



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. 10
(for the months October to December 2009)**

[01/2010]

	Name	Signature
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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 AECOM Asia Co. Ltd. accepts no responsibility for its use by others.

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Date: 8 February 2010

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By Fax (2761 4864) & Post

Attention: Mr. Raymond S.K. Yip

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 2009**

Reference is made to ET's e-mail correspondences enclosed with a copy of the captioned report for October to December 2009 for the captioned project. We are pleased to inform that we have no further comment on the captioned Report.

We are pleased to inform that the captioned Report, which had been certified by the Environmental Team Leader, is verified by IEC to be in compliance with Condition 1.9 of Environmental Permit No. EP-162/2003/B and Condition 1.7 of the Environmental Permit No. EP-290/2007 of the Project.

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

Yours sincerely,

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

K.S. Lee
Independent Environmental Checker

c.c. Mr. Y T Tang ENSR (ET Leader)
 Mr. Eric Chan Arup (HY2002/21)

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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 tenth 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 alignment, which is approximately 5.5 km long and 40 m 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 lasted for about 30 – 40 minutes. 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 2009 to December 2009

Date	Time	Lighting Scheme	Weather Condition	Records of Bird Mortality				Remarks
				Species	No.	Location	Estimated Cause of Death	
7 October 09 (Wed)	7.30pm	Scheme 3	24.6-31°C, 49-94% humidity	-	0	-	-	No record of dead bird.
30 November 2009 (Mon)	7.30pm	Scheme 1	17.8-22.1°C, 61-80% humidity	-	0	-	-	No record of dead bird.
29 December 2009 (Tue)	7.30pm	Scheme 1	13.8-16.9°C, 85-96% humidity	-	0	-	-	Foggy. No record of dead bird.

6 OUTLINE OF MONITORING PROGRAMME FOR THE NEXT QUARTER

6.1 During the next quarter, from January to March 2010, bridge lighting scheme 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 2010 to March 2010

Monitoring Month	Tentative Date	Target Scheme
January 2010	15 January 2010 (Fri)	Scheme 2
February 2010	18 February 2010 (Thu)	Scheme 3 (due to Lunar New Year)
March 2010	12 March 2010 (Fri)	Scheme 2

7 CONCLUSION

7.1 No dead bird was spotted on the HK-SWC nor floating on sea surface. No bird mortality was recorded during the operation of HK-SWC during the monitoring surveys from October to December 2009.