

<b>Contract No. HY/2014/05 -  Hong Kong- Zhuhai- Macao Bridge  Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;">Notification No.: 20171223_Air_24hr</span>				
<b>Date of Investigation Report:</b> 10 January 2018				
<b>Date of Environmental Quality Limit Exceedance:</b> 23 December 2017 and the results were issued on 5 January 2018				
<b>Monitoring Location:</b> AMS3B – Site Boundary of Site Office Area at Work Area WA2 (The air quality monitoring station for the Contract is covered by Contract No. HY/2013/01 HZMB HKBCF – Passenger Clearance Building)				
<b>Monitoring Date:</b> 23 December 2017 <b>Start Time:</b> 08:00				
<b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>				
PARAMETER	STATION	AL (µg/m <sup>3</sup> )	LL (µg/m <sup>3</sup> )	MEASURED LEVEL, µg/m <sup>3</sup>
24-hr TSP	AMS3B – Site Boundary of Site Office Area at Works Area WA2	167	260	<b><i>182</i></b>
Notes: <b><i>Bold Italic</i></b> means AL exceedance <b><u><i>Bold Italic with underline</i></u></b> means LL exceedance				

**Possible reason for Action / Limit Level Non-compliance:**

On 23 December 2017, one AL exceedance of 24-hr TSP at AMS3B was recorded.

Based on the information from the Contractor, the construction works undertaken on 23 and 24 December 2017 are shown as below:

- ABWF & MEP works (Internal) of Buildings 022, 023, 032, 044, 045, 050H1, 050H2, 050A1, 050A2, 053
- ABWF works (external) of Buildings 022, 023, 025, 032, 044, 045, 050H1, 050H2, 050A1, 050A2
- ABWF works (roof) of Buildings 021, 022, 023, 032, 044, 050H1, 050H2, 050A1, 050A2, 053
- Utilities and Drainage installation of Buildings 050H1, 050A1, 050A2

The Contractor confirmed that the mitigation measures according to Water Spraying Plan in December 2017 (Appendix A) are implemented to avoid dust emission. Photos of haul road condition and dust suppression are included in Appendix A. The Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr. According to site inspection which conducted on 4, 13, 18 and 27 December 2017, no dusty activities and dry condition in haul road were observed.

The Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix B. The hourly AQHI of Tung Chung station ranged 3 to 8 (Low to Very High) on 23 and 24 December 2017 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The RABF site of HKBCF is far away from AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS3B during the monitoring period.

Therefore, it is concluded that the exceedances were not related to the Contract.

**Actions taken/ to be taken:**

The Water Spraying Plan including the information of watering schedule, routing of trucks of for watering and the location of water filling, was prepared and submitted to RE and ENPO. The Contractor was also reminded to implement all necessary mitigation as specified in EIA (Section 5.5.6.3), EM&A Manual (EM&A Log Ref: A3), EMP, Method Statements, General and Particular Specifications of this Project to minimize the potential dust impact during construction activities.

Prepared by: Ruby Law Title: Environmental Team Representative

Signature:  Date: 10 January 2018

Checked by: Keith Chau Title: Environmental Team Leader

Signature:  Date: 10 January 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Appendix A



**Contract No. HY/2014/05  
Hong Kong – Zhuhai – Macao – Bridge  
Boundary Crossing Facility – Remaining Ancillary Buildings and Facilities**

**Watering Plan for December 2017**

Water Truck License Plate Number: PJ9039, SE4312

Capacity of a Water Truck: 15000L

Volume of water/ distance needed to water spraying: = 7.3 L/m

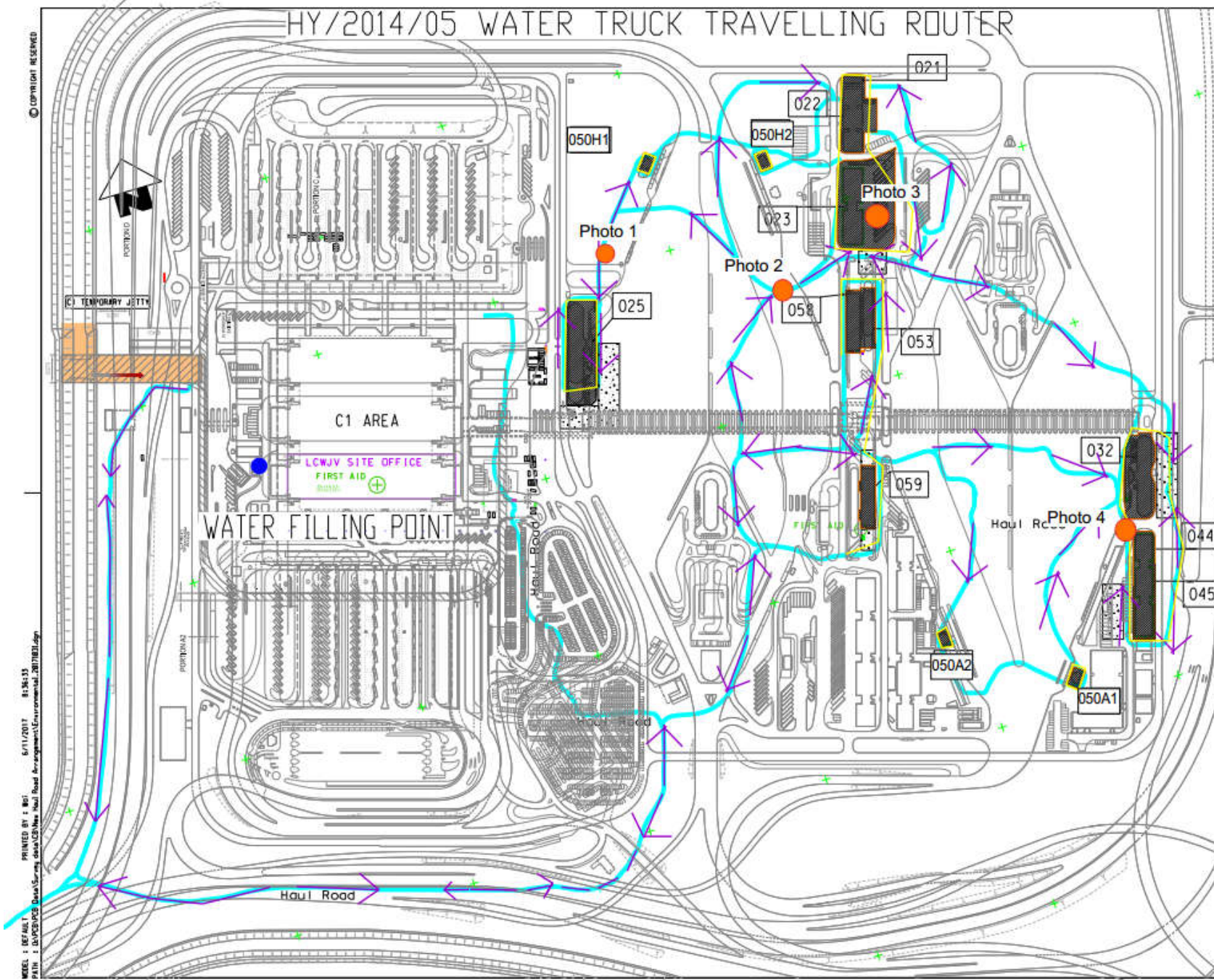
Water Truck could spray 15000L in one 59 minutes trip.

**Planned Schedule of Watering Spraying by Water Truck**

Cycle	Truck No.	Time of water spraying
1	PJ9039	08:00 – 09:15
2	SE4312	09:15 – 10:30
3	PJ9039	10:30 – 11:45
4	SE4312	13:00 – 14:15
5	PJ9039	14:15 – 15:30
6	SE4312	15:30 – 16:45
7	PJ9039	16:45 – 18:00
8	SE4312	18:00 – 19:00

# HY/2014/05 WATER TRUCK TRAVELLING ROUTER

- LEGEND**
- WATER FILLING POINT
  - WORKING SPACE
  - TRAVEL ROUTE
  - ROAD WITH WATER SPRAYING BY HY/2014/05
  - HAUL ROAD OF HKBCF



No.	Date	Desc.	Drawn By	Check By



**Contractor**  
 Leighton - Chun Wo Joint Venture

**Project No.**  
 CONTRACT NO. HY/2014/05  
 HONG KONG - ZHUNJI - MACAO BRIDGE  
 HONG KONG BOUNDARY CROSSING FACILITIES - REMAINING ANCILLARY BUILDINGS AND FACILITIES

Design By	Approved By
Check By	Drawn By
Scale	Date
Drawn No.	REV.

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Water spraying record during TSP 24-hr monitoring on 23 and 24 December 2017

Photo 1



Photo 2



Photo 3



Photo 4



Appendix B

Date	Hour	AQHI at Tung Chung Station	Average Wind Speed (m/s) #	Average Wind Direction #
23/12/2017	08:00	3	0	ENE
23/12/2017	09:00	3	0	NNE
23/12/2017	10:00	4	0	ENE
23/12/2017	11:00	4	0	ENE
23/12/2017	12:00	4	0	NNE
23/12/2017	13:00	4	0	N
23/12/2017	14:00	4	0	NE
23/12/2017	15:00	5	0	NE
23/12/2017	16:00	6	0	NNE
23/12/2017	17:00	6	0	N
23/12/2017	18:00	6	0	---
23/12/2017	19:00	6	0	NE
23/12/2017	20:00	6	0	WNW
23/12/2017	21:00	5	0	N
23/12/2017	22:00	5	0	N
23/12/2017	23:00	5	0	NNW
24/12/2017	00:00	5	0	ENE
24/12/2017	01:00	6	0	ESE
24/12/2017	02:00	5	0	---
24/12/2017	03:00	6	0	---
24/12/2017	04:00	7	0	W
24/12/2017	05:00	8	0	SSE
24/12/2017	06:00	8	0	NNW
24/12/2017	07:00	7	0	---
24/12/2017	08:00	7	0	---

^ The data collection for calculation of AQHI was affected due to station or equipment maintenance, the data of a most similar station was adopted.

#- The related wind data is obtained from the on-site wind station.

N.A. - Not available.

<b>Contract No. HY/2014/05 -  Hong Kong- Zhuhai- Macao Bridge  Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;">Notification No.: 20180117_Air_24hr_v1</span>				
<b>Date of Investigation Report:</b> 20 February 2018				
<b>Date of Environmental Quality Limit Exceedance:</b> 17 January 2018 and the results were issued on 29 January 2018				
<b>Monitoring Location:</b> AMS2 – Tung Chung Pier and : AMS3B – Site Boundary of Site Office Area at Works Area WA2 (The air quality monitoring stations for the Contract is covered by Contract No. HY/2013/01 HZMB HKBCF – Passenger Clearance Building)				
<b>Monitoring Date:</b> 17 January 2018 <b>Start Time:</b> 08:00				
<b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>				
<u>PARAMETER</u>	<u>STATION</u>	<u>AL (µg/m<sup>3</sup>)</u>	<u>LL (µg/m<sup>3</sup>)</u>	<u>MEASURED LEVEL, µg/m<sup>3</sup></u>
24-hr TSP	AMS2 – Tung Chung Pier	176	260	<b><i>184</i></b>
24-hr TSP	AMS3B – Site Boundary of Site Office Area at Works Area WA2	167	260	<b><i>183</i></b>
Notes: <b><i>Bold Italic</i></b> means AL exceedance <b><i><u>Bold Italic with underline</u></i></b> means LL exceedance				

**Possible reason for Action / Limit Level Non-compliance:**

On 17 January 2018, one AL exceedance of 24-hr TSP at AMS2 and one AL exceedance of 24-hr TSP at AMS3B were recorded.

Based on the information from the Contractor, the construction works undertaken on 17 and 18 January 2018 are shown as below:

- Architectural Builder's Work and Finishes (ABWF) & Mechanical, Electrical and Plumbing (MEP) works (Internal) of Buildings 022, 023, 025, 032, 044, 045, 050H1, 050H2, 050A1, 050A2, 053, 058
- ABWF works (external) of Buildings 021, 022, 023, 032, 044, 045, 050H1, 050H2, 050A1, 050A2
- ABWF works (roof) of Buildings 032, 044, 050H1, 050H2, 050A1, 050A2
- Foot Path, Utilities and Drainage installation of Buildings 021, 022, 023, 032, 045, 053, 058

The Contractor confirmed that the mitigation measures according to Water Spraying Plan in January 2018 (Appendix A) are implemented to avoid dust emission. Photos of haul road condition and dust suppression are included in Appendix A. The Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr.

The Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix B. The hourly AQHI of Tung Chung station ranged 3 to 10+ (Low to Serious) on 17 and 18 January 2018 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The RABF site of HKBCF is far away from AMS2 and AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS2 and AMS3B during the monitoring period.

Therefore, it is concluded that the exceedances were not related to the Contract.

**Actions taken/ to be taken:**

The Water Spraying Plan including the information of watering schedule, routing of trucks of for watering and the location of water filling, was prepared and submitted to RE and ENPO. The Contractor was also reminded to implement all necessary mitigation as specified in EIA (Section 5.5.6.3), EM&A Manual (EM&A Log Ref: A3), EMP, Method Statements, General and Particular Specifications of this Project to minimize the potential dust impact during construction activities.

Prepared by: Ruby Law Title: Environmental Team Representative

Signature:  Date: 20 February 2018

Checked by: Keith Chau Title: Environmental Team Leader

Signature:  Date: 20 February 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO





**Contract No. HY/2014/05**  
**Hong Kong – Zhuhai – Macao – Bridge**  
**Boundary Crossing Facility – Remaining Ancillary Buildings and Facilities**

**Watering Plan for January 2018**

Water Truck License Plate Number: PJ9039, SE4312

Capacity of a Water Truck: 15000L

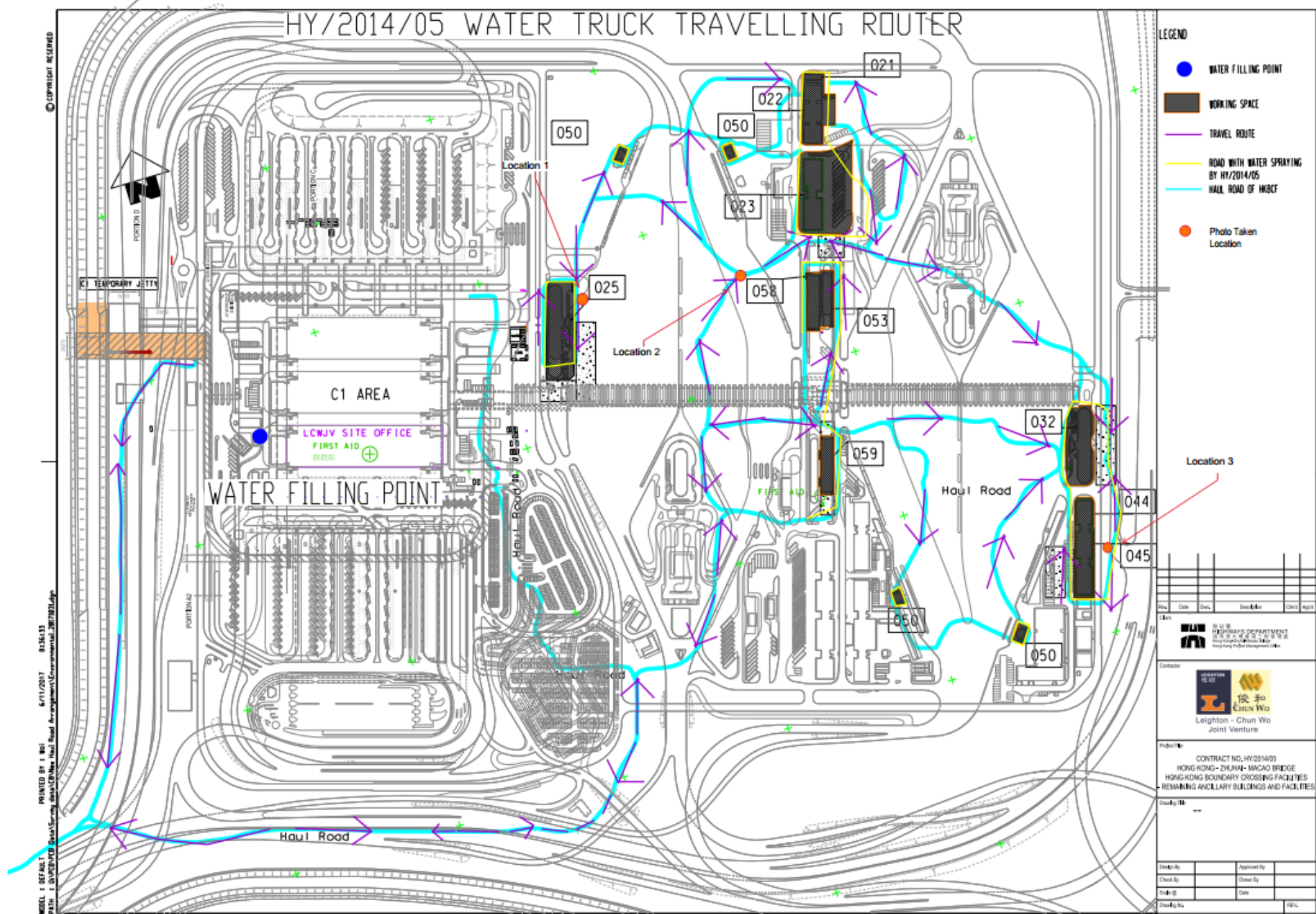
Volume of water/ distance needed to water spraying: = 7.3 L/m

Water Truck could spray 15000L in one 59 minutes trip.

**Planned Schedule of Watering Spraying by Water Truck**

Cycle	Truck No.	Time of water spraying
1	PJ9039	08:00 – 09:15
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3	PJ9039	10:30 – 11:45
4	SE4312	13:00 – 14:15
5	PJ9039	14:15 – 15:30
6	SE4312	15:30 – 16:45
7	PJ9039	16:45 – 18:00
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# HY/2014/05 WATER TRUCK TRAVELLING ROUTER



- LEGEND**
- WATER FILLING POINT
  - WORKING SPACE
  - TRAVEL ROUTE
  - ROAD WITH WATER SPRAYING BY HY/2014/05
  - HAUL ROAD OF HBCF
  - Photo Taken Location

No.	Date	Desc.	Drawn/Rev.	Check	Appr.




Leighton - Chun Wo Joint Venture

**Project No:** CONTRACT NO. HY/2014/05  
 HONG KONG - ZHANJIANG MACAO BRIDGE  
 REMAINING ANCILLARY BUILDINGS AND FACILITIES

Drawn By	Approved By
Check By	Drawn By
Scale	Date
Drawn No.	REV.

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Water spraying record during TSP 24-hr monitoring on 17 and 18 January 2018

Location 1	Location 2
 A close-up photograph of the rear of a yellow truck. The truck is parked on a dirt surface. A stream of water is being sprayed from the rear of the truck, creating a misty spray. In the background, there is a concrete structure with an open doorway and some construction materials.	 A wide-angle photograph of a construction site. In the foreground, there is a large, flat, dirt-covered area. In the background, a yellow crane is visible, along with a white truck with a yellow container. The sky is clear and blue.
Location 3	
 A photograph of a yellow truck driving on a dirt road at a construction site. The truck is moving towards the camera, and there is a large puddle of water on the road in front of it. In the background, there is a large building under construction and other construction equipment.	

Appendix B

Date	Hour	AQHI at Tung Chung Station	Average Wind Speed (m/s) #	Average Wind Direction #
17/01/2018	08:00	6	0	SW
17/01/2018	09:00	6	0	SW
17/01/2018	10:00	6	0	SSW
17/01/2018	11:00	8	0	SSW
17/01/2018	12:00	10	0	W
17/01/2018	13:00	10+	0	---
17/01/2018	14:00	10+	0	W
17/01/2018	15:00	10+	0	W
17/01/2018	16:00	10+	0	W
17/01/2018	17:00	10+	0	W
17/01/2018	18:00	10+	0	E
17/01/2018	19:00	10+	0	---
17/01/2018	20:00	9	0	SSE
17/01/2018	21:00	6	0	SSE
17/01/2018	22:00	5	0	E
17/01/2018	23:00	5	0	SE
18/01/2018	00:00	5	0	SSE
18/01/2018	01:00	4	0	E
18/01/2018	02:00	4	0	SE
18/01/2018	03:00	4	0	SSE
18/01/2018	04:00	4	0	SE
18/01/2018	05:00	4	0	SSE
18/01/2018	06:00	3	0	SSW
18/01/2018	07:00	3	0	---
18/01/2018	08:00	3	0	---

Remark:

#- The related wind data is obtained from the on-site wind station.