

**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.: 241s ver 1

Date of Notification: 9 August 2017

Works Inspected: Data collected from water sampling works on 12 July 2017 by Contract No. HY/2010/02 and Contract No. HY/2011/09.

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	SR3	DA	23.5 and 120% of upstream control station's suspended solids at the same tide of the same day (i.e. CS2: 3.95 x 120% = 4.7 for mid ebb AND CS(Mf)5: 14.02 x 120% = 16.8 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: 3.95 x 130% = 5.1 for mid ebb AND CS(Mf)5: 14.02 x 130% = 18.2 for mid flood)	24.7	18.0

Notes:

- 1) DA means depth average.
- 2) ***Bold Italic*** means AL exceedances.
- 3) ***Bold Italic with underline*** means LL exceedances.
- 4) The monitoring data of water quality monitoring for stations SR3 and CS(Mf)5 were adopted from the published EM&A data of Contract No. HY/2010/02. The data are available at a website: <http://www.hzmbenpo.com/>
- 5) The monitoring data of water quality monitoring for station CS2 was adopted from the published EM&A data of Contract No. HY/2011/09. The data are available at a website: <http://www.hzmbenpo.com/>

Possible reason for Action Level Non-compliance:

On 12 July 2017, an Action Level exceedance of suspended solid was recorded at station SR3 during mid-ebb tide. The exceedance has been investigated and is considered unlikely to be related to the contract works due to the following reasons:

1. Removal of surcharge, road and drainage construction at Zones 1 and 2; seawall construction at Zones 2 and 3; box culvert construction at Zone 2; and transportation of fill material at Zone 3 were carried out within the properly deployed silt curtain as recommended in the EIA Report.
2. The ranges of suspended solid at station SR3 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	
	to	to	to	to
SR3	6.7	31	7.6	28

The measured value for mid-ebb tide at station SR3 was within the range of suspended solid for mid-ebb tide during baseline monitoring.

3. There was no marine transportation at Zones 1, 2, and 3. There were no specific activities recorded during the monitoring period that would cause any significant impacts on the monitoring results. Also, there was no muddy plume observed at station SR3 during sampling exercise.
4. No leakage of turbid water or any abnormality or malpractice for all contract works was observed during the sampling exercise.

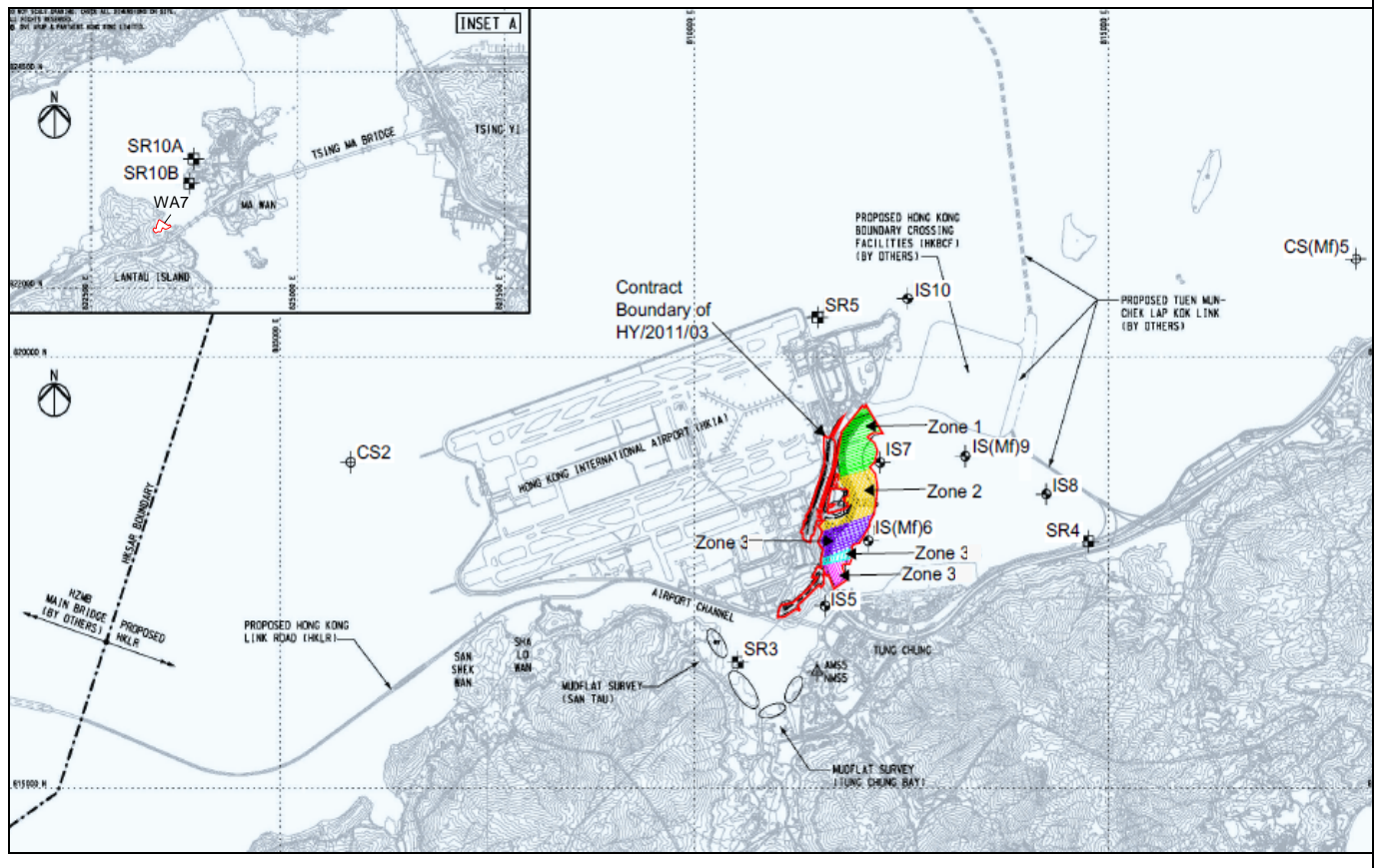
As such, the exceedance of suspended solid level is considered to be attributed to other external factors such as sea condition, rather than the contract works.

Actions taken/ to be taken:

As the suspended solid level recorded beyond the water quality criteria was 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 : 14 August 2017

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

Date of Notification: 9 August 2017

Works Inspected: Data collected from water sampling works on 14 July 2017 by Contract No. HY/2010/02 and Contract No. HY/2011/09

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	IS7	DA	<p>23.5 and 120% of upstream control station's suspended solids at the same tide of the same day (i.e. CS2: 5.97 x 120% = 7.2 for mid ebb AND CS(Mf)5: 11.65 x 120% = 14.0 for mid flood)</p>	<p>34.4 and 130% of upstream control station's suspended solids at the same tide of the same day (i.e. CS2: 5.97 x 130% = 7.8 for mid ebb AND CS(Mf)5: 11.65 x 130% = 15.1 for mid flood)</p>	15.8	24.8

Notes:

- 1) DA means depth average.
- 2) ***Bold Italic*** means AL exceedances.
- 3) ***Bold Italic with underline*** means LL exceedances.
- 4) The monitoring data of water quality monitoring for stations SR3 and CS(Mf)5 were adopted from the published EM&A data of Contract No. HY/2010/02. The data are available at a website: <http://www.hzmbenpo.com/>
- 5) The monitoring data of water quality monitoring for station CS2 was adopted from the published EM&A data of Contract No. HY/2011/09. The data are available at a website: <http://www.hzmbenpo.com/>

Possible reason for Action Level Non-compliance:

On 14 July 2017, an Action Level exceedance of suspended solid was recorded at station IS7 during mid-flood tide. The exceedance has been investigated and is considered unlikely to be related to the contract works due to the following reasons:

1. Removal of surcharge, road and drainage construction at Zones 1 and 2; seawall construction at Zones 2 and 3; box culvert construction at Zone 2; and transportation of fill material at Zone 3 were carried out within the properly deployed silt curtain as recommended in the EIA Report.

2. The ranges of suspended solid at station IS7 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	
	to		to	
IS7	6.1	21	7.8	34

The measured value for mid-ebb tide at station IS7 was within the range of suspended solid for mid-flood tide during baseline monitoring.

3. There was no marine transportation at Zones 1, 2, and 3. There were no specific activities recorded during the monitoring period that would cause any significant impacts on the monitoring results. Also, there was no muddy plume observed at station IS7 during sampling exercise.
4. No leakage of turbid water or any abnormality or malpractice for all contract works was observed during the sampling exercise.

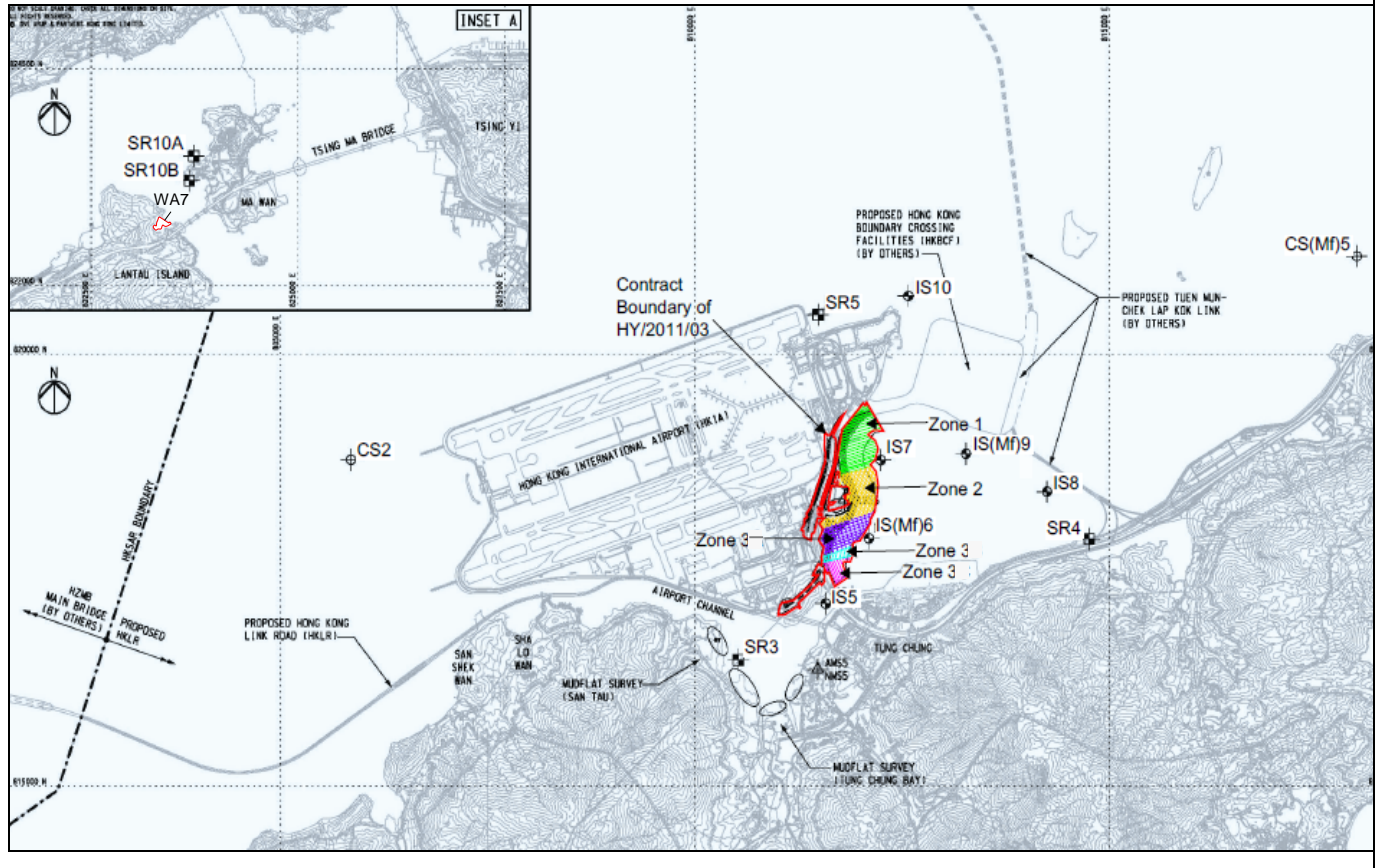
As such, the exceedance of suspended solid level is considered to be attributed to other external factors such as sea condition, rather than the contract works.

Actions taken/ to be taken:

As the suspended solid level recorded beyond the water quality criteria was 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 : 14 August 2017

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.: 243 ver 0

Date of Notification: 11 September 2017

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 June 2017 – August 2017				
	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Action Level (AL)</td> <td style="text-align: center;">Limit Level (LL)</td> </tr> </table>		Action Level (AL)	Limit Level (LL)		
Action Level (AL)	Limit Level (LL)					
Northeast Lantau (NEL)	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">STG < 4.2 & ANI < 15.5</td> <td style="text-align: center;">NEL: (STG < 2.4 & ANI < 8.9) and</td> </tr> <tr> <td style="text-align: center;">Northwest Lantau (NWL)</td> <td style="text-align: center;">NWL: (STG < 3.9 & ANI < 17.9)</td> </tr> </table>	STG < 4.2 & ANI < 15.5	NEL: (STG < 2.4 & ANI < 8.9) and	Northwest Lantau (NWL)	NWL: (STG < 3.9 & ANI < 17.9)	<u>STG = 0; ANI = 0</u>
STG < 4.2 & ANI < 15.5	NEL: (STG < 2.4 & ANI < 8.9) and					
Northwest Lantau (NWL)	NWL: (STG < 3.9 & ANI < 17.9)					
		<u>STG = 2.20; ANI = 6.58</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 June 2017 – August 2017). According to the contractor's information, the marine activities undertaken for HKLR03 during the quarter of June 2017 – August 2017 included removal of surcharge, box culvert construction, road and drainage construction, seawall construction, and transportation of fill material.

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 11 September 2017.

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 (19th quarter of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0044 and 0.0202 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 19 quarters of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.000001 and 0.000000 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 June 2017 to August 2017 has been reviewed by the dolphin specialist. During the same quarter, no dolphin was sighted from 169.50 km of survey effort on primary lines in NEL, while five groups of 24 dolphins were sighted from 231.50 km of survey effort on primary lines in NWL. This review has confirmed that the low occurrence of dolphins reported by the HKLR03 monitoring surveys in summer 2017 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 9 October 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, HY2011/09, HY/2012/07 and 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 likely 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.

HyD updated that the draft map of the proposed Brothers Marine Park (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 Regular Marine Travel Route (RMTR) Plan. The BMP was designated on 30 December 2016. It was suggested that the protection measures (e.g. speed limit control) for the approved BMP shall be brought forward so as to provide a better habitat for dolphin recovery. It was noted that under the latest RMTR Plan, the contractors have committed to reduce the vessel speed in BMP.

The marine travel route will shift along the edge of Brother Marine Park as much as practical under the RMTR Plan. It was noted that even though marine vessels may moor within the mooring site of BMP, commercial activities including loading / unloading / transshipment are not allowed except a permit is obtained. The HZMB works vessels were recommended to avoid the BMP.

It was reminded that starting from January 2016, HSF from the SkyPier will be re-routed north to the northern edged of the Sha Chau and Lung Kwu Chau Marine Park which currently has the highest density of CWD in the NWL. While the HSF will reduce speed to 15 knots, the associated disturbance may still affect CWD in the area. It was implied that the CWDs in the area shall be closely followed.

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



Date : 18 January 2018

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

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