

## Investigation Report for Exceedances of Limit Level of Water Quality Monitoring on 4 May 2023

Investigation was carried out in response to exceedances of limit level during the water quality monitoring on 4 May 2023. The following table summarizes details of the exceedances.

Environmental Team for Hung Shui Kui/ Ha Tsuen New Development Area Stage 1 Works – Site Formation and Engineering Infrastructure								
Date	Station	Parameter (Unit)	Depth-averaged Measured Value	Action Level	Limit Level	Exceedance		Project Related (Y/N)
						AL	LL	
04/05	TKW1	Suspended Solids (SS) (mg/L)	66.0	16.0	18.4		✓	N
	TKW		54.0	19.8	21.6		✓	N

Construction activities carried out at Road D1 during the investigation period	<p>According to the information provided by the engineer representative (RE), the construction works carried out on 4 May 2023 include:</p> <ul style="list-style-type: none"> <li>• Backfilling for area A1, A2, B1, B2</li> <li>• Rolling pass for area A1, A2, B1, B2</li> <li>• Dewatering</li> <li>• Transportation of contaminated soil to Site 3-6</li> <li>• Excavation of sewage channel</li> </ul>
Possible reason for Action or Limit Level Non-compliance:	<p>A site inspection was carried out by the ET on 4 May 2023. During the site inspection, no direct effluent discharge from the site was observed.</p> <p>Construction works carried out on 4 May 2023 were located away from the water quality monitoring station TKW1 and TKW. No water-based construction activity was conducted on 4 May 2023.</p> <p>As observed during the site inspection, the Contractor had implemented on site measures to control site runoff, including sump, WetSep and portable pumps for temporary storage and treatment of surface water and site effluent. No evidence was found to indicate that the exceedances on 4 May 2023 was affected by the site activities. The non-compliance may be related to surface runoff and effluent discharges from workshops, open storages, warehouse, private toilet(s) and/ or residential dwellings along the catchment downstream of the site.</p> <p>No further exceedance of action or limit level of SS at TKW and TKW1 was detected during the water quality monitoring on 6 May 2023.</p>

	<p>In conclusion, the exceedances recorded on 4 May 2023 were considered non-project related.</p>
<p>Action taken / to be taken:</p>	<ol style="list-style-type: none"> <li>1. Repeated in-situ measurement was not applicable for laboratory measurement of SS level.</li> <li>2. As no further exceedance of action or limit level of SS at TKW and TKW1 was detected during the water quality monitoring on 6 May 2023, it is considered that the source of impact may be related to surface runoff and effluent discharges from workshops, open storages, warehouse, private toilet(s) and/ or residential dwellings along the catchment downstream of the site.</li> <li>3. A notification of exceedances has been issued to the IEC, the Contractor, and the EPD.</li> <li>4. Duplicate water samples were collected on site, and the monitoring data were checked and confirmed. All plant, equipment and the Contractor's working methods were checked during the site inspection. No non-compliance was observed.</li> <li>5. As no evidence was found to indicate that the exceedance on 4 May 2023 was affected by the site activities, no additional mitigation measure was discussed with the IEC, RE and the Contractor.</li> <li>6. During the site inspection, the Contractor had implemented on site measures to control site runoff. The Contractor was reminded to implement/ maintain the following mitigation measures:             <ol style="list-style-type: none"> <li>a. Surface run-off from construction sites shall be discharged at the designated discharge point as indicated in the effluent discharge license via adequately designed sand/ silt removal facilities.</li> <li>b. The Contractor will provide sump(s) near the WetSep to temporary store site runoff prior to treatment.</li> <li>c. Channels/ earth bunds/ sandbag barriers will be properly provided on site to direct stormwater to the sump(s).</li> <li>d. Water (either upstream river water or site runoff) detained behind the box culvert will be treated by the WetSep on site prior to discharge.</li> </ol> </li> <li>7. The frequency of monitoring was not increased as the exceedance was considered non-project related and no further action or limit level exceedance of SS at TKW and TKW1 was recorded on the following monitoring day (i.e. 6 May 2023).</li> </ol>

### Photo Records of Site Inspection:

4 May 2023



(P1)

Stockpile of dusty materials was covered properly to avoid generation of muddy runoff. No muddy surface runoff was observed during the site inspection.



(P2)

Surface runoff and site effluent was collected and diverted to the WetSep for temporary storage and treatment before the water was used for fugitive dust suppression on site.

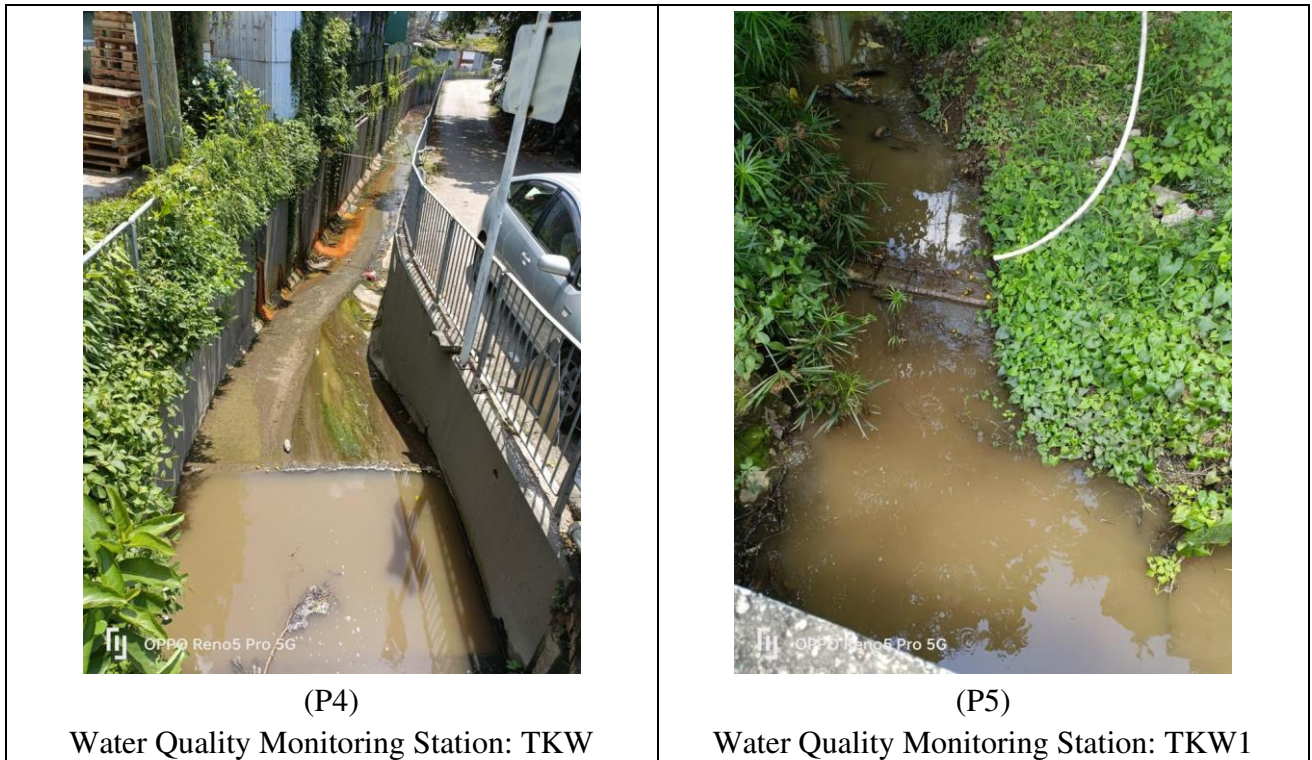


(P3)

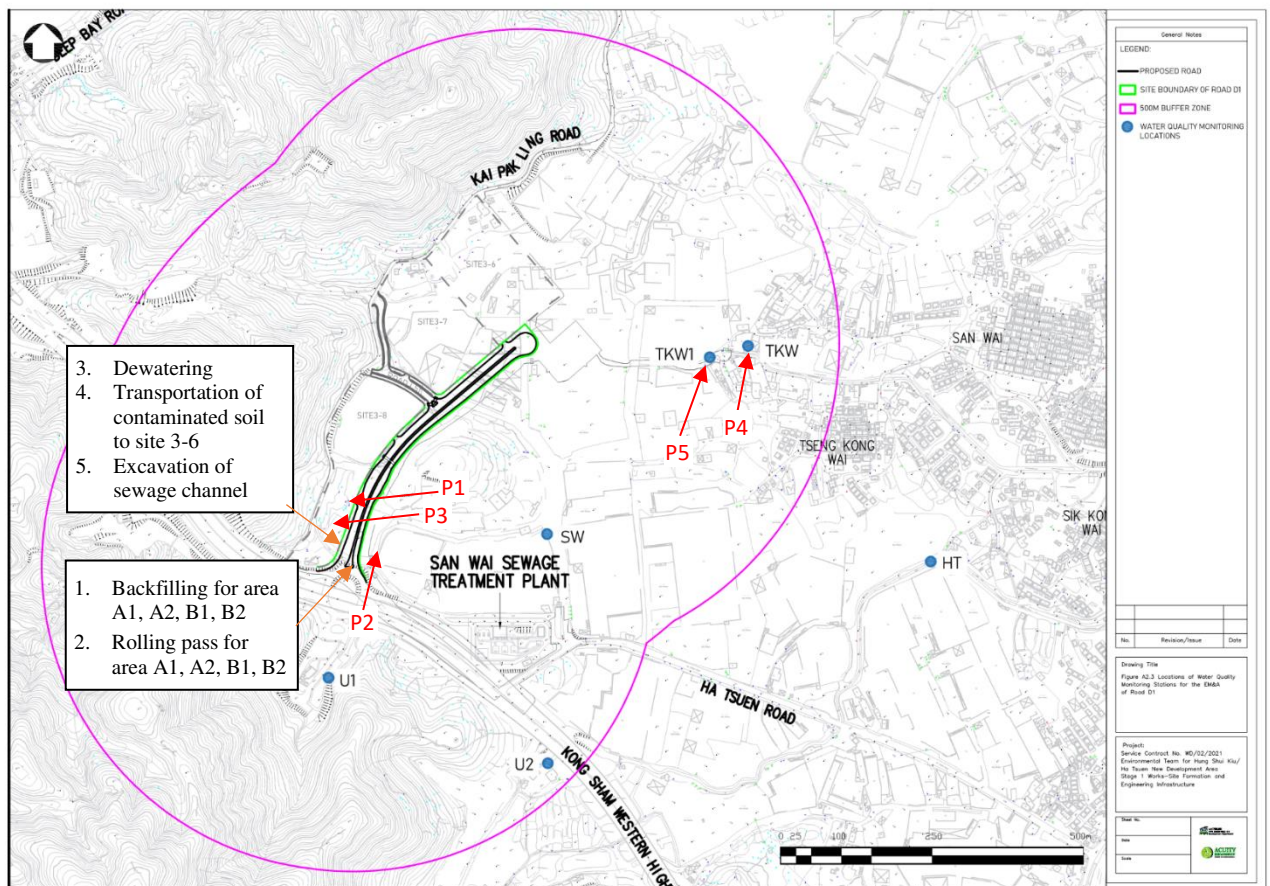
Surface runoff was directed to sump pit for temporary storage. No muddy surface runoff and no direct discharge of ground water was observed.





**Site Observation Photos around Water Quality Monitoring Stations taken on 4 May 2023**



**Figure 1 Location Plan of Impact Water Quality Monitoring Stations (Site activities held on 4 May 2023 were reported in text boxes)**



Prepared by:                Howard Chan  
Designation                Environmental Team Member  
  
Signature:                      
  
Date                            24 June 2023

Certified by:                F. C. Tsang  
Designation:                Environmental Team Leader  
  
Signature:                      
  
Date:                            24 June 2023

## Investigation Report for Exceedances of Limit Level of Water Quality Monitoring on 8 May 2023

Investigation was carried out in response to exceedances of limit level during the water quality monitoring on 8 May 2023. The following table summarizes details of the exceedances.

Environmental Team for Hung Shui Kui/ Ha Tsuen New Development Area Stage 1 Works – Site Formation and Engineering Infrastructure								
Date	Station	Parameter (Unit)	Depth-averaged Measured Value	Action Level	Limit Level	Exceedance		Project Related (Y/N)
						AL	LL	
08/05	TKW1	Suspended Soil (SS) (mg/L)	34.0	16.0	18.4		✓	N
	TKW		30.0	19.8	21.6		✓	N
	SW		10.5	9.7	9.9		✓	N
	TKW	Turbidity (NTU)	30.0	24.2	24.6		✓	N

Construction activities carried out at Road D1 during the investigation period	<p>According to the information provided by the engineer representative (RE), the construction works carried out on 8 May 2023 include:</p> <ul style="list-style-type: none"> <li>• Dewatering</li> <li>• General site clearance</li> </ul>
Possible reason for Action or Limit Level Non-compliance:	<p>Construction works carried out on 8 May 2023 were located away from the water quality monitoring stations TKW1 and TKW. No water-based construction activity was conducted on 8 May 2023.</p> <p>According to the records of the Hong Kong Observatory, about 30 to 40 mm rainfall was recorded over Hung Shui Kiu on 8 May 2023, which led to river runoff with high turbidity/ suspended solids levels due to surface runoff from the catchment. For instance, high level of SS (about 14 mg/L) was measured at station U1 upstream of station SW. The high loading of SS upstream of SW was considered a key factor of SS Limit Level exceedance at SW. Other factors that may be related to the exceedances include surface runoff and effluent discharges from workshops, open storages, warehouse, private toilet(s) and/ or residential dwellings along the catchment downstream of the site.</p> <p>As observed during the site inspections on 4 and 8 May 2023, the Contractor had implemented mitigation measures on site to control site runoff, including sumps/ ponds, WetSep, and portable pumps for temporary storage of surface water.</p>

	<p>No further exceedances of action or limit level of SS at TKW1, TKW and SW, and turbidity level at TKW were detected on 10 May 2023 and on the subsequent water quality monitoring days in May 2023.</p> <p>In conclusion, the exceedances recorded on 8 May 2023 were considered non-project related.</p>
<p>Action taken / to be taken:</p>	<ol style="list-style-type: none"> <li>1. Repeated in-situ measurement was carried out to confirm the turbidity level measured at TKW. Repeated in-situ measurement was not applicable for laboratory measurement of SS level.</li> <li>2. The source of impact may be related to rainfall at Hung Shui Kiu recorded on 8 May 2023 and also surface runoff and effluent discharges from workshops, open storages, warehouse, private toilet(s) and/ or residential dwellings along the catchment downstream of the site.</li> <li>3. A notification of exceedances has been issued to the IEC, the Contractor, and the EPD.</li> <li>4. Duplicate water samples were collected at the monitoring stations and in-situ measurement was repeated. The monitoring data were checked and confirmed. All plant, equipment and the Contractor's working methods were checked during the site inspections. No non-compliance was observed.</li> <li>5. As no evidence was found to indicate that the exceedance on 8 May 2023 was affected by the site activities, no additional mitigation measure was discussed with the IEC, RE and the Contractor.</li> <li>6. During the site inspection, the Contractor had implemented on site measures to control site runoff. The Contractor was reminded to implement/ maintain the following mitigation measures:             <ol style="list-style-type: none"> <li>a. Surface run-off from construction sites shall be discharged at the designated discharge point as indicated in the effluent discharge license via adequately designed sand/ silt removal facilities.</li> <li>b. The Contractor will provide sump(s) near the WetSep to temporary store site runoff prior to treatment.</li> <li>c. Channels/ earth bunds/ sandbag barriers will be properly provided on site to direct site runoff to the sump(s).</li> <li>d. Water (either upstream river water or site runoff) detained behind the box culvert will be treated by the WetSep on site prior to discharge.</li> </ol> </li> </ol> <p>Following the site inspection on 25 May 2023, the IEC advised that water diversion measure (which separates the upstream river water from the site runoff and effluent discharge) should be implemented to facilitate the source identification in exceedance investigation for the water quality monitoring station U1 and SW. The RE had also issued a reminder to the Contractor to implement the measure on 17 June 2023. The RE and ET will audit the Contractor's progress in implementation and maintenance of this and other measures during the regular weekly site inspection.</p>



	<p>7. The frequency of monitoring was not increased as the exceedance was considered non-project related and no further exceedances of action or limit level of SS at TKW1, TKW and SW, and turbidity level at TKW were detected on the subsequent water quality monitoring days in May 2023.</p>
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**Site Photos on 8 May 2023 provided by the Engineer**



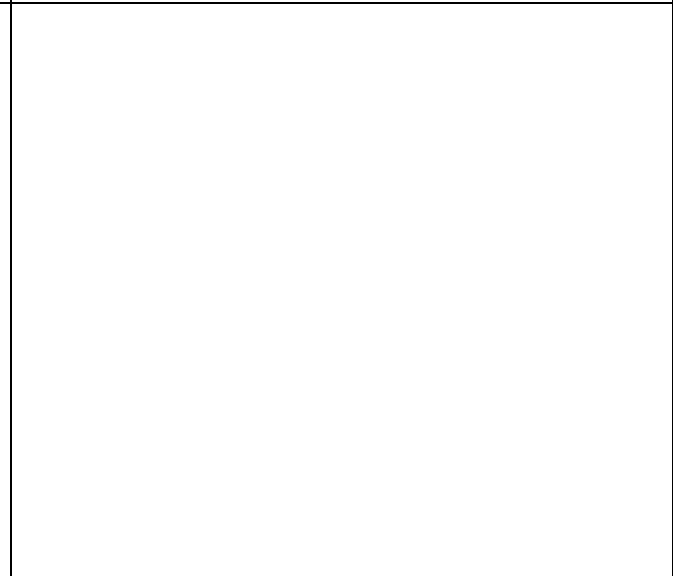
Temporary detention pond at the works area near the access road (R1)



Works area near the box culvert (R2)



Water (mixed upstream river water and site runoff) detained temporarily behind the box culvert prior to treatment (R3)





**Photo Records of Site Investigation held by the ET on 4 May 2023:**



(P1)

Stockpile of dusty materials was covered properly to avoid generation of muddy runoff. No muddy surface runoff and no direct effluent discharge was observed during the site inspection.



(P2)

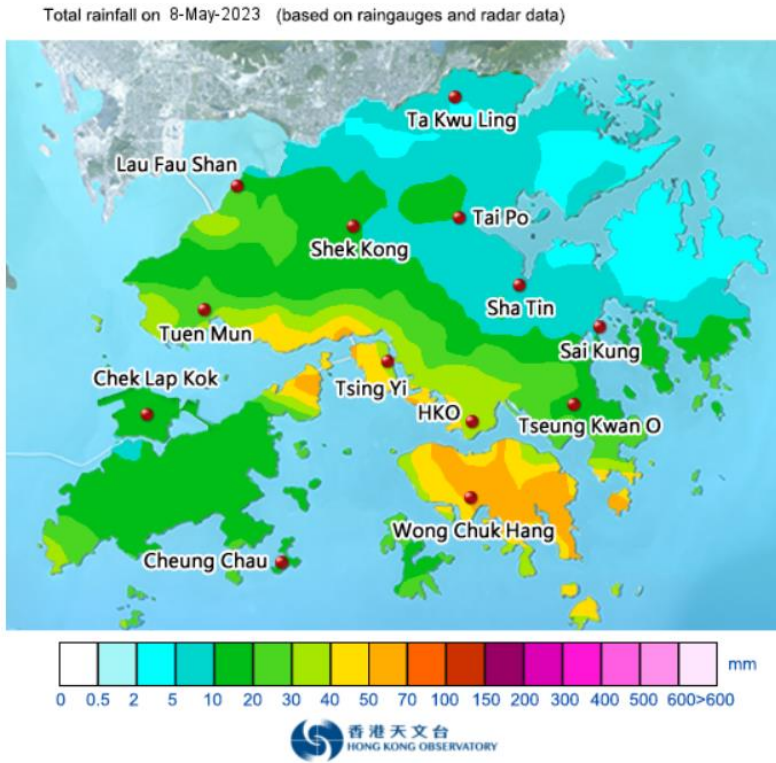
Surface runoff and site effluent was collected and diverted to sump and WetSep for temporary storage and treatment before the water was used for fugitive dust suppression on site.



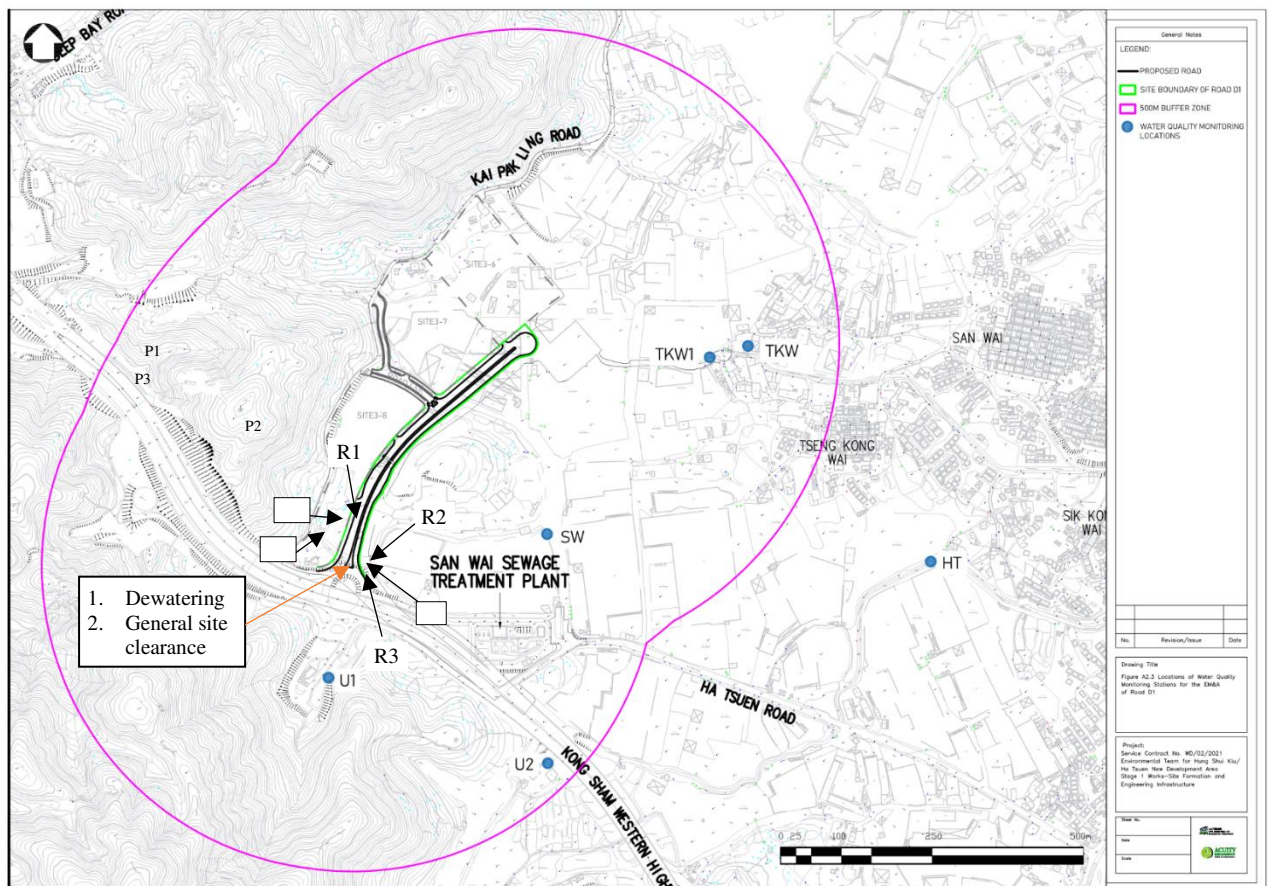
(P3)

Surface runoff was directed to sump pit for temporary storage. No muddy surface runoff and direct discharge of ground water was observed.

**Figure 1 Rainfall Record from the Hong Kong Observatory**



**Figure 2 Location Plan of Impact Water Quality Monitoring Stations (Site activities held on 8 May 2023 were reported in text boxes)**





Prepared by: Howard Chan

Certified by: F. C. Tsang

Designation: Environmental Team Member

Designation: Environmental Team Leader

Signature:



Signature:



Date

24 June 2023

Date:

24 June 2023



## Investigation Report for Exceedance of Limit Level of Water Quality Monitoring on 12 May 2023

Investigation was carried out in response to exceedance of limit level during the water quality monitoring on 12 May 2023. The following table summarizes details of the exceedance.

Environmental Team for Hung Shui Kui/ Ha Tsuen New Development Area Stage 1 Works – Site Formation and Engineering Infrastructure								
Date	Station	Parameter (Unit)	Depth-averaged Measured Value	Action Level	Limit Level	Exceedance		Project Related (Y/N)
						AL	LL	
12/05	SW	Turbidity (NTU)	26.9	21.4	22.9		✓	Y

Construction activities carried out at Road D1 during the investigation period	<p>According to the information provided by the engineer representative (RE), the construction works carried out on 12 May 2023 include:</p> <ul style="list-style-type: none"> <li>• Dewatering</li> <li>• Excavation of sewage channel</li> <li>• Breaking concrete for sewage</li> </ul> <p>No water-based construction activity was conducted on 12 May 2023.</p>
Possible reason for Action or Limit Level Non-compliance:	<p>A site inspection was carried out by the ET on 12 May 2023. During the site inspection, overflow of untreated site effluent from the site was observed near the box culvert.</p> <p>According to the information provided by the Contactor, malfunction of WetSep was reported on 12 May 2023 and the Contractor repaired it immediately. The untreated site effluent from the site was considered as the major reason for the exceedance of turbidity limit level at the water quality monitoring station SW downstream of the site. The exceedance recorded on 12 May 2023 was therefore considered project related.</p>
Action taken / to be taken:	<ol style="list-style-type: none"> <li>1. Repeated in-situ measurement was carried out to confirm the turbidity level measured at SW.</li> <li>2. The source of impact may be related to the untreated site effluent overflow from the site when the WetSep was malfunctioned.</li> <li>3. A notification of exceedance has been issued to the IEC, the Contractor, and the EPD.</li> <li>4. Duplicate water samples were collected at the monitoring station and in-situ measurement was repeated. The monitoring data were checked and confirmed. All plant, equipment and the Contractor's working methods were checked during the site inspection. Malfunction of the WetSep was reported. No other non-compliance was observed.</li> </ol>

5. As requested by the RE and the ET, the Contractor stopped the overflow immediately and fixed the WetSep. No further overflow was observed after the WetSep resumed normal operation on the same day.
6. During the site inspection, the Contractor had implemented on site measures to control site runoff. The Contractor was reminded to implement/ maintain the following mitigation measures:
  - a. The WetSep and other accessories shall be maintained regularly to minimise malfunction.
  - b. Surface run-off from construction sites shall be discharged at the designated discharge point as indicated in the effluent discharge license via adequately designed sand/ silt removal facilities.
  - c. The Contractor will provide sump(s) near the WetSep to temporary store site runoff prior to treatment.
  - d. Channels/ earth bunds/ sandbag barriers will be properly provided on site to direct stormwater to the sump(s).
  - e. Water (either upstream river water or site runoff) detained behind the box culvert will be treated by the WetSep on site prior to discharge.

Following the site inspection on 25 May 2023, the IEC advised that water diversion measure (which separates the upstream river water from the site runoff and effluent discharge) before passing through the box culvert should be implemented to facilitate the source identification in exceedance investigation for the water monitoring station U1 and SW. The RE had also issued a reminder to the Contractor to implement the measure on 17 June 2023. The RE and ET will continue to audit the Contractor's progress in implementation and maintenance of this and other measures during the regular weekly site inspection.

7. The frequency of monitoring was not increased due to late reporting of monitoring results from the ET site staff and lack of manpower due to illness (COVID-19) amongst the staff. Following the incident, all field staff was reminded to report all in-situ measurement results on the same day of monitoring. The ETL and other ET consultants will also supervise and audit the monitoring and results forwarded by the site staff to avoid any further late reporting.

As no further exceedances of action or limit level of turbidity at SW were detected on the subsequent water quality monitoring days in May 2023, it is considered that the cause of non-compliance has been identified and rectified, and the investigation was closed.

### Site Photos on 12 May 2023 provided by the Engineer



### Photo Records of Site Investigation held by the ET on 12 May 2023

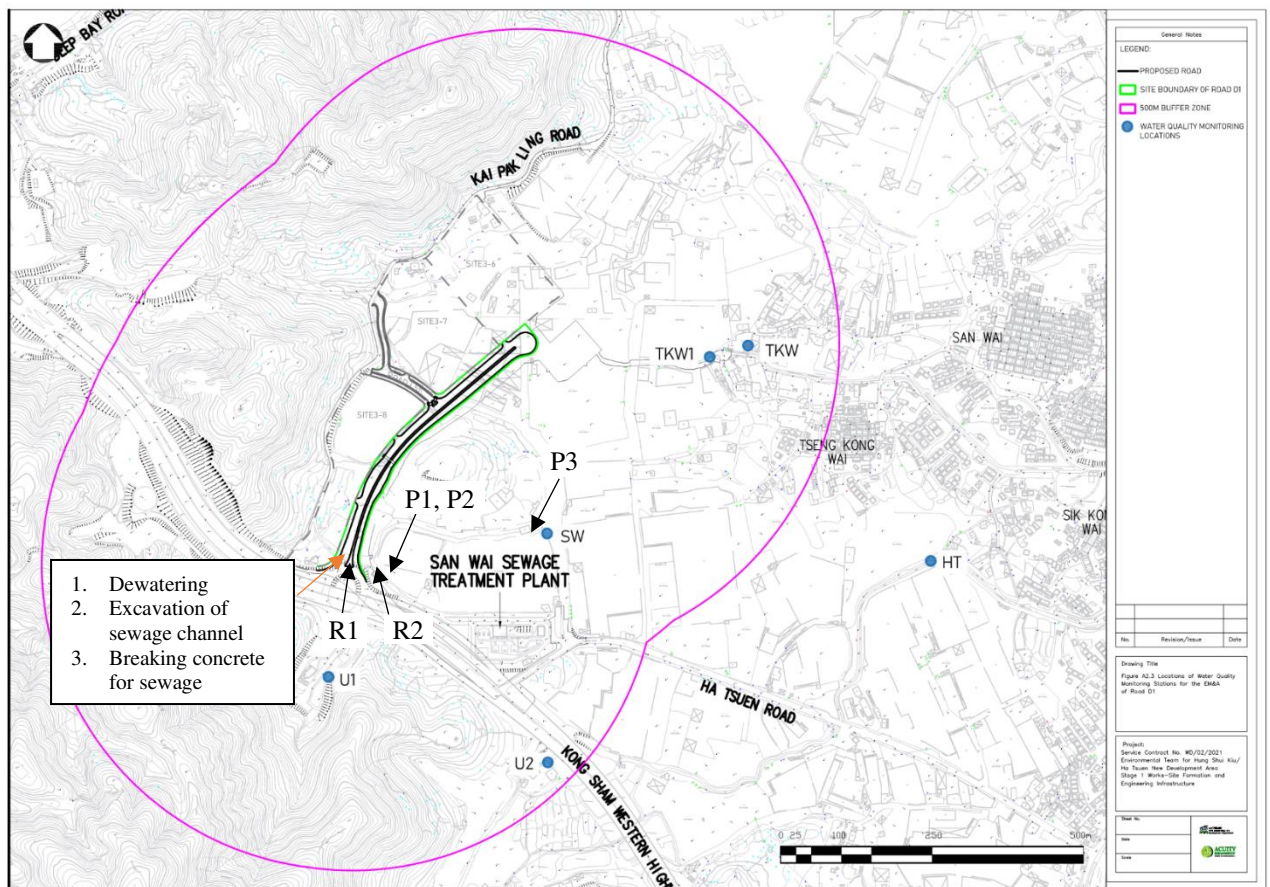




**Site Observation Photo of Water Quality Monitoring Station taken by the ET on 12 May 2023**



**Figure 1 Location Plan of Impact Water Quality Monitoring Stations (Site activities held on 12 May 2023 were reported in text boxes)**



Prepared by: Howard Chan

Certified by: F. C. Tsang

Designation: Environmental Team Member

Designation: Environmental Team Leader

Signature:



Signature:



Date

24 June 2023

Date:

24 June 2023

## **Investigation Report for Exceedances of Limit Level of Water Quality Monitoring on 30 May 2023**

Investigation was carried out in response to the exceedance of limit level during the water quality monitoring on 30 May 2023. The following table summarizes details of the exceedance.

<b>Environmental Team for Hung Shui Kui/ Ha Tsuen New Development Area Stage 1 Works – Site Formation and Engineering Infrastructure</b>								
<b>Date</b>	<b>Station</b>	<b>Parameter (Unit)</b>	<b>Depth-averaged Measured Value</b>	<b>Action Level</b>	<b>Limit Level</b>	<b>Exceedance</b>		<b>Project Related (Y/N)</b>
						<b>AL</b>	<b>LL</b>	
30/05	HT	pH value	8.6	8.4	8.5		✓	N

<p>Construction activities carried out at Road D1 during the investigation period</p>	<p>According to the information provided by the engineer representative (RE), the construction works carried out on 30 May 2023 include:</p> <ol style="list-style-type: none"> <li>1. Dewatering;</li> <li>2. Casting concrete for 450PE sewerage pipe from manhole FMH-D1-07 to FMH-D1-06A;</li> <li>3. Laying 450PE sewerage pipe from manhole FMH-D1-06A to FMH-D1-06.</li> </ol>
<p>Possible reason for Action or Limit Level Non-compliance:</p>	<p>A site inspection was carried out by the ET on 30 May 2023. During the site inspection, site effluent was treated by the WetSep on site before discharge. No direct effluent discharge from the site was observed.</p> <p>Construction works carried out on 30 May 2023 were located away from the water quality monitoring station HT (more than 850 m). No water-based construction activity was conducted on 30 May 2023.</p> <p>As shown in the drainage utilities plan provided by the RE, any discharge from the construction site will not travel through the river section of HT. Thus, it is unlikely that the exceedance is related to the construction works on site.</p> <p>As observed during the site inspection, the Contractor had implemented/ maintained on site measures to control site runoff, including provision of sump, WetSep and portable pumps for temporary storage and treatment of surface water and site effluent. No evidence was found to indicate that the exceedance on 30 May 2023 was affected by the site activities.</p> <p>No further action or limit level exceedance of pH value at HT was detected during the water quality monitoring on 1 and 3 June 2023.</p>



	<p>In conclusion, the exceedance recorded on 30 May 2023 was considered non-project related.</p>
<p>Action taken / to be taken:</p>	<ol style="list-style-type: none"> <li>1. Repeated in-situ measurement was carried out to confirm the pH level measured at HT.</li> <li>2. As the station HT is located more than 850 m from the construction site and the drainage utilities plan provided by the RE indicated that there would be no direct water quality impact from the construction activities on site, the non-compliance is likely due to other source(s) that may include surface runoff and effluent discharges from workshops, open storages, warehouse, private toilet(s) and/ or residential dwellings along the catchment upstream of the station.</li> <li>3. A notification of exceedance has been issued to the IEC, the Contractor, and the EPD.</li> <li>4. Duplicate water samples were collected on site and in-situ measurement was repeated. The monitoring data were checked and confirmed. All plant, equipment and the Contractor's working methods were checked during the site inspection on 30 May 2023. No non-compliance was observed.</li> <li>5. As no evidence was found to indicate that the exceedance on 30 May 2023 was affected by the site activities, no additional mitigation measure was discussed with the IEC, RE and the Contractor.</li> <li>6. During the site inspection, the Contractor had implemented on site measures to control site runoff. The Contractor was reminded to implement/ maintain the following mitigation measures:             <ol style="list-style-type: none"> <li>a. The WetSep and other accessories shall be maintained regularly to minimise malfunction.</li> <li>b. Surface run-off from construction sites shall be discharged at the designated discharge point as indicated in the effluent discharge license via adequately designed sand/ silt removal facilities.</li> <li>c. The Contractor will provide sump(s) near the WetSep to temporary store site runoff prior to treatment.</li> <li>d. Channels/ earth bunds/ sandbag barriers will be properly provided on site to direct stormwater to the sump(s).</li> <li>e. Water (either upstream river water or site runoff) detained behind the box culvert will be treated by the WetSep on site prior to discharge.</li> </ol> </li> <li>7. The frequency of monitoring was not increased as the exceedance was considered non-project related and no further exceedance of action or limit level of pH level at HT was detected on the following water quality monitoring on 1 and 3 June 2023.</li> </ol>

**Site Photos on 30 May 2023 provided by the Engineer**



Works areas on both sides of the access road  
(R1)



Sump formed next to the finished box culvert  
(R2)

**Photo Records of Site Investigation carried out by the ET on 30 May 2023**



(P1)  
 Water (upstream river water and site runoff) detained near the box culvert.



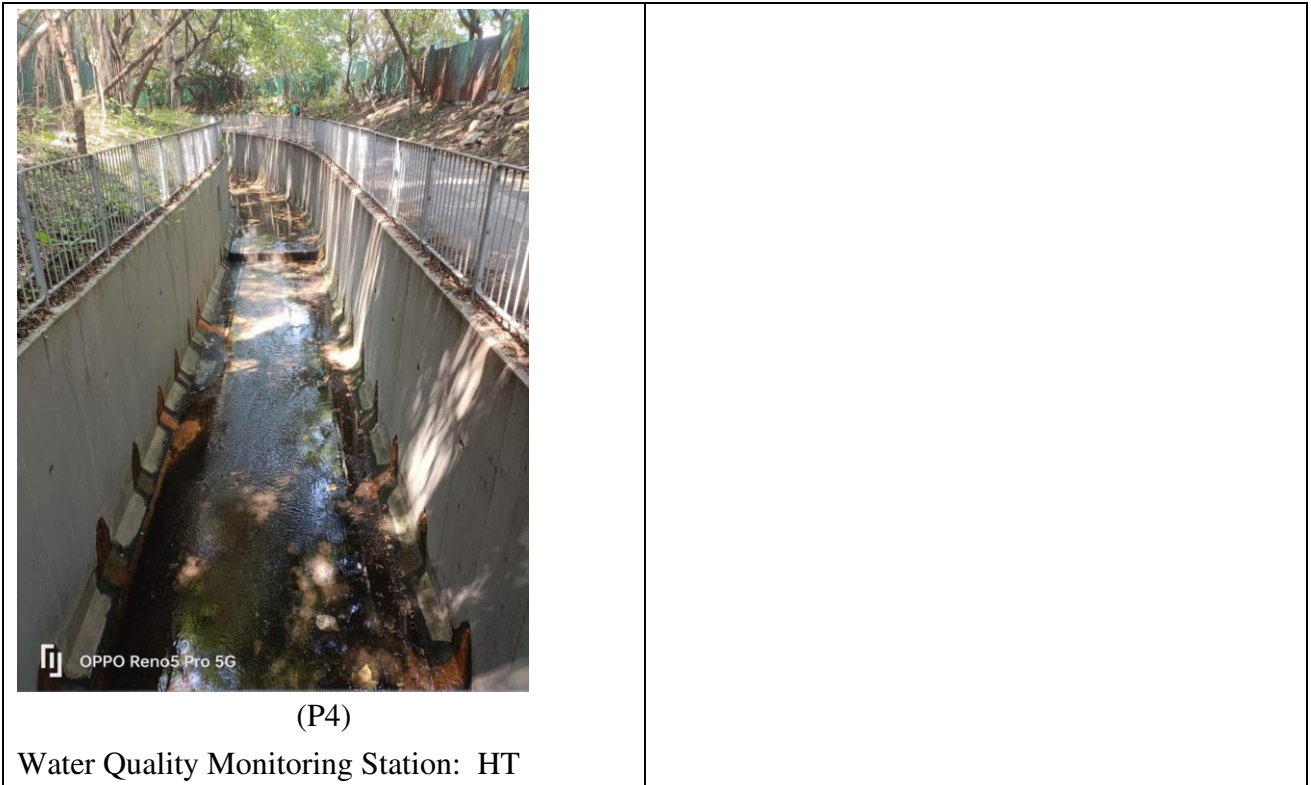
(P2)  
 Water detained within the sump was directed to the WetSep by a drainage pipe.



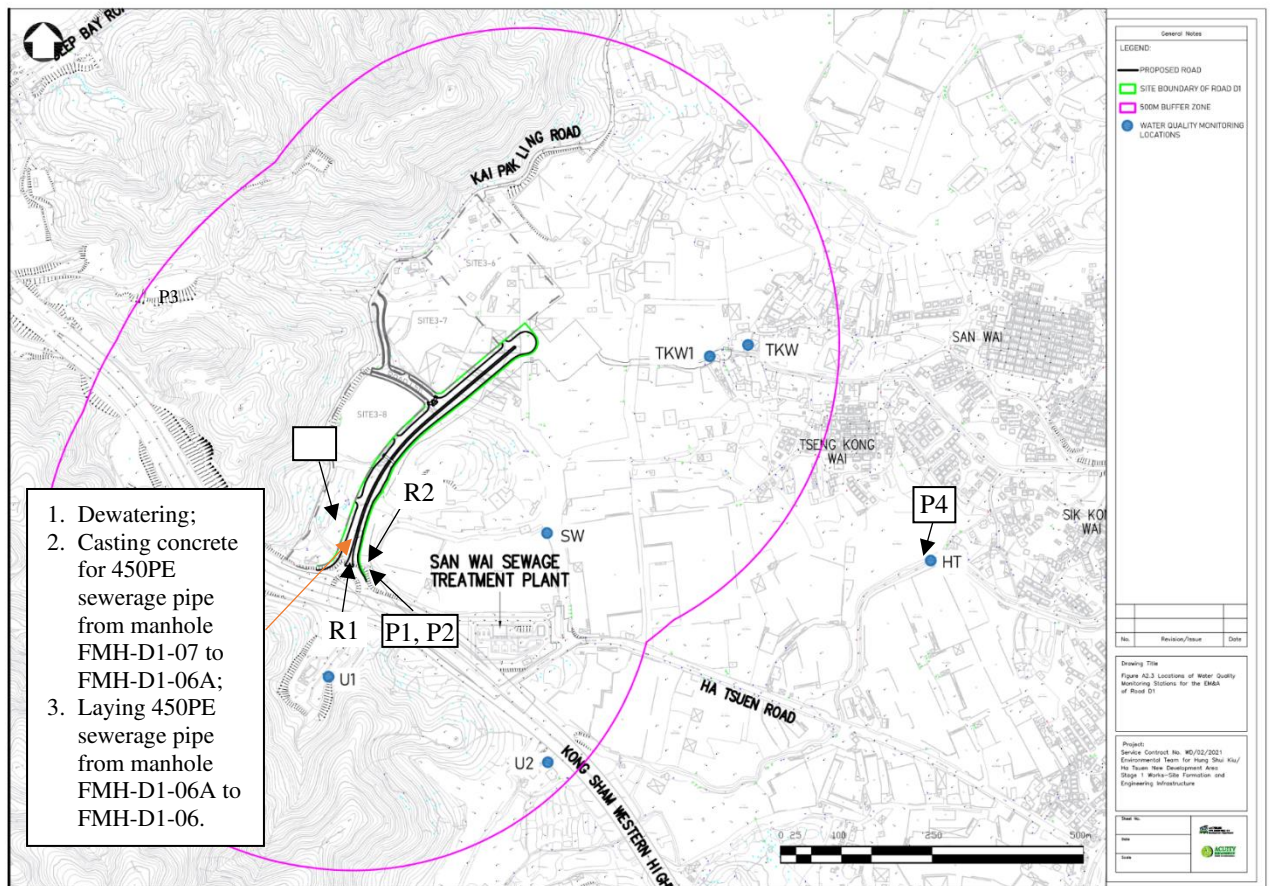
(P3)  
 Slope was covered by tarpaulin sheets to minimize muddy runoff under rainfall.



**Photo Record at Water Quality Monitoring Station HT taken by the ET on 30 May 2023**

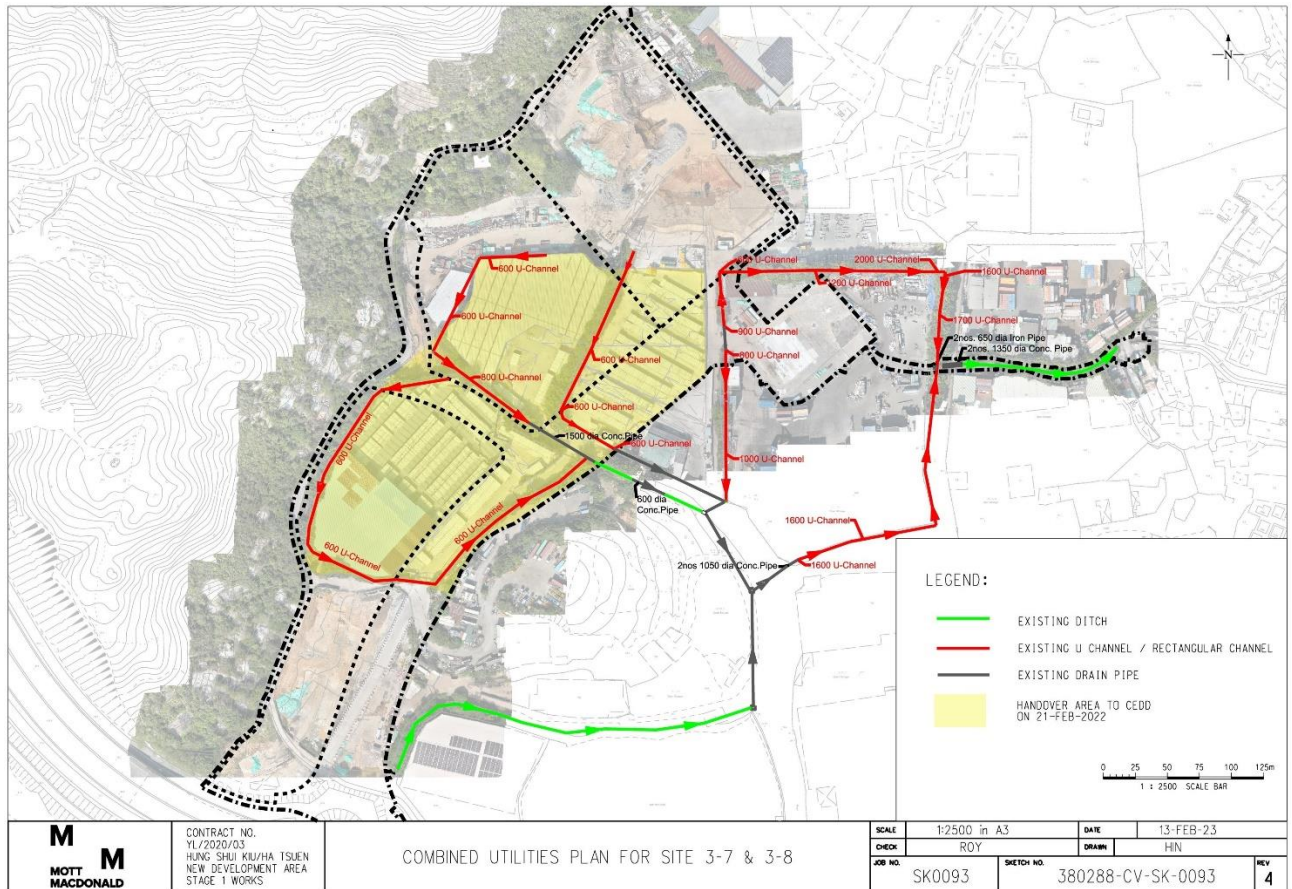


**Figure 1 Location Plan of Impact Water Quality Monitoring Stations (Site activities held on 30 May 2023 were reported in text boxes)**





**Figure 2 Drainage Utilities Plan provided by the RE**



Prepared by:

Howard Chan

Certified by:

F. C. Tsang

Designation

Environmental Team Member

Designation:

Environmental Team Leader

Signature:



Signature:



Date

24 June 2023

Date:

24 June 2023