

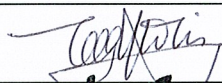
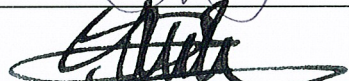
**Highways Department**

Contract No. HY/2007/04

**Hong Kong – Shenzhen Western Corridor  
(Operational Phase)**

**Monitoring of Bridge Lighting Scheme  
and Bird Collisions Quarterly Report No. 2  
(for the months October to December 2007)**

[01/2008]

	Name	Signature
Prepared & Checked:	Y T Tang	
Reviewed & Approved:	Alan Kwok	

Version:	Rev. 0	Date: 21 January 2008
----------	--------	-----------------------

The information contained in this report is, to the best of our knowledge, correct at the time of printing. The interpretation and recommendations in the report are based on our experience, using reasonable professional skill and judgment, and based upon the information that was available to us. These interpretations and recommendations are not necessarily relevant to any aspect outside the restricted requirements of our brief. This report has been prepared for the sole and specific use of our client and ENSR Asia (HK) Ltd. accepts no responsibility for its use by others.

This report is copyright and may not be reproduced in whole or in part without prior written permission.

**ENSR Asia (HK) Ltd.**

11/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong  
 Tel: (852) 2893 1551 Fax: (852) 2891 0305 Email: ensrhk@ensr.aecom.com  
 www.ensr.aecom.com www.maunsell.aecom.com

西圖香港有限公司  
CH2M HILL Hong Kong Limited  
Suite 1801, Harcourt House  
39 Gloucester Road  
Wanchai, Hong Kong  
Tel (852) 2507-2203  
Fax (852) 2507-2293



**CH2MHILL**

Our Ref.: HYDDBLWCEM00/1/10937

Date: 31 December 2007

Highways Department  
Major Works Project Management Office  
5<sup>th</sup> Floor, Ho Man Tin Government Offices,  
88 Chung Hau Street, Homantin, Kwoloon

By Fax (2761 4864) & Post

Attention: Mr. K.M. Bok / Mr. George Ku

Dear Sirs,

**Re: Contract No. HY/2007/04  
Hong Kong – Shenzhen Western Corridor (Operational Phase)  
Quarterly Report of Bridge Lighting Scheme and Bird Collisions Monitoring –  
October to December 2007**

Reference is made to ET's e-mail correspondences enclosed with a copy of the captioned report for October to December 2007 and revised pages for the captioned project. We are pleased to inform that we have no further comment on the captioned report.

We are pleased to inform you that the captioned report, which had been certified by the Environmental Team Leader, is verified by IEC in compliance with Condition 1.9 of the Environmental Permit No.EP-162/2003/B of the project.

Thank you very much for your kind attention and please do not hesitate to contact the undersigned or our Mr. Roy Leung if you have any queries.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'K.S. Lee'.

K.S. Lee  
Independent Environmental Checker

c.c. Mr. Alan Kwok  
Mr. Eric Chan

ENSR (ETL)  
Arup (HY2002/21)

By Fax: 2891 0305  
By Fax: 2268 3955

## TABLE OF CONTENTS

	Page
1 Monitoring Requirement.....	2
2 Monitoring Equipment .....	2
3 Monitoring Location.....	2
4 Monitoring Methodology.....	2
5 Monitoring Results .....	3
6 Outline of Monitoring Programme for the Next Quarter .....	4
7 Conclusion .....	4

### List of Tables

Table 5.1	Summary of Monitoring Results from October 2007 to December 2007 .....	3
Table 6.1	Tentative Monitoring Programme from January 2008 to March 2008 .....	4

### List of Figures

Figure 3.1	Bridge Alignment for Bridge Lighting Scheme and Bird Collision Monitoring
------------	---

## **1 MONITORING REQUIREMENT**

- 1.1 As required under the Environmental Permits (EP) and the approved EM&A Manuals for the Project, monitoring of bridge lighting scheme and bird collision during operational phase have to be conducted monthly for 3 years.
- 1.2 The EM&A Manuals require the monitoring of the operation of the bridge lighting schemes and their relationship with bird mortality. Monitoring effort should be concentrated in autumn migration, winter, and spring migration seasons. Various combinations of illumination scheme, weather condition, season of year, and time of day should be monitored. Monthly surveys are recommended.
- 1.3 This is the second quarterly report prepared as required by EPs and documents the monitoring methodology and results, including types and schemes of illumination used on the bridge, weather conditions and records of bird mortalities. This report also provides an outline of the monitoring programme in the next quarter.

## **2 MONITORING EQUIPMENT**

- 2.1 A camera and a pair of binoculars were required during the monitoring process.

## **3 MONITORING LOCATION**

- 3.1 The monitoring of bird collision took place along the HK-SWC, which is approximately 5.5km long and 40m wide. The bridge alignment for the monitoring is given in Figure 3.1.

## **4 MONITORING METHODOLOGY**

- 4.1 Surveys were conducted to assess potential impacts of different lighting schemes on bird mortality as caused by collision with the bridge and associated structures. In order to monitor the bird mortality, surveys were carried out along the HK-SWC at both sides of the carriageway covering both the Hong Kong and Shenzhen sections. Attention was paid to the road surface while attempts were made to spot dead birds. Sea surface was also scanned for any floating dead birds. The monitoring frequency is once every month.
- 4.2 The four lighting schemes are listed as follows:

- **Scheme 1** – Monday to Thursday and Sunday, 19.30-22.00. Architectural lighting for the tower.
- **Scheme 2** – Friday, Saturday and general festival, 19.30-22.00. Architectural lighting for the tower and side faces of the deck.
- **Scheme 3** – Special festival and events, 19.30-22.00 Architectural lighting for the tower, stay cables and the side faces of the deck.
- **Scheme 4** – During inclement weather. Turn off the architectural lighting.

## 5 MONITORING RESULTS

5.1 The following Table 5.1 summarizes the results, including the types and schemes of illumination used on the bridge, the weather conditions and records of bird mortalities by species, number, location and estimated cause of death.

**Table 5.1 Summary of Monitoring Results from October 2007 to December 2007**

Date	Time	Lighting Scheme	Weather Condition	Records of Bird Mortality				Remarks
				Species	No.	Location	Estimated Cause of Death	
3 Oct 07 (Wed)	7.30pm	Scheme 3	Fine, light breeze, 90% humidity	-	0	-	-	No record of dead bird. National Day Golden Week of China.
5 Nov 07 (Mon)	7.30pm	Scheme 1	Fine clear sky, 22°C, 68% humidity	-	0	-	-	No record of dead bird.
4 Dec 07 (Tue)	8.20pm	Scheme 1	Fine weather, 22°C, calm wind.	-	0	-	-	No record of dead bird

## 6 OUTLINE OF MONITORING PROGRAMME FOR THE NEXT QUARTER

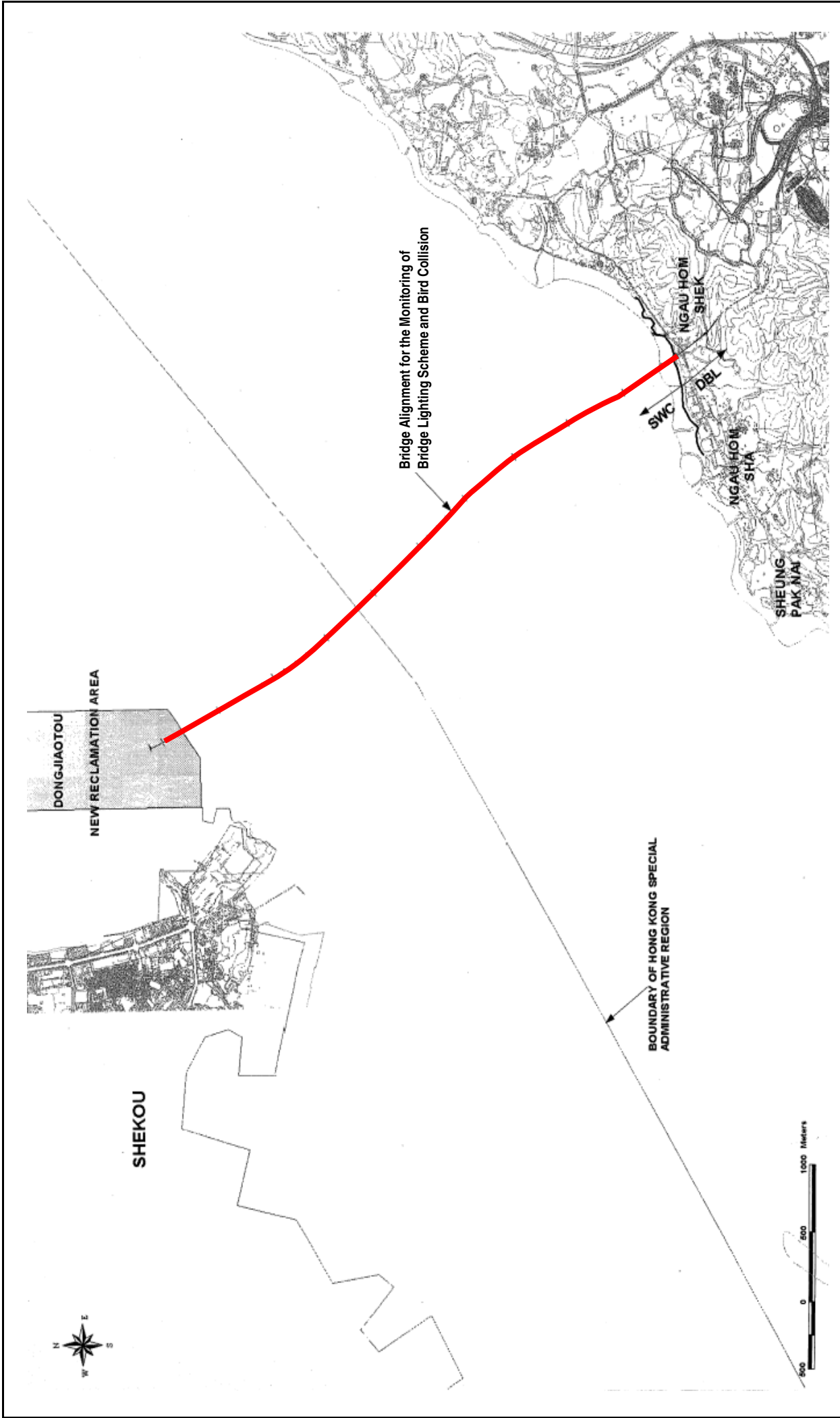
6.1 During the next quarter, from January 2008 to March 2008, bridge lighting and bird collision monitoring surveys will be carried out monthly. Our aim is to allocate the same amount of opportunities for the monitoring of each of the four lighting schemes. It is important to note that Scheme 3 (used during special festivals and events), and Scheme 4 (used during inclement weather) are rarely used, thus opportunities for the monitoring of these schemes are less. Effort will be made to monitor combination of various lighting schemes, weather conditions, time of day (7.30pm - midnight) and seasons. A tentative monitoring programme is given in Table 6.1.

**Table 6.1 Tentative Monitoring Programme from January 2008 to March 2008**

Monitoring Month	Tentative Date	Target Scheme
January 2008	11 January 2008 (Fri)	Scheme 2
February 2008	12 February 2008 (Tue)	Scheme 3
March 2008	7 March 2008 (Fri)	Scheme 2

## 7 CONCLUSION

7.1 No dead bird was spotted on the HK-SWC or floating on sea surface. No bird mortality was recorded during the operation of HK-SWC during the monitoring visits from October to December 2007.



Contract No. HY/2007/04

Hong Kong - Shenzhen Western Corridor

SCALE

N.T.S.

CHECK

CWHY

JOB NO.

DATE

2007

DRAWN

FLWY

FIGURE

60025836

3.1

Rev

-

**Bridge Alignment for Bridge Lighting Scheme and Bird Collision Monitoring**

**ENSR** | **AECOM**