

**Contract No. HY/2011/03 -
 Hong Kong- Zhuhai- Macao Bridge
 Hong Kong Link Road Section between Scenic Hill and Hong Kong Boundary Crossing Facilities**
Notifications of Environmental Quality Limits Exceedances Notification No.: 229 ver 0

Date of Notification: 19 September 2016

Works Inspected: Data collected from water sampling works on 19 September 2016 and the results were issued on 26 September 2016

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS10	DA	23.5 and 120% of upstream control station's suspended solids at the same tide of the same day (i.e. CS2: 5.98 x 120% = 7.2 for mid ebb AND CS(Mf)5: 9.55x 120% = 11.5 for mid flood)	34.4 and 130% of upstream control station's suspended solids at the same tide of the same day (i.e. CS2: 5.98 x 130% = 7.8 for mid ebb AND CS(Mf)5: 9.55 x 130% = 12.4 for mid flood)	6.0	25.2

Notes:
 DA means depth average.
Bold Italic means AL exceedances.
Bold Italic with underline means LL exceedances.

Possible reason for Action and Limit Level Non-compliance:

On 19 September 2016, an Action Level exceedance of suspended solid was recorded at station IS10 during mid-flood tide. The exceedance has been investigated and are considered unlikely to be related to contract works due to the following reasons:

1. Removal of surcharge, box culvert construction works at Zones 1 and 2, seawall construction works at Zones 2 and 3A, grouting for soldier pile at Zone 2 and transportation of fill material on the ground at Zone 3A were carried out within silt curtain as recommended in the EIA Report. According to the Contractor, the wastewater effluent generated from the contract works was treated before discharging into water bodies (e.g. storm water drains, coast and sea etc.) on 19 September 2016 in accordance with the discharge license.
2. The range of suspended solid at station IS10 during the baseline monitoring is shown as below:

Station	Range of Suspended Solid (mg/L) Mid-Ebb Tide	Range of Suspended Solid (mg/L) Mid-Flood Tide
IS10	6.1 to 20.2	7.2 to 16

The measured values at station IS10 were above the range of suspended solid for mid-flood tide during baseline monitoring.

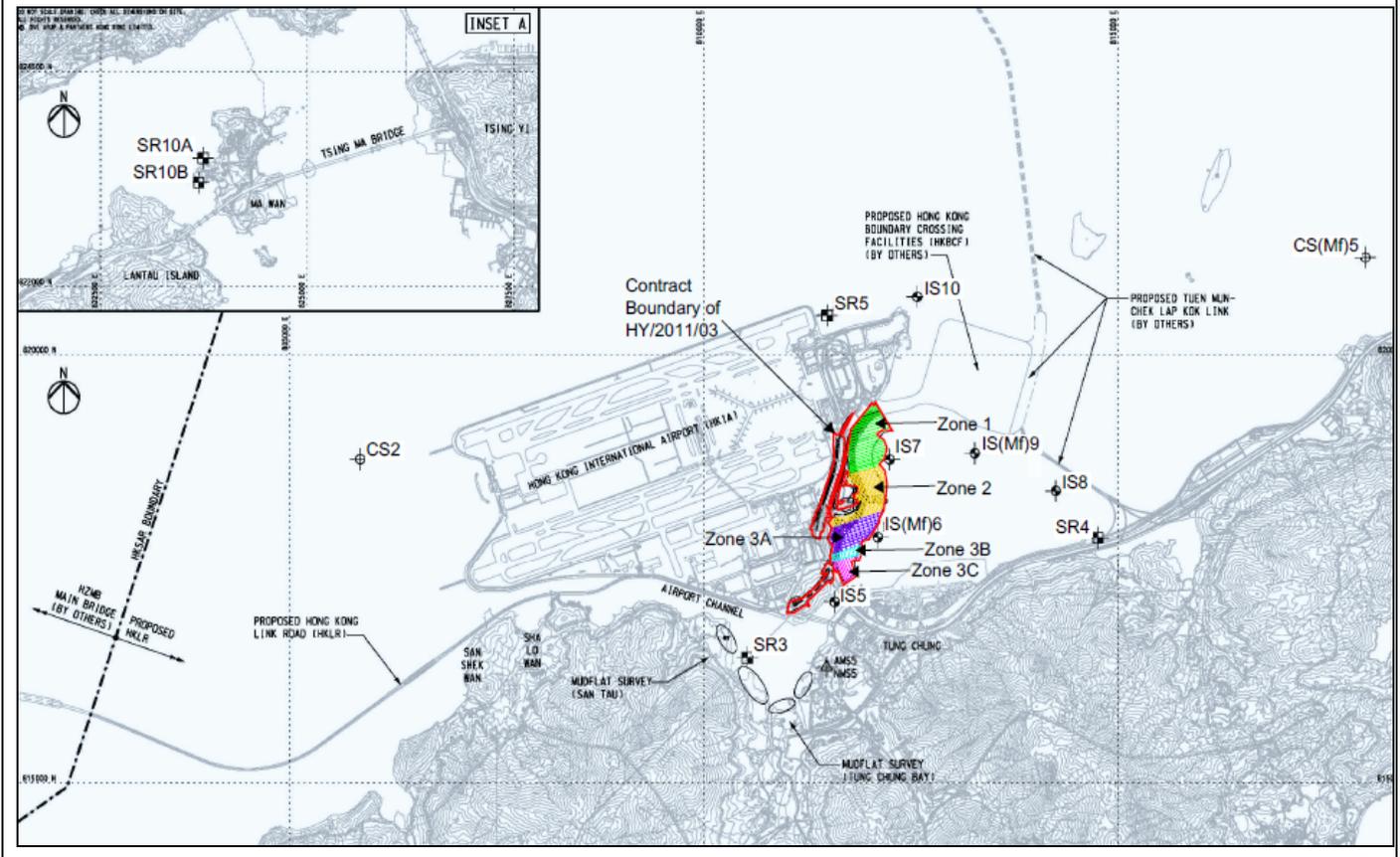
3. However, there were no specific activities recorded during the monitoring period that would cause any significant impacts on the monitoring results. No marine works was conducted near monitoring station IS10 which are located outside the site boundary of HKLR03 Contract. Also, there was no marine transportation of fill materials/sediment on 19 September 2016 and no muddy plume observed at station IS10 during sampling exercise.
4. No leakage of turbid water or any abnormality or malpractice for all contract works was observed during the sampling exercise.

As such, the exceedance of suspended solid levels is considered to be attributed to other external factors such as sea condition, rather than the contract works.

Actions taken/ to be taken:

As the suspended solid levels recorded beyond the water quality criteria were not related to the contract works, no immediate actions are considered necessary. However, the Contractor is reminded to ensure that the silt curtain is fully maintained throughout the construction works and construction works are carried out under stringent supervision to prevent any water quality impacts to the seawater.

Location Plan:



Reviewed by : Claudine Lee

Title : ET Leader



Date : 7 October 2016

Copied to : Supervising Officer, IEC, EPD, Contractor, ENPO

Date of Notification: 23 November 2016

Works Inspected: Data collected from water sampling works on 16 November 2016 and the results were issued on 23 November 2016

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS10	DA	23.5 and 120% of upstream control station's suspended solids at the same tide of the same day (i.e. CS2: 10.08 x 120% = 12.1 for mid ebb AND CS(Mf)5: 12.57x 120% = 15.1 for mid flood)	34.4 and 130% of upstream control station's suspended solids at the same tide of the same day (i.e. CS2: 10.08 x 130% = 13.1 for mid ebb AND CS(Mf)5: 12.57 x 130% = 16.3 for mid flood)	10.3	<u>42.2</u>
SS	SR5	DA			12.4	<u>34.5</u>

Notes:
DA means depth average.
Bold Italic means AL exceedances.
Bold Italic with underline means LL exceedances.

Possible reason for Action and Limit Level Non-compliance:

On 16 November 2016, Limit Level exceedances of suspended solid were recorded at stations IS10 and SR5 during mid-flood tide. The exceedances have been investigated and are considered unlikely to be related to contract works due to the following reasons:

1. Removal of surcharge, box culvert construction works at Zones 1 and 2, seawall construction works at Zones 2 and 3A, toe loading works and drilling of pipe pile at Zone 1, ground investigation works at Zone 2, and transportation of fill material at Zone 3A were carried out within silt curtain as recommended in the EIA Report.
2. The ranges of suspended solid at stations IS10 and SR5 during the baseline monitoring are shown as below:

Station	Range of Suspended Solid (mg/L) Mid-Ebb Tide		Range of Suspended Solid (mg/L) Mid-Flood Tide	
IS10	6.1	to 20.2	7.2	to 16
SR5	6.7	to 16.5	6.5	to 31.2

The measured values at stations IS10 and SR5 were above the range of suspended solid for mid-flood tide during baseline monitoring.

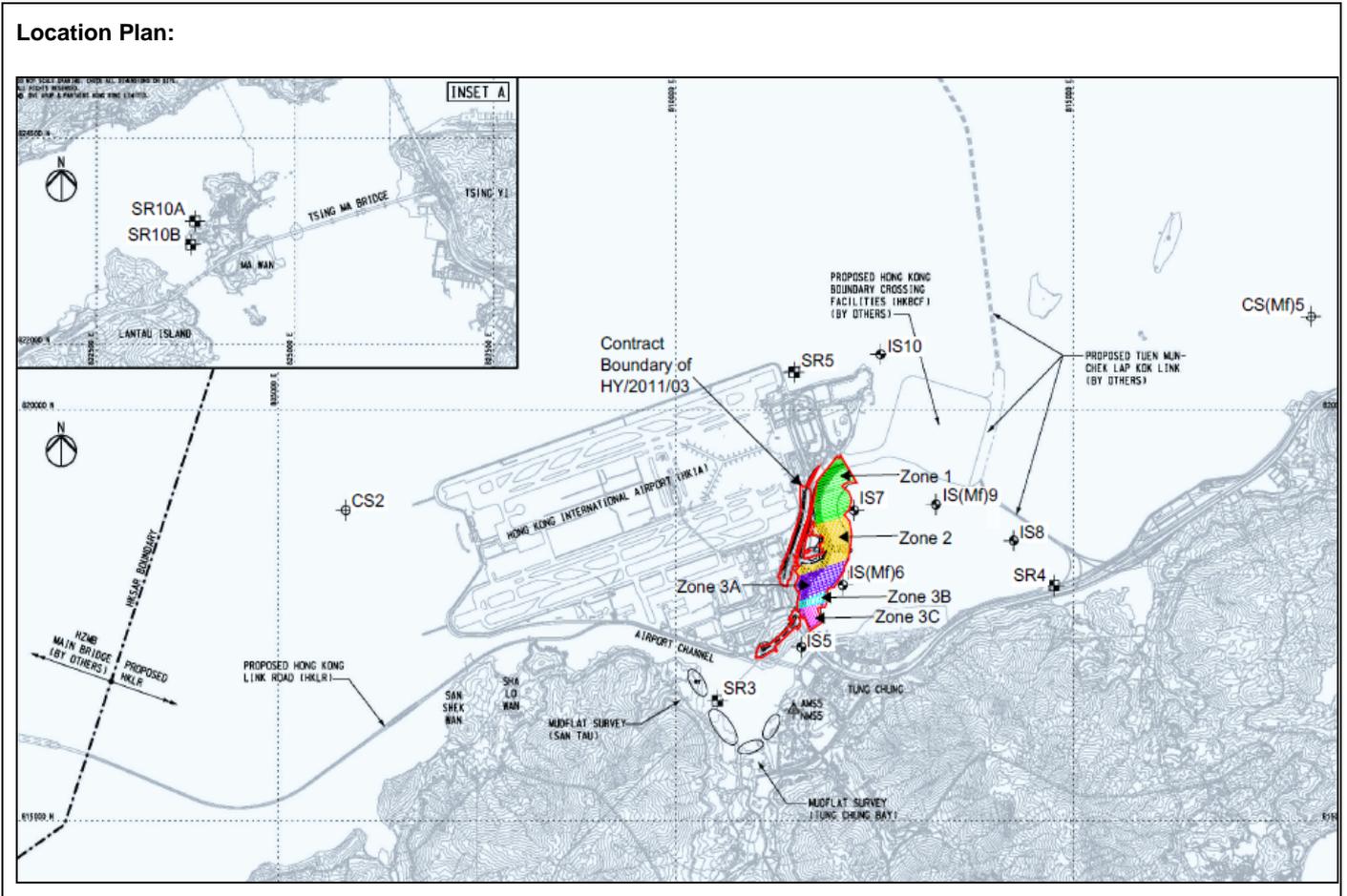
3. However, there were no specific activities recorded during the monitoring period that would cause any significant impacts on the monitoring results. No marine works was conducted near monitoring stations IS10 and SR5 which are located outside the site boundary of HKLR03 Contract. Also, there was no marine transportation of fill materials/sediment on 16 November 2016 and no muddy plume observed at stations IS10 and SR5 during sampling exercise.
4. No leakage of turbid water or any abnormality or malpractice for all contract works was observed during the sampling exercise.

As such, the exceedances of suspended solid levels are considered to be attributed to other external factors such as sea condition, rather than the contract works.

Actions taken/ to be taken:

As the suspended solid levels recorded beyond the water quality criteria were not related to the contract works, no immediate

actions are considered necessary. However, the Contractor is reminded to ensure that the silt curtain is fully maintained throughout the construction works and construction works are carried out under stringent supervision to prevent any water quality impacts to the seawater.



Reviewed by : Claudine Lee

Title : ET Leader

Date : 30 November 2016

Copied to : Supervising Officer, IEC, EPD, Contractor, ENPO

**Contract No. HY/2011/03 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Link Road Section between Scenic Hill and Hong Kong Boundary Crossing Facilities
Notifications of Environmental Quality Limits Exceedances** Notification No.: 231 ver 1

Date of Notification: 6 December 2016

Works Inspected: Not Applicable

Monitoring Location: NEL & NWL

Parameter: Ecology (Chinese White Dolphin Monitoring)

Action & Limit Levels		Monitoring Results
	North Lantau Social Cluster	The quarter of September 2016 – November 2016
	Action Level (AL) Limit Level (LL)	
Northeast Lantau (NEL)	STG < 4.2 & ANI < 15.4	<u>STG = 0; ANI = 0</u>
Northwest Lantau (NWL)	STG < 6.9 & ANI < 31.3	<u>STG = 2.86; ANI = 10.89</u>

- Notes:
1. STG means quarterly encounter rate of number of dolphin sightings.
 2. ANI means quarterly encounter rate of total number of dolphins.
 3. For North Lantau Social Cluster, AL will be triggered if either NEL or NWL falls below the criteria; LL will be triggered if both NEL and NWL fall below the criteria.
 4. ***Bold Italic*** means AL exceedances.
 5. ***Bold Italic with underline*** means LL exceedances

Possible reason for Limit Level Non-compliance:

There was one Limit Level exceedance of dolphin monitoring for the quarterly monitoring data (between September 2016 – November 2016). According to the contractor's information, the marine activities undertaken for HKLR03 during the quarter of September 2016 – November 2016 included piling works, removal of surcharge materials, temporary drainage diversion, ground investigation, box culvert diversion, construction of permanent seawall and maintenance of silt curtain.

There is no evidence showing the current LL non-compliance directly related to the construction works of HKLR03 (where the amounts of working vessels for HKLR03 have been decreasing), although the generally increased amount of vessel traffic in NEL during the impact phase has been partly contributed by HKLR03 works since October 2012. It should also be noted that reclamation work under HKLR03 (adjoining the Airport Island) situates in waters which has rarely been used by dolphins in the past, and the working vessels under HKLR03 have been travelling from source to destination in accordance with the Marine Travel Route to minimize impacts on Chinese White Dolphin (CWD). In addition, the contractor will implement proactive mitigation measures such as avoiding anchoring at Marine Department's designated anchorage site – Sham Shui Kok Anchorage (near Brothers Island) as far as practicable.

According to Monitoring of Chinese White Dolphins in Southwest Lantau Waters – Fourth Quarterly Report (December 2015 to February 2016) which is available on ENPO's website, with their primary ranges centered in North and West Lantau waters, some individuals showed apparent range shifts or extensions to Southwest Lantau waters in 2015-16. For example, three individual dolphins (NL120, WL46 and WL221) indicated obvious shifts in their range use from NWL to West Lantau (WL) and Southwest Lantau (SWL) waters. Moreover, many individuals (e.g. NL212, NL260, WL200, SL55, WL232, WL237 and WL265) have extended their ranges from WL waters to SWL waters. It remains to be seen whether some of these individuals have permanently shifted their ranges away from their primary ranges in North Lantau, or begin to spend more times in SWL waters as part of their ranges.

ENPO updated that the Hong Kong-Zhuhai-Macao Bridge Authority (HZMBA) for the Mainland section of Hong Kong-Zhuhai-Macao Bridge (HZMB) has commenced an interim survey on fisheries resources and CWD in the Mainland waters. ENPO presented the preliminary findings of the HZMBA interim survey on CWD sighting and photo-identification works which provide solid evidence that some CWD that were previously more often sighted in HK waters have expanded their ranges into the Mainland waters, and some with reduced usage in HK waters. These preliminary data were mentioned in Monitoring of Chinese White Dolphins in Southwest Lantau Waters – Fourth Quarterly Report (December 2015 to February 2016) which is available on ENPO's website.

Actions taken/ to be taken:

Inform the IEC, ENPO, ER/SOR and Contractor
The ETL informed IEC, ENPO, SOR and Contractor via email on 6 December 2016

Repeat statistical data analysis to confirm findings and check monitoring data:

A two-way ANOVA with repeated measures and unequal sample size was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. The two variables that were examined included the two periods (baseline and impact phases) and two locations (NEL and NWL).

For the comparison between the baseline period and the present quarter (sixteenth quarter of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0051 and 0.0296 respectively. If the alpha value is set at 0.05, significant differences were detected between the baseline and present quarters in both the average dolphin encounter rates of STG and ANI.

For comparison between the baseline period and the cumulative quarters in impact phase (i.e. first sixteen quarters of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.000004 and 0.000001 respectively. Even if the alpha value is set at 0.00001, significant differences were still detected in both the average dolphin encounter rates of STG and ANI (i.e. between the two periods and the locations).

Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences:

The AFCD monitoring data during September to November 2016 has been reviewed by the dolphin specialist. During the same quarter, no dolphin was sighted from 176.90 km of survey effort on primary lines in NEL, while three groups of six dolphins were sighted from 255.36 km of survey effort on primary lines in NWL. This review has confirmed that the extremely low occurrence of dolphins reported by the HKLR03 monitoring surveys in autumn 2016 in NEL and NWL survey area is accurate.

Recommendations/ mitigation measures/ actions if necessary:

Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary:

All dolphin protective measures are fully and properly implemented in accordance with the EM&A Manual. According to the Regular Marine Travel Route Plan, the travelling speed of vessels must not exceed 5 knots when crossing the edge of the marine park. The Contractor will continue to provide training for skippers to ensure that their working vessels travel from source to destination to minimize impacts on Chinese White Dolphin and avoid anchoring at Marine Department's designated anchorage site - Sham Shui Kok Anchorage (near Brothers Island) as far as practicable. Also, it is recommended to complete the marine works of the Contract as soon as possible so as to reduce the overall duration of impacts and allow the dolphins population to recover as early as possible.

A meeting was held on 10 February 2017 with attendance of representative of ENPO, Resident Site Staff (RSS), Environmental Team (ET) and dolphin specialist for Contract Nos. HY/2010/02, HY/2011/03, HY/2012/07, HY/2012/08. The discussion/recommendation as recorded in the minutes of the meeting, which might be relevant to HKLR03 Contract are summarized below.

It was concluded that the HZMB works is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to the HZMB works as a whole (or individual marine contracts) cannot be quantified nor separate from the other stress factors.

The dolphin specialists of the projects confirmed that the CWD sighting around the North of Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP) has significantly decreased, and it was apparently related to the re-routing of high speed ferry (HSF) from Skypier.

It was reminded that the ETs shall keep reviewing the implementation status of the dolphin related mitigation measures and remind the contractor to ensure the relevant measures were fully implemented.

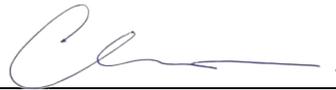
It was recommended that the marine works of HZMB projects should be completed as soon as possible so as to reduce the overall duration of impacts and allow the dolphins population to recover as early as possible.

It was also recommended that the marine works footprint (e.g., reduce the size of peripheral silt curtain) and vessels for the marine works should be reduced as much as possible, and vessels idling / mooring in other part of the North Lantau shall be avoided whenever possible.

It was suggested that the protection measures (e.g., speed limit control) for the Brothers Marine Park (BMP) shall be brought forward so as to provide a better habitat for dolphin recovery. It was noted that under the Regular Marine Travel Route Plan (RMTR) Plan, the contractors have committed to reduce the vessel speed in BMP. HyD updated that the draft map of the proposed BMP was gazetted in February 2016. ENPO updated that the BMP was approved by the Chief Executive in the Executive Council in August 2016. The ETs were reminded to update the BMP boundary in the RMTR Plan. The BMP was designated on 30 December 2016. It was reminded that trespassing the BMP is not allowed under the RMTR Plan.

There was a discussion on exploring possible further mitigation measures, for example, controlling the underwater noise. It was noted that the EIA reports for the projects suggested several mitigation measures, all of which have been implemented.

Reviewed by : Claudine Lee Title : ET Leader


Copied to : Supervising Officer, ENPO, IEC, EPD, Contractor Date : 25 April 2017

Summary of Notifications of Summons and Prosecutions

Total No. of Notifications of Summons / Prosecutions Received	No. of Notifications of Summons / Prosecutions Received during Reporting Period	Status of Notifications of Summons / Prosecutions
0	0	N/A