

Annex B

Water Quality Monitoring Results

Table B1 *Action and Limit Levels of Water Quality for Dredging, Disposal and Capping Activities at ESC CMP V*

| Parameter | Action Level | Limit Level |
|---|---|--|
| Dissolved Oxygen (DO) ⁽¹⁾ | <u>Surface and Mid-depth</u> ⁽²⁾ 5%-ile of baseline data for surface and middle layer = 3.76 mg L⁻¹ | <u>Surface and Mid-depth</u> ⁽²⁾ 1%-ile of baseline data for surface and middle layer = 3.11 mg L⁻¹ ⁽³⁾ |
| | and | and |
| | Significantly less than the reference stations mean DO (at the same tide of the same day) | Significantly less than the reference stations mean DO (at the same tide of the same day) |
| | <u>Bottom</u> 5%-ile of baseline data for bottom layers = 2.96 mg L⁻¹ | <u>Bottom</u> The average of the impact station readings are <2 mg/L⁻¹ |
| | and | and |
| | Significantly less than the reference stations mean DO (at the same tide of the same day) | Significantly less than the reference stations mean DO (at the same tide of the same day) |
| Depth-averaged Suspended Solids (SS) ^{(4) (5)} | 95%-ile of baseline data for depth average = 37.88 mg L⁻¹ | 99%-ile of baseline data for depth average = 61.92 mg L⁻¹ |
| | and | and |
| | 120% of control station's SS at the same tide of the same day | 130% of control station's SS at the same tide of the same day |
| Depth-averaged Turbidity (Tby) ^{(4) (5)} | 95%-ile of baseline data = 28.14 NTU | 99%-ile of baseline data = 38.32 NTU |
| | and | and |
| | 120% of control station's Tby at the same tide of the same day | 130% of control station's Tby at the same tide of the same day |

Notes:

- (1) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- (2) The Action and Limit Levels for DO for Surface & Middle layers were calculated from the combined pool of baseline surface layer data and baseline middle layer data.
- (3) Given the Action Level for DO for Surface & Middle layers has already been lower than 4 mg L⁻¹, it is proposed to set the Limit Level at 3.11 mg L⁻¹ which is the first percentile of the baseline data.
- (4) "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
- (5) For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

Table B2 Water Column Profiling Results for ESC CMP Vd in November 2019

| Stations | Temp (°C) | Salinity (ppt) | Turbidity (NTU) | Dissolved Oxygen (%) | (mg L ⁻¹) | pH | Suspended Solids (mg L ⁻¹) |
|-----------------------|--------------|-------------------|--------------------|-------------------------|-----------------------|---------|---|
| WCP 1 (Downstream) | 26.36 | 31.15 | 2.95 | 95.88 | 6.49 | 7.96 | 3.5 |
| WCP 2 (Upstream) | 26.27 | 31.22 | 3.77 | 95.40 | 6.46 | 7.95 | 3.1 |
| WQO (Dry Season) | N/A | 28.10-34.34# | N/A | N/A | >4 | 6.5-8.5 | 13.6 |

Note:

#Not exceeding 10% of natural ambient level which is the result obtained from the Reference Station.

Cell shaded yellow / red indicate value exceeding the Action/Limit levels.

Cell shaded grey indicate value exceeding the WQO.

Table B3 In-situ Monitoring Results for Routine Water Quality Monitoring of ESC CMPs in November 2019

| Sampling Period | Stations | Temp (°C) | Salinity (ppt) | Turbidity (NTU) | Dissolved Oxygen (%) | (mg L ⁻¹) | pH (mg L ⁻¹) |
|-----------------|--------------------|--------------|-------------------|--------------------|-------------------------|-----------------------|-----------------------------|
| November 2019 | RFE (Reference) | 26.20 | 31.14 | 2.34 | 93.73 | 6.36 | 7.96 |
| | IPE (Impact) | 25.98 | 31.17 | 3.30 | 95.35 | 6.49 | 8.02 |
| | INE (Intermediate) | 26.05 | 31.42 | 2.67 | 92.92 | 6.31 | 8.06 |
| | Ma Wan | 26.24 | 31.97 | 2.41 | 90.04 | 6.07 | 8.13 |
| | WQO | N/A | 28.03-34.25# | N/A | N/A | >4 | 6.5-8.5 |

Notes:

#Not exceeding 10% of natural ambient level which is the result obtained from the Reference Station.

Cell shaded yellow / red indicate value exceeding the Action/Limit levels.

Cell shaded grey indicate value exceeding the WQO.

Table B4 Laboratory Results for Routine Water Quality Monitoring of ESC CMPs in November 2019

| Sampling Period | Stations | As (µg/L) | Cd (µg/L) | Cr (µg/L) | Cu (µg/L) | Pb (µg/L) | Hg (µg/L) | Ni (µg/L) | Ag (µg/L) | Zn (µg/L) | NH ₃ (mg/L) | TIN (mg/L) | BOD ₅ (mg/L) | SS (mg/L) |
|-----------------|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------------|----------------------------------|----------------------------|--------------|
| November 2019 | RFE | 2.13 | <0.5 | 1.21 | 7.37 | <1.0 | <0.5 | 1.44 | <1.0 | 20.08 | 0.05 | 0.39 | 1.31 | 5.27 |
| | IPE | 2.11 | <0.5 | 1.04 | 14.45 | 1.12 | <0.5 | 1.13 | <1.0 | 26.23 | 0.10 | 0.43 | 1.24 | 4.77 |
| | INE | 2.04 | <0.5 | <1.0 | 18.13 | <1.0 | <0.5 | <1.0 | <1.0 | 20.07 | 0.09 | 0.39 | 0.95 | 4.42 |
| | Ma Wan | 1.99 | <0.5 | 1.31 | 25.93 | 1.31 | <0.5 | <1.0 | <1.0 | 32.46 | 0.10 | 0.32 | 1.33 | 4.08 |
| | | | | | | | | | | | | WQO of TIN: 0.5 mg/L | | |
| | | | | | | | | | | | | Dry Season WQO of SS : 13.6 mg/L | | |

Notes:

Cell shaded yellow / red indicate value exceeding the Action/Limit levels.

Cell shaded grey indicate value exceeding the WQO.

Table B5 *Summary Table of DO, Turbidity and SS Levels Recorded in November 2019 for Impact Water Quality Monitoring during Dredging Operations of ESC CMP Vb*

| Sampling Date | Tidal Period | Station | Average DO Levels (mg/L) | | Average Turbidity Level (NTU) | Average SS Level (mg/L) |
|---------------|--------------|---------|--------------------------|-----------------------|-------------------------------|-------------------------|
| | | | Bottom | Surface and Mid Depth | | |
| 11/11/2019 | Mid Ebb | US1 | 7.88 | 8.20 | 4.31 | 5.57 |
| | | US2 | 7.79 | 8.28 | 3.23 | 4.47 |
| | | DS1 | 8.33 | 8.69 | 3.31 | 4.22 |
| | | DS2 | 8.08 | 8.35 | 5.55 | 6.78 |
| | | DS3 | 8.07 | 8.40 | 5.34 | 5.85 |
| | | DS4 | 7.81 | 8.17 | 4.72 | 6.93 |
| | | DS5 | 7.95 | 8.17 | 5.09 | 6.72 |
| | | MW1 | 6.72 | 6.92 | 4.49 | 6.67 |
| | Mid Flood | US1 | 7.44 | 7.45 | 6.72 | 8.82 |
| | | US2 | 7.50 | 7.54 | 7.98 | 10.00 |
| | | DS1 | 7.52 | 7.65 | 6.12 | 8.67 |
| | | DS2 | 7.49 | 7.53 | 6.73 | 7.80 |
| | | DS3 | 7.52 | 7.52 | 6.25 | 8.28 |
| | | DS4 | 7.45 | 7.47 | 6.50 | 8.85 |
| | | DS5 | 7.44 | 7.44 | 6.47 | 8.23 |
| | | MW1 | 6.70 | 6.74 | 4.31 | 6.47 |
| 13/11/2019 | Mid Ebb | US1 | 7.99 | 9.11 | 5.97 | 6.93 |
| | | US2 | 7.99 | 8.98 | 5.04 | 6.62 |
| | | DS1 | 8.04 | 8.77 | 6.15 | 5.03 |
| | | DS2 | 8.25 | 8.79 | 4.95 | 7.93 |
| | | DS3 | 8.28 | 8.90 | 5.27 | 8.83 |
| | | DS4 | 7.99 | 8.89 | 8.05 | 8.85 |
| | | DS5 | 8.15 | 9.07 | 5.34 | 6.47 |
| | | MW1 | 7.39 | 7.85 | 3.64 | 5.55 |
| | Mid Flood | US1 | 8.23 | 8.28 | 12.10 | 16.88 |
| | | US2 | 8.24 | 8.28 | 9.15 | 13.83 |
| | | DS1 | 8.15 | 8.20 | 9.53 | 12.33 |
| | | DS2 | 8.12 | 8.19 | 8.85 | 10.22 |
| | | DS3 | 8.14 | 8.19 | 9.75 | 11.92 |
| | | DS4 | 8.15 | 8.21 | 8.60 | 10.38 |
| | | DS5 | 8.11 | 8.22 | 11.30 | 12.55 |
| | | MW1 | 7.80 | 7.97 | 6.45 | 7.57 |
| 15/11/2019 | Mid Ebb | US1 | 8.26 | 8.84 | 3.59 | 5.05 |
| | | US2 | 8.40 | 8.90 | 3.31 | 4.78 |
| | | DS1 | 8.19 | 8.63 | 3.84 | 3.83 |
| | | DS2 | 8.09 | 8.58 | 3.56 | 6.10 |
| | | DS3 | 8.02 | 8.49 | 5.41 | 6.50 |
| | | DS4 | 7.76 | 8.40 | 3.63 | 4.10 |
| | | DS5 | 7.83 | 8.62 | 5.34 | 5.55 |
| | | MW1 | 7.55 | 7.72 | 3.24 | 5.05 |
| | Mid Flood | US1 | 8.08 | 8.18 | 5.73 | 6.08 |
| | | US2 | 8.02 | 8.15 | 7.35 | 8.10 |
| | | DS1 | 7.95 | 8.05 | 6.54 | 7.50 |
| | | DS2 | 7.99 | 8.05 | 6.05 | 8.40 |
| | | DS3 | 7.99 | 8.05 | 7.35 | 7.18 |
| | | DS4 | 7.99 | 8.10 | 8.20 | 8.48 |
| | | DS5 | 8.03 | 8.12 | 8.60 | 8.70 |
| | | MW1 | 7.52 | 7.64 | 6.12 | 6.22 |
| 18/11/2019 | Mid Ebb | US1 | 8.45 | 9.13 | 3.69 | 5.53 |

| Sampling Date | Tidal Period | Station | Average DO Levels (mg/L) | | Average Turbidity Level (NTU) | Average SS Level (mg/L) |
|---------------|--------------|---------|--------------------------|-----------------------|-------------------------------|-------------------------|
| | | | Bottom | Surface and Mid Depth | | |
| | Mid Flood | US2 | 8.46 | 8.98 | 4.01 | 4.95 |
| | | DS1 | 8.65 | 9.03 | 4.24 | 5.92 |
| | | DS2 | 8.32 | 8.95 | 3.91 | 9.05 |
| | | DS3 | 8.23 | 9.23 | 3.89 | 5.72 |
| | | DS4 | 8.07 | 9.03 | 4.06 | 5.22 |
| | | DS5 | 7.94 | 8.76 | 4.16 | 5.48 |
| | | MW1 | 7.59 | 7.89 | 3.94 | 5.12 |
| | | US1 | 8.03 | 8.68 | 7.25 | 7.72 |
| | | US2 | 8.31 | 8.96 | 4.94 | 6.50 |
| | | DS1 | 8.31 | 8.74 | 5.09 | 4.30 |
| | | DS2 | 8.10 | 8.49 | 8.14 | 10.82 |
| | | DS3 | 8.08 | 8.66 | 7.54 | 6.05 |
| | | DS4 | 8.17 | 8.69 | 8.09 | 7.97 |
| | | DS5 | 8.21 | 8.56 | 4.72 | 6.32 |
| | | MW1 | 7.97 | 8.19 | 6.07 | 6.62 |
| 20/11/2019 | Mid Ebb | US1 | 7.19 | 7.65 | 6.80 | 7.87 |
| | | US2 | 7.15 | 7.47 | 6.30 | 7.13 |
| | | DS1 | 7.23 | 7.46 | 8.19 | 7.50 |
| | | DS2 | 7.12 | 7.51 | 7.09 | 5.63 |
| | | DS3 | 7.29 | 7.60 | 7.54 | 7.65 |
| | | DS4 | 7.24 | 7.55 | 8.04 | 7.32 |
| | | DS5 | 7.34 | 7.65 | 6.69 | 6.67 |
| | | MW1 | 6.72 | 6.75 | 3.96 | 4.35 |
| | | US1 | 7.29 | 7.95 | 5.21 | 6.08 |
| | | US2 | 6.96 | 7.54 | 6.45 | 6.58 |
| | | DS1 | 7.94 | 7.75 | 5.87 | 7.15 |
| | | DS2 | 7.71 | 7.88 | 4.56 | 5.08 |
| | | DS3 | 7.55 | 7.85 | 4.66 | 4.70 |
| | | DS4 | 7.41 | 7.84 | 4.32 | 5.53 |
| | | DS5 | 7.68 | 8.07 | 5.39 | 5.52 |
| MW1 | 6.76 | 6.86 | 5.85 | 5.65 | | |
| 22/11/2019 | Mid Ebb | US1 | 7.40 | 7.56 | 5.10 | 6.75 |
| | | US2 | 7.32 | 7.55 | 5.19 | 5.77 |
| | | DS1 | 7.35 | 7.47 | 5.70 | 6.20 |
| | | DS2 | 7.44 | 7.48 | 6.03 | 7.07 |
| | | DS3 | 7.42 | 7.45 | 6.79 | 6.37 |
| | | DS4 | 7.32 | 7.40 | 8.07 | 7.55 |
| | | DS5 | 7.36 | 7.40 | 8.12 | 7.83 |
| | | MW1 | 6.77 | 6.81 | 3.53 | 4.10 |
| | | US1 | 7.49 | 7.57 | 5.06 | 6.85 |
| | | US2 | 7.41 | 7.63 | 6.65 | 5.52 |
| | | DS1 | 7.49 | 7.65 | 3.13 | 4.23 |
| | | DS2 | 7.42 | 7.55 | 4.06 | 4.13 |
| | | DS3 | 7.32 | 7.42 | 4.71 | 4.45 |
| | | DS4 | 7.43 | 7.59 | 3.81 | 5.10 |
| | | DS5 | 7.41 | 7.61 | 3.96 | 4.90 |
| MW1 | 6.56 | 6.61 | 4.16 | 3.92 | | |
| 25/11/2019 | Mid Ebb | US1 | 7.05 | 7.31 | 7.12 | 6.23 |
| | | US2 | 7.02 | 7.22 | 8.44 | 7.68 |
| | | DS1 | 7.05 | 7.30 | 10.90 | 8.80 |
| | | DS2 | 6.97 | 7.30 | 12.30 | 12.28 |
| | | DS3 | 7.11 | 7.48 | 8.24 | 7.85 |
| | | DS4 | 7.08 | 7.31 | 7.90 | 7.28 |

| Sampling Date | Tidal Period | Station | Average DO Levels (mg/L) | | Average Turbidity Level (NTU) | Average SS Level (mg/L) | | |
|---------------|--------------|------------|--------------------------|-----------------------|-------------------------------|-------------------------|-------|------|
| | | | Bottom | Surface and Mid Depth | | | | |
| | Mid Flood | DS5 | 7.02 | 7.26 | 11.55 | 10.95 | | |
| | | MW1 | 6.11 | 6.22 | 5.72 | 6.05 | | |
| | | US1 | 7.19 | 7.34 | 19.34 | 12.55 | | |
| | | US2 | 6.81 | 7.00 | 19.28 | 13.20 | | |
| | | DS1 | 7.24 | 7.32 | 19.09 | 11.55 | | |
| | | DS2 | 7.25 | 7.38 | 10.20 | 8.07 | | |
| | | DS3 | 7.30 | 7.39 | 10.76 | 10.43 | | |
| | | DS4 | 7.25 | 7.33 | 15.30 | 13.92 | | |
| | | DS5 | 7.23 | 7.37 | 13.90 | 13.48 | | |
| | | MW1 | 6.20 | 6.19 | 8.30 | 7.10 | | |
| | | 27/11/2019 | Mid Ebb | US1 | 6.84 | 6.85 | 14.13 | 9.72 |
| | | | | US2 | 6.85 | 6.88 | 11.57 | 9.17 |
| | | | | DS1 | 6.85 | 6.89 | 14.50 | 7.07 |
| | | | | DS2 | 6.86 | 6.90 | 11.75 | 7.65 |
| | DS3 | 6.85 | | 6.90 | 12.35 | 7.98 | | |
| | DS4 | 6.83 | | 6.89 | 12.28 | 8.22 | | |
| | DS5 | 6.88 | | 6.86 | 11.96 | 11.03 | | |
| | MW1 | 6.22 | | 6.28 | 16.91 | 5.75 | | |
| | Mid Flood | US1 | | 6.70 | 6.97 | 11.90 | 12.53 | |
| | | US2 | | 6.75 | 7.00 | 9.70 | 10.22 | |
| | | DS1 | | 6.75 | 6.97 | 7.42 | 10.03 | |
| | | DS2 | | 6.77 | 6.90 | 7.53 | 9.60 | |
| | | DS3 | | 6.76 | 6.90 | 8.20 | 10.23 | |
| | | DS4 | | 6.72 | 6.98 | 9.45 | 8.85 | |
| | | DS5 | 6.74 | 6.91 | 12.50 | 9.35 | | |
| | MW1 | 6.27 | 6.55 | 5.39 | 12.58 | | | |
| 29/11/2019 | Mid Ebb | US1 | 6.54 | 6.80 | 8.37 | 9.72 | | |
| | | US2 | 6.64 | 6.79 | 10.42 | 9.85 | | |
| | | DS1 | 6.67 | 6.85 | 8.42 | 8.57 | | |
| | | DS2 | 6.46 | 6.60 | 8.15 | 7.20 | | |
| | | DS3 | 6.45 | 6.55 | 10.90 | 10.40 | | |
| | | DS4 | 6.06 | 6.46 | 9.00 | 7.88 | | |
| | | DS5 | 6.04 | 6.44 | 7.70 | 6.98 | | |
| | | MW1 | 6.07 | 6.14 | 6.55 | 6.05 | | |
| | | Mid Flood | US1 | 6.77 | 6.81 | 16.74 | 13.52 | |
| | | | US2 | 6.73 | 6.74 | 18.52 | 16.12 | |
| | | | DS1 | 6.70 | 6.72 | 12.25 | 9.70 | |
| | | | DS2 | 6.66 | 6.70 | 12.93 | 9.87 | |
| | | | DS3 | 6.68 | 6.71 | 13.35 | 9.73 | |
| | | | DS4 | 6.65 | 6.67 | 11.98 | 10.03 | |
| | DS5 | | 6.66 | 6.72 | 14.46 | 11.78 | | |
| | MW1 | 6.22 | 6.25 | 10.40 | 9.27 | | | |

Notes:

1. Please refer to Table B1 above for the Action and Limit Levels for dredging activities.
2. Cell shaded yellow indicated value exceeding the Action Level criteria.
3. Cell shaded red indicated value exceeding the Limit Level criteria.