland or natural stream, submit to the Director for approval 3 sets of landscape proposals, including plans of scale 1 to 1000 or other appropriate scale as agreed by the Director. With a view to further minimising ecological impacts, the proposals shall show the compensatory replanting areas for permanent woodland loss and reinstated areas for temporary woodland loss (with the size of compensation area clearly stated in hectares), as well as the recreated stream, and shall include an implementation programme for these work. The implementation programme shall clearly identify the responsibility for implementation, management and maintenance of landscape mitigation measures for these works. All measures recommended in the approved proposal(s) shall be fully implemented in accordance with the details and time schedule set out in the submission. No construction work causing any loss of woodland or natural stream shall commence without the approval of the proposals

The measures recommended in the approved EIA documents with respect to compensation planting are as stated below.

Ecological Mitigation - Woodland Planting

The recommendation for Woodland Compensation is stated under - Ecological Mitigation Table 7.1 of the 2000 EIA Review Report. A summary table, "Table A", showing the area of woodland loss, area of compensation and reinstated area for temporary woodland loss under the current scheme as compared to the previous EIA and EIA Review Reports for both portions of *Route 8 (previously known as Route 9)* is attached in Appendix 1. The figures presented in "Table A" including the compensatory replanting areas for permanent woodland loss and reinstated areas for temporary woodland loss area required under the Permit Conditions. Permanent woodland loss is the loss of woodland due to forming of the carriageway, rock slopes or other permanent structures. Temporary woodland loss is the temporary loss of woodland occurring during construction phase which will be reinstated upon the completion of works by replanting of woodland species on the affected areas.

It should be noted that the areas of woodland loss mentioned in the previous EIA reports and EIA Review Report include both permanent loss and temporary loss at Butterfly Valley. However, at Toll Plaza, temporary woodland loss is not included in the calculation of the area of woodland loss. Notes have been added in Table 'A' to highlight this difference. Drawing no. SK46 indicating the location of area of woodland loss, and drawing no. SK47C showing the location of compensation and reinstated areas are attached in Appendix 1.

The design approach has been to minimise the extent of disturbance of existing woodland areas as far as possible. To this end, the footprints of the works including the toll plaza and the slope works have been designed to minimise the overall landtake for the works. As shown in Table A, the woodland loss at Toll Plaza has been reduced from 5.6 ha to 5.32 ha by reduction of two toll lanes and rearranging the car park and ancillary facilities as recommended in the 1998 EIA Report. Although the EIA Report also recommended to integrate the portal building and administration so as to further reduce the landtake for Toll Plaza, it is considered cost ineffective and not efficient for such arrangement. It should be noted that the footprint of the administration building has been designed to be optimum for the operation of the tunnel including siting of the operating staff, control panel and toll collection system.

It should also be noted that the woodland loss at Butterfly Valley has been reduced to 1.97 ha in view that the woodland loss for slope works should be considered as temporary loss which will be reinstated when the proposed woodlands are established on the newly formed slopes.

Woodland compensatory plantings and reinstated plantings for temporary loss are proposed as shown in the Landscape Softworks Plan (drawings no. *94099/LCK/R8/LCKV/SK-1360 to SK1365, SK1391 - SK1392; and 94099/ENT/SK5234B, SK5235A, SK5236B, SK5177A, SK5416&SK5417E*). Woodland planting will be established on all newly formed soil cut and embankment slopes. In addition, there are:

- ♦ areas around the perimeter of newly formed slopes that are anticipated to be disturbed by the works within which infill planting of woodland trees would be possible.
- ♦ existing areas of shrub and open woodland vegetation on the slopes high above Ching Cheung Road, existing slopes near Wai Man Tsuen, natural hillslope near Ching Cheung Road and facing towards the Lai Chi Kok Electric Sub-Station, existing areas of groundcovers, trees and illegal structures near Ching Cheung Road and along Castle Peak Road, existing areas of grassland and shrub near the proposed Toll Plaza and along Tai Po Road, and the areas along the seasonal stream near the proposed Toll Plaza within which "infill

planting" of woodland tree species would be possible, although the room for increasing density of woodland planting in these areas would be limited.

The detailed breakdown of the various forms of compensation planting for both portions of **Route 8 (previously known as Route 9)** that can be achieved is shown in Table B attached in Appendix 1.

Compensation Tree Planting

The numbers of trees to be felled are based on the separate Tree Surveys prepared for the Main and Entrusted Portions, and are shown in Table C attached in the Appendix 1.

The recommendation for Compensation Tree Planting is described in para. 9.8.23 of the 1999 EIA report which states that subject to further studies during the detailed design stage (para. 9.8.15), "existing woodland cleared by construction activity will also be replaced at a ratio of at least twenty trees planted for every tree felled.". According to the latest tree survey results, it was revealed that the existing tree density is very much higher than that expected when the EIA was done in 1999. Hence, the room of infill planting has been reduced.

Government Recommended planting density for woodland (Tree Planting and Maintenance in HK - SILTech 1991) is at a rate of between 2,500 and 4,445 no. of plants per hectare (2000 mm and 1500 mm spacing respectively). ***Current practice accepts up to 11,547 plants per hectare (1000 mm spacing in triangular grid pattern) in Main Portion and 10,000 plants per hectare (1000m spacing in square grid pattern) in Entrusted Portion.***

Based on the available compensatory and reinstated areas of **12.72 ha (Main Portion) and 4.14 ha⁽¹⁾ (Entrusted Portion) and a total of 120,312 + 41,400 = 161,712 nos (141,500 nos in Revision 2) of woodland trees respectively can be planted in the available areas.**

Based on the total number of trees lost (ref. Columns (1) in Table C) of 33,718, the compensation planting represents a compensation ratio of **4.80:1 (4.20:1 in Revision 2).**

Based on the estimated number of trees to be felled in the secondary woodland areas (ref. Column (2) in Table C) of 21,281, the compensation planting represents a compensation ratio of **7.60 : 1 (6.65:1 in Revision 2).** It should be noted that this ratio represents the maximum practicable replanting ratio with considering the available replanting area and acceptable planting density.

It should be noted that about **99.5% (92% in Revision 2)** of the proposed replanting areas are on engineering slopes and natural hillslopes on which planting of heavy standard trees is considered impracticable. Therefore, it is proposed to plant whips on these areas. The remaining **0.5% (8% in Revision 2)** of the planting area is at a newly formed fill platform. Heavy standard trees are proposed to mix with whips to re-establish a new woodland and recreate the stream habitat.

Ecological Mitigation – Recreated Stream

The requirement for the Recreated Stream is stated under Section 7.7.2 of the 2000 EIA Review Report. A new stream about **465m long (450m long in Revision 2)** will be re-created to compensate for the loss of the permanent stream and constructed to mimic natural stream habitats. The details of the recreated stream are shown on the **sketch nos. 94099/ENT/R STREAM/SK01, 94099/ENT/SK4279C, SK6210 & SK3739A.**

Implementation Programme

The proposed ecological mitigation measures will be implemented by Highways Department under two construction contracts of **Route 8 (previously known as Route 9)** with contract period from September 2003 to

April 2007. The woodland plantings will be planted as early as possible (with a condition of not affecting or being affected by the construction works) such that there will be a longer period for the establishment of the woodland within the construction period.

The management and maintenance authorities for the landscape works are shown on the Maintenance Responsibilities for Landscape Works Plans (drawings no. 94099/05401 to 05413). The management and maintenance for the recreated stream will be divided among government departments in accordance with *ETWB TC (W) No. 3/2006* with considering the recreated stream as natural stream course.

NOTE:

- (1) **Compensatory and reinstated area under Entrusted Portion shall be updated by the consultant of CEDD Contract no. ST89/02 Route 8 – Sha Tin Heights Tunnel and Approaches.**

Appendix 1

Table A	Summary of Areas of Woodland Loss, Area of Compensation, and Reinstated Area for Temporary Woodland Loss
Table B	Breakdown of Area of Woodland Compensation
Table C	Numbers of Trees to be Felled
Drg. No. SK46	Indicative Location of Woodland Loss Area
Drg. No. SK47C	Indicative Location of Woodland Compensation and Reinstatement

Table A - Summary of areas of permanent woodland loss, compensation, and reinstated area for temporary woodland loss

Location of Woodland Loss	Area of Loss (ha)			Location of Compensatory Replanting	Area of Compensation (ha)			Reinstated Area for temporary woodland loss (ha)		
	EIA Reports (January 98 & August 99)	Environmental Review (dated November 00)	Current Scheme		EIA Reports (January 98 & August 99)	Environmental Review (dated November 00)	Current Scheme (breakdown of compensation area shown in Table B)		Main Portion	Entrusted Portion
							Main Portion	Entrusted Portion		
Butterfly Valley	3 ⁽¹⁾	3.6 ⁽¹⁾	1.97 ⁽²⁾	3.00	4.00	3.52 (2.40)	-	1.49	-	
Ventilation Building & Toll Plaza	5.6 ⁽²⁾	5.6 ⁽²⁾	5.32 ⁽²⁾	2.50	2.50	3.77 (4.07)	-	-	-	
Total	8.60	9.20	7.29	1.00	1.00	0.52 (0.98)	-	-	-	
				5.00	5.00	-	1.87	-	-	
						0.29 (0.13)	-	0.52	-	
						1.15 (0.14)	-	0.29	-	
						-	0.20	-	2.07	
				-	-	1.17 (-)	-	-	-	
				11.50	12.50	10.42 (7.72)	2.07	2.30	2.07	
				subtotal						

* Includes all the replanting area on the slopes in the non-woodland area

Note: (1) Area includes permanent and temporary woodland loss.

(2) Area includes permanent woodland loss only

(3) Figures in brackets () are figures in Revision 2 which are now superseded

Total Reinstated area =

2.3 ha [Main Portion] + 2.07 ha [Entrusted Portion]
(4.37 ha in total in Revision 2)

Total Compensatory area =

10.42 ha [Main Portion] + 2.07 ha [Entrusted Portion]
(9.79 ha in total in Revision 2)

Total area for planting =

12.72 ha [Main Portion] + 4.14 ha [Entrusted Portion]
(14.16 ha in total in Revision 2)

Table B - Breakdown of Woodland Compensation Area

Location	Woodland Compensation Area									
	Main Portion					Entrusted Portion				
	Total Area	Woodland on Newly Formed Slope (ha)	Infill Planting at Perimeter of Slope (ha)	Infill Planting on Undisturbed ground (ha)	Total Area	Woodland on Newly Formed Slope (ha)	Infill Planting at Perimeter of Slope (ha)	Infill Planting on Undisturbed ground (ha)		
Cut/fill Slopes at Butterfly Valley	3.52 (2.40)	3.08 (2.10)	0.44 (0.30)	-	-	-	-	-	-	-
Ching Cheung Road and Butterfly Interchange (including the cut slope along Ching Cheung Road)	3.77 (4.07)	1.44 (1.55)	0.07 (0.07)	2.26 (2.45)	-	-	-	-	-	-
Wai Man Tsuen	0.52 (0.98)	-	-	0.52 (0.98)	-	-	-	-	-	-
Pak Shek Area	-	-	-	-	1.87	1.14	-	0.73	-	-
Site of Ventilation Building *	0.29 (0.13)	-	0.29 (0.13)	-	-	-	-	-	-	-
Toll Plaza (within Main Portion) *	1.15 (0.14)	-	-	1.15 (0.14)	-	-	-	-	-	-
Lai Wan Interchange	1.17 (-)	1.17 (-)	-	-	-	-	-	-	-	-
Toll Plaza (within Entrusted Portion) *	-	-	-	-	0.2	0.2	-	-	-	-
Total	10.42 (7.72)	5.69 (3.65)	0.80 (0.5)	3.93 (3.57)	2.07	1.34	0.00	0.73	0.00	0.73

* New compensation areas identified as compared to previous EIA Report

Note: (1) Figures in brackets () are figures in Revision 2 which are now superseded.

Table C - Numbers of Trees to be Felled

Location	column (1) Total Number of Trees to be Felled	column (2) Estimated Number of Trees to be Felled in Secondary Woodland Areas
Main Portion	14,539 no.	7,941 no.
Entrusted Portion	19,179 no.	(including 5,641 no. in Butterfly Valley and 2,300 no. in Ventilation Building Area)
		13,340 no.
Total	33,718 no.	21,281 no.

Appendix 2

Drawings