Summary of Proposed Simulations for Water Quality Modelling for the HKBCF, HKLR and TMCLKL
**Simulations of Tidal Flows (Wet and Dry Season Simulations)**

**V1 Verification (2010)** Simulation of the Baseline 2010 Scenario using the refined model grid for successful 15 days simulation period.

To verify that the grid refinement has not changed the simulation of the large scale flow fields.

The model results will be compared with the Baseline Simulation results. To verify that the grid refinement has not modified large scale flow fields.

**V2 Verification (2014)** Simulation of the Baseline 2014 Scenario using the refined model grid for successful 15 days simulation period.

To verify that the grid refinement has not changed the simulation of the large scale flow fields.

The model results will be compared with the Verification Simulations.

**1 2010 Baseline Scenarios using the refined model grid**

Baseline Scenarios before construction of the TM-CLKL+HKBCF+HKLR.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**2 Feb 2011 Simulation of the coastline extent of seawall construction in 2011**

To provide the tidal flows for the simulation of the initial worst case design and fitting scenario. Sections will be compared with the Baseline Simulations.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**3 Apr 2012 Intermediate construction phase in bulk completion of the TM-CLKL+HKBCF+HKLR Phase I in 2012**

Tidal flow fields required for assessment of the construction impact of the intermediate phase of the TM-CLKL+HKBCF+HKLR and all concurrent works in 2012. The model results will provide tidal flow fields for the sediment plume simulations for the TM-CLKL+HKBCF+HKLR plus all concurrent projects expected to be under construction at the time these phases are finishing.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**4 Apr 2013 Simulation of the substantially completed TM-CLKL+HKBCF+HKLR and concurrent works in April 2013 when works are nearing completion but potential sediment losses are significant**

Tidal flow fields required for assessment of the construction impact of the nearly completed TM-CLKL+HKBCF+HKLR and all concurrent works in 2013. The model results will provide tidal flow fields for the sediment planes simulations for the TM-CLKL+HKBCF+HKLR plus all concurrent projects expected to be under construction at the time these phases are finishing.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**5 End 2016 Simulation of the completed TM-CLKL+HKBCF+HKLR and concurrent works including Road P1 in 2016**

Tidal flow fields required for assessment of the impact the completed concurrent works in 2016 has on tidal flow fields for the TM-CLKL+HKBCF+HKLR.

The model results will provide tidal flow fields for the sediment planes simulations for the TM-CLKL+HKBCF+HKLR plus all concurrent projects expected to be under construction at the time these phases are finishing.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**6 End 2026 Simulation of the completed concurrent works including Road P1 and Road P2 in 2026**

Tidal flow fields required for assessment of the impact the completed concurrent works in 2026 has on tidal flow fields for the TM-CLKL+HKBCF+HKLR.

The model results will provide tidal flow fields for the sediment planes simulations for the TM-CLKL+HKBCF+HKLR plus all concurrent projects expected to be under construction at the time these phases are finishing.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**Simulations of Sediment Flows (Wet and Dry Season Simulations) - Construction Impacts**

**P1 2011 Simulation of the start of construction of the TM-CLKL+HKBCF+HKLR together with all concurrent projects underway or beginning in 2011**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the construction of the TM-CLKL+HKBCF+HKLR and all other concurrent projects underway or beginning in 2011.

The model results will be compared with the Simulation No. 1 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**P2 2012 Simulation of the initial stage of construction of the TM-CLKL+HKBCF+HKLR Phase I together with all concurrent projects under construction in 2012**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the interim stages of construction of the TM-CLKL+HKBCF+HKLR and all concurrent projects under construction in 2012.

The model results will be compared with the Simulation No. 2 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**P3 2013 Simulation of the interim stages of construction of the TM-CLKL+HKBCF+HKLR Phase II together with all concurrent projects under construction in 2013**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the interim stages of construction of the TM-CLKL+HKBCF+HKLR and all concurrent projects under construction in 2013.

The model results will be compared with the Simulation No. 3 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**P4 2014 Simulation of the final stages of construction of the TM-CLKL+HKBCF+HKLR Phase III together with all concurrent projects under construction in 2014**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the final stages of construction of the TM-CLKL+HKBCF+HKLR and all concurrent projects under construction in 2014.

The model results will be compared with the Simulation No. 4 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**P5 2015 Simulation of the interim stages of construction of the TM-CLKL+HKBCF+HKLR Phase I together with all concurrent projects under construction in 2015**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the interim stages of construction of the TM-CLKL+HKBCF+HKLR and all concurrent projects under construction in 2015.

The model results will be compared with the Simulation No. 5 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**P6 2016 Simulation of the interim stages of construction of the TM-CLKL+HKBCF+HKLR Phase II together with all concurrent projects under construction in 2016**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the interim stages of construction of the TM-CLKL+HKBCF+HKLR and all concurrent projects under construction in 2016.

The model results will be compared with the Simulation No. 6 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**P7 2017 Simulation of the final stages of construction of the TM-CLKL+HKBCF+HKLR Phase III together with all concurrent projects under construction in 2017**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the final stages of construction of the TM-CLKL+HKBCF+HKLR and all concurrent projects under construction in 2017.

The model results will be compared with the Simulation No. 7 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**P8 2018 Simulation of the completed TM-CLKL+HKBCF+HKLR and all other concurrent projects in 2018**

Possible cumulative impacts on suspended solids concentrations arising from losses of fine sediment to suspension during the construction of the TM-CLKL+HKBCF+HKLR and all other concurrent projects in 2018.

The model results will be compared with the Simulation No. 8 below to verify that the model has stabilised.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**Simulations of Marine Water Quality (Annual Simulations) - Operational Impacts**

**W1 2026 Simulation of the completed TM-CLKL+HKBCF+HKLR and all other concurrent projects in 2026**

The model results will be compared with the relevant Water Quality Objectives and other water quality standards which might apply. The results will also be compared with those from WQI in order to assess the potential impacts from the completed TM-CLKL+HKBCF+HKLR on marine water quality.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.

**W2 2036 Simulation of the completed concurrent projects in 2036 for the TM-CLKL+HKBCF+HKLR**

The model results will be compared with the relevant Water Quality Objectives and other water quality standards which might apply. The results will also be compared with those from WQI in order to assess the potential impacts from the completed TM-CLKL+HKBCF+HKLR on marine water quality.

Typhoon Channel changed bathymetry. CMPs at 2011, Kwai Tong Basin changed bathymetry. Cooling water discharges from Black Point, Castle Peak and Lamma Power Stations, port seawall for Portion A in HKBCF+HKLR and artificial islands.