Annex 7B

Water Quality Modelling Method Statement

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27 April 2018

CLP Power Hong Kong Limited
Black Point Power Station
Yung Long Road,
Lung Kwu Tan,
Tuen Mun, New Territories
(Attn.: Mr. Graham Holland)

Dear Mr. Holland,

Environmental Impact Assessment Ordinance, Cap 499
Project Title: Hong Kong Offshore LNG Terminal
EIA Study Brief (No. ESB-292/2016)
<u>Water Quality Modelling Method Statement</u>

I refer to the letter of 23 April 2018 and the subsequent email dated 26 April 2018 from your consultants, ERM-Hong Kong Ltd, submitting on your behalf the revised Water Quality Modelling Method Statement.

Pursuant to the section 3.4.7 and Appendix D of the EIA Study Brief (No. ESB-292/2016), please be advised that we have no comment on the method statement, in which the proposed calibration and validation, simulation and assessment methodology for the modelling are agreed by us for the purpose of carrying out the water quality impact assessment in the captioned EIA study. Please note that some modelling details may be subject to re-examination and if necessary, subject to refinement and revisions during the course of the EIA study.

Yours sincerely,

(Matthew W.C. Chan)
Senior Environmental Protection Officer
for Director of Environmental Protection

c.c. AFCD (Attn.: C. P. Lam)
ERM (Attn.: Jasmine NG) Fax: 2723 5660

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Hong Kong Offshore LNG Terminal

Method Statement for Water Quality Modelling

Rev 7

April 2018

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Hong Kong Offshore LNG Terminal

Method Statement for Water Quality Modelling

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Client: CLP Power Hong Kong Limited	Project No: 0359722
Summary: This document presents the method statement for water quality modelling works for the Hong Kong Offshore LNG Terminal Project.	Date: 23 April 2018
	Approved by: *Dr Robin Kennish* *Project Director*

7	Method Statement	Var	JN	RK	23/04/18
Revision	Description	By	Checked	Approved	Date

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CONTENTS

1 INTRODUCTION

1.1 BACKGROUND

To support the increased use of natural gas in Hong Kong from 2020 onwards, CLP Power Hong Kong Limited (CLP) has identified that the development of an offshore liquefied natural gas (LNG) import facility in Hong Kong using Floating Storage and Regasification Unit (FSRU) technology (the 'Hong Kong Offshore LNG Terminal Project' or 'the Project') presents a viable additional gas supply option that can access competitive gas supplies from world markets. The Project will involve the construction and operation of an offshore LNG import facility to be located in the southern waters of Hong Kong, a double berth jetty, and subsea pipelines that connect to the gas receiving stations (GRS) at the Black Point Power Station (BPPS) and Lamma Power Station (LPS), owned and operated by CLP and Hongkong Electric Co., Ltd. (HK Electric) respectively.

The Project requires an Environmental Permit from the Hong Kong SAR Government. In relation to this, CLP has prepared a Project Profile for application for an Environmental Impact Assessment (EIA) Study Brief, which was submitted to Environmental Protection Department (EPD) on 6 May 2016. The EIA Study Brief (No. ESB-292/2016) (hereafter referred to as "the Study Brief") was issued by EPD on 15 June 2016.

Environmental Resources Management (ERM) was commissioned by CLP for the EIA Study for the proposed Project. In accordance with *Clause 3.4.7* of the Study Brief, a water quality impact assessment shall be conducted to evaluate and assess potential impacts on water quality.

1.2 DESCRIPTION OF THE PROJECT

Based on the project design information available at the time of preparing this *Method Statement*, the Project involves the following marine construction and dredging works:

- Offshore LNG Terminal: no capital dredging is considered necessary at the offshore LNG terminal site (about 600 m x 600 m in size, including navigation approach and manoeuvring/ turning area for the FSRU vessel and LNG carriers) where a double berth jetty (approximate dimension of 500m in length and 50m in width) will be constructed. The double berth jetty may be a piled structure built using typical construction methods with the mud / sediment potentially removed from inside the piles. Maintenance dredging may be required to be carried out once every five years (subject to actual site conditions) to ensure continued access and manoeuvrability by the FSRU vessel and LNGC.

- BPPS Pipeline - a subsea pipeline will be installed to supply natural gas from the offshore LNG terminal to the GRS at the BPPS. A combination of dredged (by closed grab dredger and trailing suction hopper dredger (TSHD)) and non-dredged (jetting) methods will be employed for trenching the BPPS pipeline. The length of the BPPS pipeline is approximately 45 km and is divided into 14 sections (KP 0.0 – 45.0). Approximately 9.2 km of the BPPS pipeline would require dredging and the width of the dredged trench is about 30 m at seabed level tapering down to about 5m at its base. Depth of dredging is anticipated to be about 3-4 m (subject to final engineering design). The BPPS pipeline will be laid within the trench by a pipelay barge, and rock armour will be placed over the pipeline within the trench for pipeline protection.

- LPS Pipeline - a subsea pipeline will be installed to supply natural gas from the offshore LNG terminal to the GRS at the LPS. The length of the LPS pipeline is approximately 18 km. A majority of the LPS pipeline trench will be formed by jetting and dredging work is anticipated to be limited to about 0.1 km. An Alternative Shore Approach Route to LPS may be considered which involves forming of a pipe trench of around 1 km off the LPS shore approach by closed grab dredging. The width and depth of the dredged trench is about 26m and 3-4m respectively, all subject to the final engineering design. The pipeline will be laid by a pipelay barge, and rock armour will be placed over the pipeline for pipeline protection.

The location of the proposed components of the Project is shown in *Figure 1.1*.

1.3 STUDY AREA

In accordance with the Study Brief, the Study Area for the water quality impact assessment covers the Southern, Second Southern Supplementary, North Western, and North Western Supplementary Water Control Zones (WCZs) as shown in *Figure 1.1*. The Study Area is also extended to cover the Deep Bay (Outer Subzone) and Western Buffer WCZ (*Figure 1.1*).

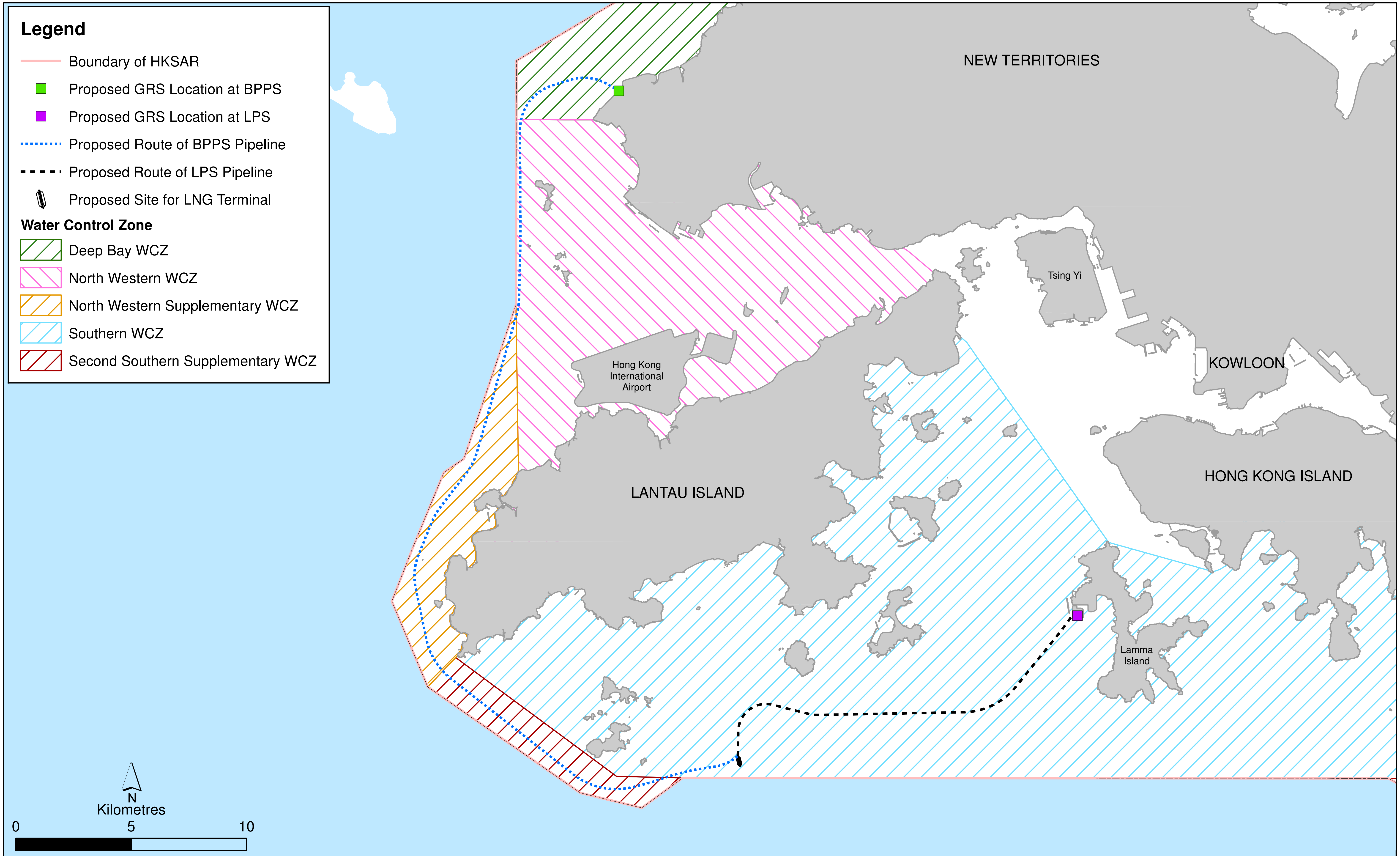

Figure 1.1

Water Quality Impact Assessment Area

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1.4 *PURPOSE OF THE METHOD STATEMENT*

This *Method Statement* presents information on the approach for numerical modelling and assessment works for water quality and hydrodynamic aspects of the EIA. It is important to note that at the time of writing this *Method Statement*, the detailed engineering information for both construction and operation activities is yet to be confirmed and therefore a general approach as to how the modelling works would be carried out is presented herein, with relevant assumptions provided as appropriate.

The methodology has been based on the following three focus areas:

- Model Selection;
- Input Data; and
- Scenarios.

1.5 *KEY ISSUES FOR MODELLING*

As stated in *Clause 3.2.1(iii)* of the Study Brief, the water quality impact assessment of the EIA of this Project shall cover the issues listed below in *Table 1.1*.

Table 1.1 Key Water Quality Issues Listed under Clause 3.2.1(iii) of the Study Brief

#	Potential Issue	Proposed Approach for this Assessment
	Construction Phase	
C1	Capital dredging	Capital dredging is not required
C2	Construction of the jetty	Qualitative (Preventive measures, effluent control and good site practice)
C3	Laying of the subsea gas pipelines	Quantitative, Delft3D WAQ
	Operation Phase	
O1	Operation maintenance dredging	Quantitative, Delft3D WAQ
O2	Maintenance and repairing of the subsea gas pipelines	Subsea gas pipelines do not require dredging for maintenance or repairing
O3	Discharge of cooled seawater with or without added or concentrated chemical (e.g. toxic antifouling chemical) including change in water temperature or salinity due to the discharge	Quantitative for cooled seawater, Delft3D FLOW and WAQ Qualitative for effluent from freshwater generator (compliant at discharge expected)
O4	Marine transport and activities of LNG carriers and FSRU vessel	Qualitative (Effluent control and good site practice)
O5	Accidental spillage or leakage of natural gas, dangerous goods and/or other chemicals	Qualitative for LNG, dangerous goods and other chemicals (Preventive measures and good site practice), quantitative for fuel spillage (1)
O6	Impact due to ballast water of LNG carriers e.g. release of toxic substances	Qualitative (Effluent control and good site practice)
O7	Discharge of sewage effluent	Quantitative, CORMIX

Note: (1) Further explanation provided under *Section 4.1*.

As shown in *Table 1.1*, some of the potential water quality impacts, such as those associated with marine construction works and routine operation phase discharge of effluent from the proposed facilities, require quantitative assessment with the aid of computational modelling tools. On the other hand, some potential sources of water quality impacts are expected to be minimal based on preliminary design, with or without control measures. These potential sources of water quality impact would be assessed qualitatively, with due consideration of built-in design control, good site practices and other control measures. As this *Method Statement* presents information on the approach for numerical modelling and assessment works for the EIA, the potential sources of water quality impact requiring only qualitative assessment are therefore considered beyond the scope of this *Method Statement* and will not be further discussed.

In summary, the objectives of the modelling exercise are to assess, by means of computer models:

- Water quality impacts from marine construction activities associated with the installation of the subsea gas pipelines during the construction phase of the Project;
- Water quality impacts from the discharge of cooled water and associated chemical from the proposed FSRU vessel;
- Water quality impacts from the discharge of treated sewage effluent from the proposed FSRU vessel;
- Water quality impacts from maintenance dredging during Project operation;
- Extent in case of fuel spillage from LNG carrier; and
- Any cumulative impacts due to other projects or activities within the Study Area.

1.6 MODEL SELECTION

The Delft3D suite of models will be utilized to provide a modelling platform for hydrodynamic and water quality modelling. A Delft3D model (referred to as the OLNG Model), making reference to the models developed under the *Update on Cumulative Water Quality and Hydrological Effect of Coastal Developments and Upgrading of Assessment Tool (Agreement No. CE 42/97)* ("Update Model"), was developed for this EIA Study and would be adopted in this modelling exercise. The OLNG Model is a seven-grid domain decomposition (DD) model, which allows flexible spatial-varying grid resolution. All seven DD domains include (*Appendix A*):

- DBM – covering most of the Deep Bay, with grid refinement of 1:3 compared with the Update Model (grid resolution at open water is about 180 m);

- URM – covering the Urmston Road and waters north of the Hong Kong International Airport (HKIA), with grid refinement of 1:3 compared with the Update Model (grid resolution at open water is about 150 m);

- APW – covering waters west of the HKIA, with grid refinement of 1:3 compared with the Update Model (grid resolution at open water is about 250 m);

- SWL – covering waters southwest of the Lantau Island, with grid refinement of 1:3 compared with the Update Model (grid resolution at open water is about 270 m);

- SLT – covering waters south of Lantau Island, where the proposed offshore LNG terminal is located, with grid refinement of 1:9 compared with the Update Model (grid resolution at open water is about 90 m);

- WLM – covering waters west of the Lamma Island, with grid refinement of 1:3 compared with the Update Model (grid resolution at open water is about 220 m); and

- UPD – covering the original update model which is further away from the Project area and therefore not refined.

Since the OLNG Model was developed based on the Update Model, which is calibrated and verified against field data, verification checking would be conducted to compare the performance of the OLNG Model and the Update Model.

1.7 *COASTLINE CONFIGURATIONS & BATHYMETRY*

The latest coastline configuration for the assessment year of 2019/2020 will be adopted in model simulations of the potential impact from Project construction and operation in this EIA Study. Changes in coastline and bathymetry configuration due to reclamations and other development activities will be reflected in the model setup. The changes in coastline and bathymetry configuration include the effects by the following development projects (1):

- Sunny Bay Reclamation;

- Lung Kwu Tan Reclamation;

- Reclamation for Expansion of Hong Kong International Airport into a Three-Runway System (3RS-HKIA);

- Integrated Waste Management Facilities (IWMF) Phase 1 at Shek Kwu Chau;

(1) Certain projects in the vicinity of this Project, such as TM-CLKL, HKBCF and HKLR involved significant reclamation works which are substantially completed when this document was prepared. These are considered in the existing coastline and therefore not included in the list.

- Reclamation for Tung Chung New Town Extension
- Kwai Tsing Container Terminal Basin dredging; and
- Siu Ho Wan Reclamation.

The bathymetry in the vicinity of the Project as shown in *Figure 1.2* is used for the OLNG Model. The bathymetry data are obtained from the Hydrographic Office, Hong Kong Electronic Navigational Chart (ENC), 2016. The reference level of the OLNG Model is Principal Datum Hong Kong and the depth data are relative to this datum.

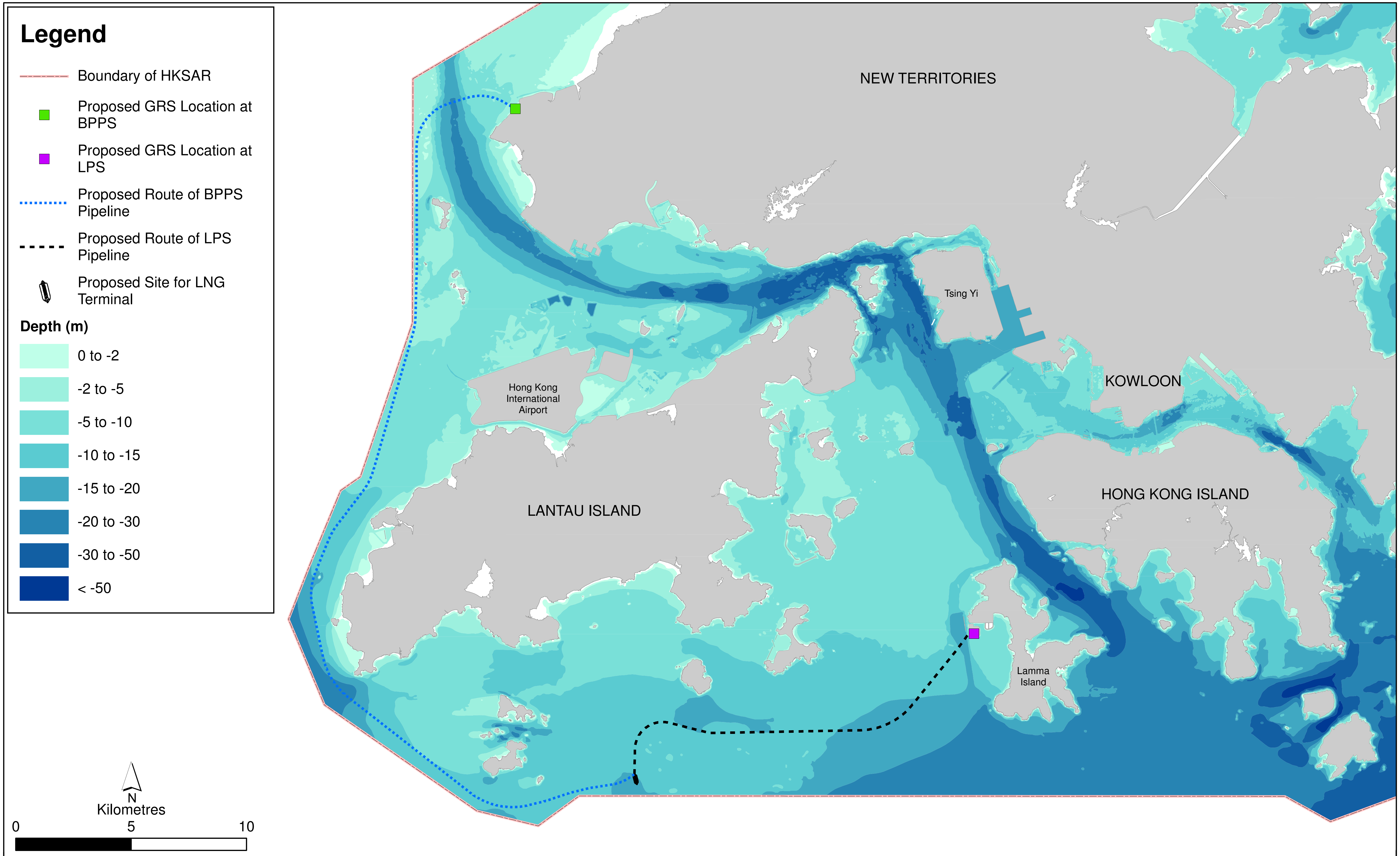

Figure 1.2

Bathymetry to be used in the OLNG Model

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1.8 *BOUNDARY CONDITIONS*

Since the coverage of the OLNG Model is the same as the Update Model, the same boundary conditions were adopted in this modelling exercise. The hydrodynamic modelling of both models covers the outer regions of Pearl River Estuary, Macau, Lamma Channel and Deep Bay. All major influences on hydrodynamics, including major river discharges, in the outer regions are therefore incorporated.

1.9 *AMBIENT ENVIRONMENTAL CONDITIONS – BACKGROUND TEMPERATURE, SOLAR RADIATION AND WIND*

The ambient environmental conditions are closely linked to the processes of hydrodynamic changes. The wind conditions applied in the hydrodynamic simulation are 5 m/s NE for dry season and 5 m/s SW for the wet season. The same average wind speed and direction were adopted in the Update Model.

The hydrodynamic model has included the fresh water inflows from all Pearl River outlets covered in the Update Model as well as from Shenzhen River in Deep Water. The salinity of the river outflows was assumed to be 0.1 ‰ and the temperatures in the dry and wet seasons were attributed to be 19 ºC and 28 ºC, respectively.

1.10 *SIMULATION PERIODS*

To ensure settings of the initial conditions will not affect the outcomes of the modelling exercise, modelling spin-up has been included in the model. For each model, at least two 15 days (i.e. length of a typical spring-neap cycle in Hong Kong) of spin-up periods have been provided. The conditions after the two 15 days spin-up periods would be adopted as the initial condition of a 22-day model run, which comprises of a 7-day warm-up (to dissipate any remnant of model restart) and 15-day actual run.

Table 1.2 Model Simulation Periods

Season	Spin Up	Model Start Time	Model End Time
Wet	30-days spin-up + 2020/07/01 00:00:00 – 2020/07/07 00:00:00	2020/07/07 00:00:00	2020/07/22 00:00:00
Dry	30-days spin-up + 2020/01/01 00:00:00 – 2020/01/07 00:00:00	2020/01/07 00:00:00	2020/01/22 00:00:00

1.11 UNCERTAINTIES IN ASSESSMENT METHODOLOGIES

1.11.1 *Uncertainties in Sediment Transport Assessment*

Uncertainties in the assessment of the impacts from suspended sediment plumes will be considered when drawing conclusions from the assessment. In carrying out the assessment, the worst case assumptions have been made in order to provide a conservative assessment of environmental impacts. These assumptions are as follows:

- The assessment is based on the peak sediment release rate for grab/ trailer dredging. In reality, these will only occur for short periods of time;
- The estimation of sediment loss from jetting works is calculated based on 100% fluidization of the cross-section of the jetting trench. The cross-section for jetting trench design considered for modelling is the largest based on the current indicative design for a conservative assessment;
- The calculations of loss rates of sediment to suspension are based on conservative estimates for the types of plant and methods of working;
- Dredging along subsea gas pipeline routes would be simulated based on a number of stationary sediment sources selected based on distance from the nearby water sensitive receivers (WSRs). While it is possible to simulate the dredging along the subsea gas pipeline routes as moving sources, such approach may not be able to capture the worst case scenario in term of tide conditions. By simulating the dredging along subsea gas pipeline routes as a number of stationary sources each releasing sediment for 2 continuous 15-day spring-neap cycles, the worst case scenario in terms of tide condition as well as background build-up would be captured. Results of model spin-up check for grab dredging is provided in *Appendix C*, which shows the predicted SS elevation at WSRs in the first and second 15-day period match quite well, indicating the spin-up is sufficient. For dredging with TSHD, the moving sediment sources would repeat the sediment release from the corresponding starting point within the 15-day spring-neap cycle, so potential worst case scenario in terms of tidal condition would be taken into account. Similarly, the modelling for pipeline jetting works would also be modelled for 3 passes to ensure various tide conditions are covered and assuming 100% fluidization of the whole trench cross-section, which is considered conservative. This also ensures the predicted level of water quality impact at WSRs would be a reasonably worst case, regardless of how long the dredging and jetting would take.

The following uncertainties have not been included in the construction / operation phase marine construction modelling assessment:

- *Ad hoc* navigation of marine traffic;
- Propeller scour of seabed sediments from vessels;

- Near shore scouring of bottom sediment; and
- Access of marine barges back and from the site.

1.11.2 *Uncertainties in Operation Phase Cooled Effluent Modelling*

The following uncertainties in the operations have not been included in the operation phase cooled discharge modelling assessment:

- Short term change in ambient conditions due to adverse weather conditions;
- Change in seabed level due to siltation or anthropogenic marine activities; and
- Change in flow regime due to reclamations which are not included in the modelling exercise (as discussed under *Sections 1.7* and *5*).

2 *WATER SENSITIVE RECEIVERS*

The water sensitive receivers (WSRs) have been identified in accordance with *Annex 14* of the *Technical Memorandum on EIA Process* (*EIAO, Cap.499, S.16*) and the Study Brief. Additional locations at the boundary of existing or proposed marine parks will also selected as observation points of the modelling output for reference. These WSRs are illustrated in *Figure 2.1* and listed in *Table 2.1a & b*. The corresponding modelling output points to represent these WSRs and observation points for the water quality modelling exercise are provided in *Figure 2.2*.

Table 2.1a Water Sensitive Receivers (WSRs) in the Vicinity of the Project Site

Description	Location	Model Output Location	Geodesic Distance / Approximate Shortest Distance by Sea (km)	
			from the Proposed Gas Pipeline	from the Proposed OLNG Facilities
Fisheries Sensitive Receivers				
Spawning/ Nursery Grounds	Fisheries Spawning Ground in North Lantau	Numerous (1); MPA-5, AR1, CR3	0.3 / 0.3	>10 / >10
	Fisheries Spawning/Nursery Grounds in South Lantau	Numerous; MPC-5-6, MPD-8-9, CR4, CR5, NB9-10, B8-9, MPE	0.05-0.2 / 0.05-0.2	0.2 / 0.2
Artificial Reef Deployment Area	Sha Chau and Lung Kwu Chau	AR1	1.0 / 1.0	>10 / >10
Fish Culture Zone	Cheung Sha Wan FCZ	FCZ1	7.0 / 7.8	9.9 / 9.9
	Lo Tik Wan FCZ	FCZ2	3.6 / 7.1	>10 / >10
	Sok Kwu Wan FCZ	FCZ3	4.0 / 9.0	>10 / >10
Oyster Production Area	Sheung Pak Nai	O1	3.6 / 3.6	>10 / >10
Marine Ecological Sensitive Receivers				
Seagrass Beds	Ha Pak Nai	H1	2.2 / 2.2	>10 / >10
	Tung Chung Bay	C8	6.7 / 6.9	>10 / >10
Marine Park (MP)	Sha Chau and Lung Kwu Chau MP	MPA-5	1.0 / 1.0	>10 / >10
	Proposed AAHK 3RS MP	MPB	0.7 / 0.7	>10 / >10
	Proposed Southwest Lantau MP	MPC-7-8	0.7 / 0.7	9.4 / 9.8
	Proposed South Lantau MP	MPD-8-9	1.7 / 1.7	2.1 / 2.1
	Proposed South Lamma MP	MPE	2.6 / 2.6	>10 / >10
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds	Sheung Pak Nai	H9	5.1 / 5.3	>10 / >10
	Ha Pak Nai	H1	2.2 / 2.2	>10 / >10
	Ngau Hom Shek	H8	6.6 / 6.9	>10 / >10
	Lung Kwu Sheung Tan	NB1	1.7 / 1.7	>10 / >10
	Tung Chung Bay	C8	6.7 / 6.9	>10 / >10
	Sha Lo Wan	H2	3.5 / 3.5	>10 / >10
	Sham Wat Wan	H6	3.4 / 4.5	>10 / >10
	Tai O	H3	1.4 / 1.4	>10 / >10
	Yi O	H4	1.2 / 1.2	>10 / >10
	Fan Lau Tung Wan	MPC-5, NB4	2.6 / 2.6	7.4 / 7.4

Description	Location	Model Output Location	Geodesic Distance / Approximate Shortest Distance by Sea (km)	
			from the Proposed Gas Pipeline	from the Proposed OLNG Facilities
	Tong Fuk Miu Wan / Shui Hau	H5	5.2 / 5.2	6.7 / 6.7
	Pui O	B4	6.9 / 6.9	9.2 / 9.2
	Shek Kwu Chau North	H7	2.9 / 3.0	5.4 / 5.5
Corals	Artificial Seawall at BPPS	CR1, CR2	0.1 / 0.1	>10 / >10
	Pak Chau	CR3	0.3 / 0.3	>10 / >10
	Shek Kwu Chau	CR4	1.6 / 1.6	4.3 / 4.3
	Siu A Chau	CR5	4.3 / 4.3	5.5 / 5.8
	Tai A Chau	CR6	1.1 / 1.1	5.7 / 5.7
	Cheung Chau	CR7-8	4.1 / 5.0	8.9 / 11.2
	Hei Ling Chau	CR9-10	6.6 / 6.6	>10 / >10
	Sunshine Island	CR11	7.0 / 7.0	>10 / >10
	Shek Kok Tsui	CR12	2.7 / 2.7	>10 / >10
	Pak Kok	CR13	3.6 / 4.1	>10 / >10
	Sha Wan	CR14	6.6 / 6.9	>10 / >10
	Ap Lei Chau	CR15	5.3 / 7.4	>10 / >10
	Wong Chuk Kok	CR16-17	5.9 / 9.3	>10 / >10
	Sham Wan	CR18	4.7 / 4.7	>10 / >10
	Luk Chau	CR19	3.8 / 7.0	>10 / >10
	Hung Shing Yeh	CR20	1.6 / 1.9	>10 / >10
	Ha Mei Wan	CR21	1.6 / 1.6	>10 / >10
	Chi Ma Wan Peninsula	CR22	7.0 / 7.8	9.9 / 9.9
Water Quality Sensitive Receivers				
Gazetted Beaches	Tong Fuk	B1	6.8 / 6.8	8.5 / 8.5
	Upper Cheung Sha Beach	B2	6.7 / 6.7	8.6 / 8.6
	Lower Cheung Sha Beach	B3	6.5 / 6.5	8.6 / 8.6
	Pui O Beach	B4	6.9 / 6.9	9.2 / 9.2
	Cheung Chau Tung Wan Beach	B5	4.1 / 5.0	8.9 / 11.2
	Kwun Yam Wan Beach	B6	3.7 / 3.7	9.0 / 10.7
	Hung Shing Yeh Beach	B8	1.8 / 1.8	>10 / >10
	Lo So Shing Beach	B9	2.1 / 2.1	>10 / >10
Non-gazetted Beaches	Lung Kwu Sheung Tan	NB1	1.7 / 1.7	>10 / >10
	Lung Kwu Tan	NB12	3.5 / 3.5	>10 / >10
	Hau Hok Wan	NB2	5.1 / 5.4	>10 / >10

Description	Location	Model Output Location	Geodesic Distance / Approximate Shortest Distance by Sea (km)	
			from the Proposed Gas Pipeline	from the Proposed OLNG Facilities
	Fan Lau Sai Wan	NB3	1.8 / 1.8	>10 / >10
	Fan Lau Tung Wan	NB4	1.9 / 2.1	>10 / >10
	Siu A Chau Wan	NB5	3.9 / 4.1	5.9 / 6.1
	Yi Long Wan	NB6	4.4 / 4.4	6.9 / 7.1
	Tai Long Wan	NB7	4.9 / 4.9	7.5 / 7.6
	Tai Kwai Wan	NB8	4.8 / 5.2	9.2 / 9.2
	Po Yue Wan	NB9	2.9 / 2.9	7.2 / 7.2
	Shek Pai Wan	NB10	4.0 / 9.1	>10 / >10
	Mo Tat Wan	NB11	4.3 / 9.5	>10 / >10
Seawater Intakes	Sludge Treatment Facilities	C1	1.6 / 1.6	>10 / >10
	Black Point Power Station	C2	1.1 / 1.1	>10 / >10
	Castle Peak Power Station	C3	4.4 / 4.4	>10 / >10
	Shiu Wing Steel Mill	C4	5.3 / 5.3	>10 / >10
	Tuen Mun Area 38	C5	6.0 / 6.1	>10 / >10
	Airport	C6-9	5.5 / 5.6	>10 / >10
	Pumping Station at Tai Kwai Wan	NB8	4.8 / 5.2	9.2 / 9.2
	Sha Wan Drive	C10	6.5 / 6.5	>10 / >10
	Queen Mary Hospital	C14	6.5 / 6.5	>10 / >10
	Cyberport	C15	5.7 / 7.2	>10 / >10
	Wah Fu Estate	C11	5.3 / 6.4	>10 / >10
	Ap Lei Chau	C12	5.8 / 8.2	>10 / >10
	Lamma Power Station	C13	0.5 / 0.5	>10 / >10

Note: (1) "Numerous" generally describe WSRs as a large area. Model observation points listed are selected locations which are representative and close to the project affected area.

Table 2.2b Additional Observation Points for Water Quality Modelling

Description	Location	Model Output Location	Geodesic Distance / Approximate Shortest Distance by Sea (km) from the Proposed Subsea Pipeline	Geodesic Distance / Approximate Shortest Distance by Sea (km) from the Proposed LNG Terminal
Observation Points (for reference)				
Boundary of Existing/Proposed Marine Parks	Sha Chau and Lung Kwu Chau MP	MPA-1-4	0.1 / 0.1	>10 / >10
	Proposed Southwest Lantau MP	MPC-1-6	0.1 / 0.1	9.4 / 9.8
	Proposed South Lantau MP	MPD-1-7	0.05-0.2 / 0.05-0.2	0.2 / 0.2

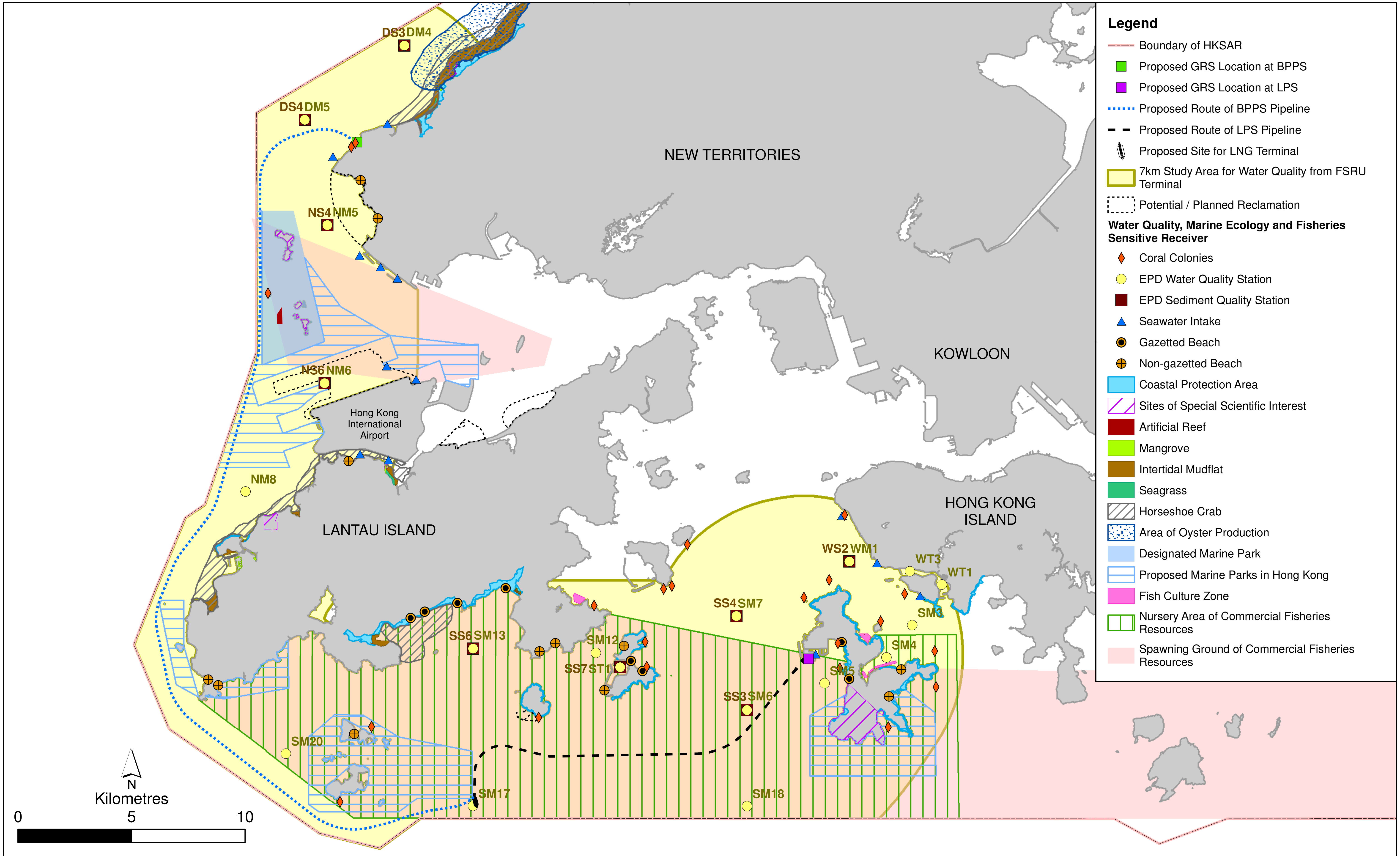

Figure 2.1

Water Sensitive Receivers in the Vicinity of the Proposed LNG Terminal and along the Proposed Pipeline Route

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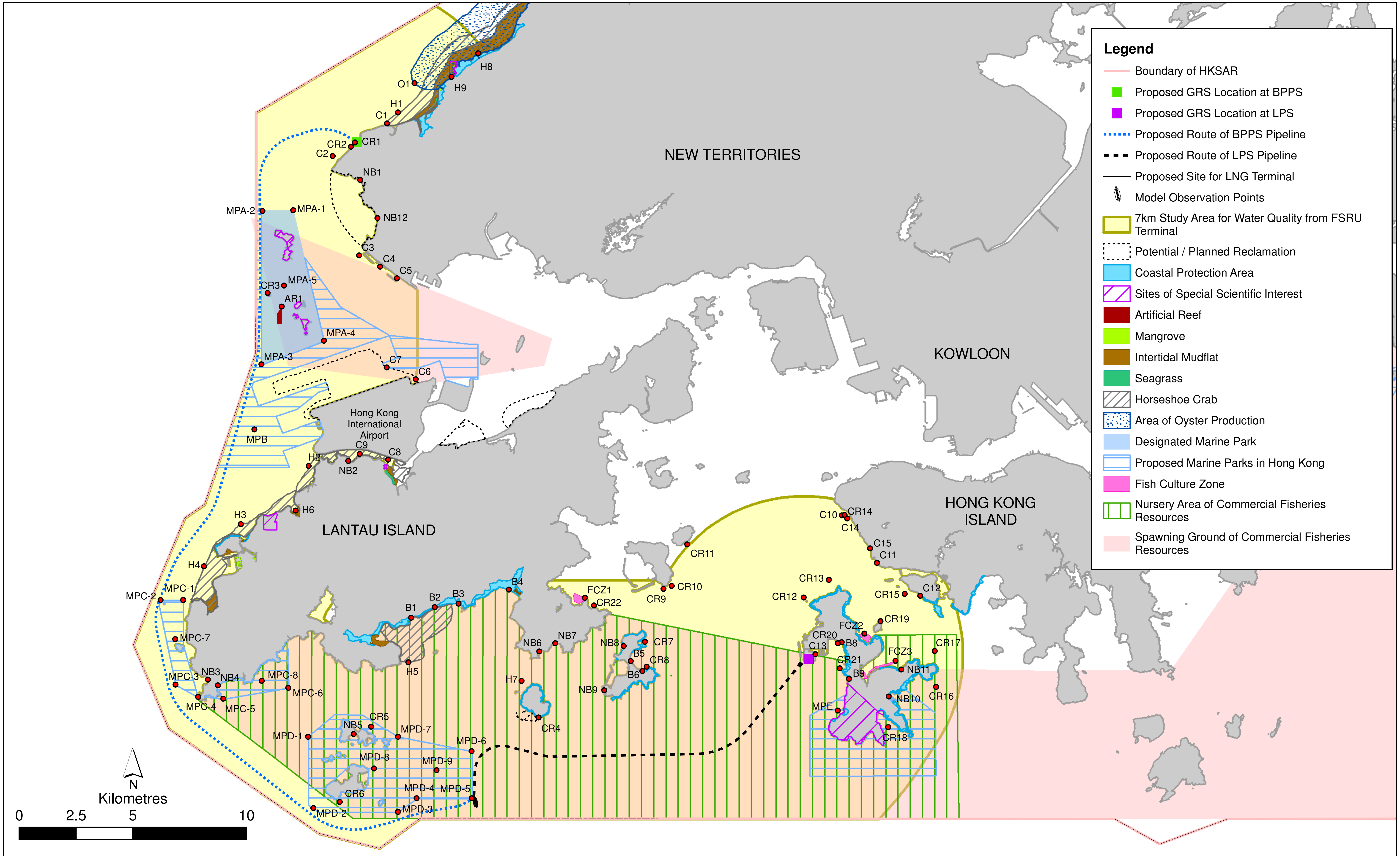

Figure 2.2

Model Observation Points for Water Quality Model in the Vicinity of the Proposed LNG Terminal and along the Proposed Pipeline Route

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3 CONSTRUCTION PHASE

3.1 OUTLINE OF MARINE CONSTRUCTION ACTIVITIES

At the time of preparing this *Method Statement* it is understood that the main marine works of this Project include the installation of subsea gas pipelines from the proposed double berth jetty to BPPS and LPS as well as the construction of the double berth jetty. Pipeline installation requires trenching (which involves a combination of grab dredging, dredging with trailing suction hopper barge and jetting), laying of pipeline, and backfilling with armour rock.

The potential impact on water quality from the proposed pipeline trenching works would be assessed quantitatively for the purpose of this EIA. For these works the WAQ module of Delft3D model will be used to directly simulate the following parameters from marine construction of this Project and other concurrent projects:

- Suspended sediments (SS);
- Sediment deposition; and
- Release of sediment-bounded pollutants.

Disturbance to seabed and release of fine sediments into the water column are anticipated for both dredging and jetting works associated with pipeline installation works. Placement of rock armour protection would be required for the installed pipelines. Rock fill used generally consists of only large granular material (D_{50} – 330 ~ 380mm) with negligible amount of fines, thus would not contribute to significant loss of fines to the water column. In view of this, the potential impact on water quality from the proposed armour rock placement works would be assessed qualitatively for the purpose of this EIA.

Other than the pipeline laying works from the OLNG Terminal to BPPS and LPS, there will be potential (1) excavation works to uncover the last 100m of an existing 1 km termination head pipeline section at LPS. Based on the latest available information, mass flow excavator (which is a variance of jetting machine) with excavation rate of 300 m^3/hr would be adopted for the excavation works. Similar to jetting machine, mass flow excavator make use of propellers to create high velocity water jet to uncover the buried pipeline to allow retrieval and surface tie-in. Potential sediment disturbance of similar nature to jetting would be expected for this event. The sediment loss rate (2) due to the use of mass flow excavator would, however, be lower than that of jetting along the LPS pipeline. Potential impact on water quality from excavation of the 100 m pipeline section at LPS would be less worse than that

(1) The need for the extent of the excavation works will be determined after pipeline integrity test that would be subjected to the condition and usability of the existing pipeline.

(2) For mass flow excavator with excavation rate of 300 m^3/hr: Loss Rate (kg/s) = Excavation Rate (m^3/s) × % Mud Entrained × Dry Mud Density (kg/m^3) = 0.083 m^3/s × 20% × 700 kg/m^3 = 11.6667 kg/s. The estimated sediment loss rate is below that from jetting at 1,000 m/day as shown in *Table 3.5* below.

of jetting all along the entire LPS pipeline. Since the jetting for LPS pipeline would be assessed quantitatively using Delft3D, the potential water quality impact from the excavation of the 100 m pipeline section at LPS is considered covered and separate modelling assessment for this work is not necessary.

Other marine works for the pipeline landfall at BPPS and LPS (if the termination head pipeline section cannot be used) may include:

- Removal (and reinstatement) of rock armours of the sloping seawall using a crane barge with a grab;
- Installation (and removal) of cofferdam comprise of pipe-pile or sheet-pile walls through the seawall;
- Removal of remaining marine deposits within the landfall cofferdam using grab dredger;
- Installation of the pipeline and riser; and
- Backfilling of the excavated part of the sloping seawall by rock fill and rock armour to the original configuration.

The potential disturbance to seabed from these marine construction activities, as well as from the construction of the double berth jetty (potentially by piling which involves dredging), is expected to be insignificant when compared with that of the pipeline dredging or jetting required at similar locations. Given that dredging at both pipeline shore approaches at BPPS and LPS would be modelled (as sediment sources 01_G and 13_G), the potential worst case impact on water quality would be assessed covering the proposed pipeline landfall construction works as well. Also, the BPPS gas pipeline would be jetted from near the location of the double berth jetty and be modelled as 04_J. It is expected that the potential seabed disturbance from jetty piling would be limited when compared with that of jetting, therefore the potential worst case condition is considered covered in this EIA. Past approved EIAs generally consider the potential disturbance to water quality by these marine construction activities negligible and no quantitative assessment would be required. One recently approved EIA which conduct quantitative assessment for such activity is the approved EIA of Expansion of Sha Tau Kok Sewage Treatment Works (AEIAR-207/2017), which estimated the potential sediment loss to the water column during the retrieval of sheetpiles after the completion of works behind cofferdam. Based on the approved EIA, the estimated sediment loss to the water column from the sheetpile retrieval activity would be very low [(1)]. The potential water quality impact from sheetpiling and other related construction activities is expected to be of similar order and thus therefore considered acceptable to not include these minor marine construction works in quantitative assessment as separate sources.

(1) The estimated sediment loss rate is 0.0044 kg/s.

Dissolved oxygen (DO) depletion will be calculated using the modelled maximum SS concentrations. This method has been adopted in recently approved EIAs (1) (2) (3). Total inorganic nitrogen (TIN), unionized ammonia (UIA), heavy metals and organic compounds will be modelled as inert tracers which release at the same time as the disturbed sediment for conservative reason.

3.2 *ASSESSMENT CRITERIA FOR CONSTRUCTION PHASE*

Water Quality Objectives (WQOs) in WCZs of the Study Area will be used to assess water quality impacts in SS, DO, TIN and UIA released in the process of dredging and jetting (*Table 3.1*).

Table 3.1 Summary of Assessment WQO Criteria for Construction Phase

Parameters	Southern WCZ	Second South Supplementary WCZ	North Western WCZ	North Western Supplementary WCZ	Deep Bay (Outer Subzone) WCZ
Dissolved Oxygen (Bottom) (mg/L)	Not less than 2 mg/L for 90% of samples for all WCZs				
Dissolved Oxygen (Depth-averaged) (mg/L)	Not less than 4 mg/L for 90% of samples for all WCZs				
Temperature (°C)	Change < 2				
Total Inorganic Nitrogen (mg/L)	< 0.1	< 0.1	< 0.5	< 0.5	<0.5
Unionized Ammonia (mg/L)	< 0.021 mg/L for all WCZs				
Suspended Solids (mg/L)	Not to raise the natural ambient level by 30%				

There are no known water quality criteria for seawater intakes at Tuen Mun Area 38 and Shiu Wing Steel Mill. The above WQO criteria for SS would be adopted for water quality assessment for these two seawater intakes. For the existing seawater intakes for BPPS and Castle Peak Power Station (CPPS), the criterion for maximum allowable elevation of suspended solids is 700 mg/L. These levels have been adopted in the approved EIA of the Black Point Gas Supply Project and also the more recent Additional Gas-fired Generation Units Project. For the seawater intake of the LPS, the allowable SS elevation is 100 mg/L according to the information provided by HK Electric.

(1) ERM - Hong Kong, Ltd (2016) EIA Study for Additional Gas-fired Generation Units Project. For CAPCO. Register No.: AEIAR-197/2016, http://www.epd.gov.hk/eia/register/report/eiareport/eia_2372016/html/0308057_EIA_Index.htm

(2) ERM - Hong Kong, Ltd (2006) EIA Study for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities. For CAPCO. Register No.: AEIAR-106/2007, http://www.epd.gov.hk/eia/register/report/eiareport/eia_1252006/html/index.htm

(3) ERM - Hong Kong, Ltd (2010) EIA Study for Black Point Gas Supply Project. For CAPCO. Register No. AEIAR-150/2010, http://www.epd.gov.hk/eia/register/report/eiareport/eia_1782009/index.html

Criterion for maximum sedimentation of 200 g/m²/day is adopted at the artificial reef deployment area and coral assemblages [(1)].

There are no existing regulatory standards or guidelines for dissolved metals and organic contaminants in the marine waters of Hong Kong. It is thus proposed to make reference to relevant international standards and this approach has been adopted in previous approved EIAs, i.e., *EIA for Decommissioning of Cheoy Lee Shipyard at Penny's Bay* [(2)], *EIA for Disposal of Contaminated Mud in the East Sha Chau Marine Borrow Pit* [(3)], *EIA for Wanchai Development Phase II* [(4)], *EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities* [(5)],*EIA for Hong Kong Offshore Wind Farm in Southeastern Waters* [(6)] and *EIA for Shatin to Central Link Cross Harbour Section (Phase II - Hung Hom to Admiralty)* [(7)]. *Table 3.2* shows the assessment criteria for dissolved metals and organic pollutants for this Study.

Table 3.2 ***Summary of Assessment Criteria for Dissolved Metals and Organic Compounds for Construction Phase***

Parameter	Unit	Assessment Criteria for this Study
Metals		
Cadmium (Cd)	µg/L	2.5 [(a) (b)]
Chromium (Cr)	µg/L	15 [(a) (b)]
Copper (Cu)	µg/L	5 [(a) (b)]
Nickel (Ni)	µg/L	30 [(a) (b)]
Lead (Pb)	µg/L	25 [(a) (b)]
Zinc (Zn)	µg/L	40 [(a) (c)]
Mercury (Hg)	µg/L	0.3 [(b)]
Arsenic (As)	µg/L	25 [(a) (b)]
Silver (Ag)	µg/L	1.9 [(d)]
Total PAHs	µg/L	3.0 [(f)]
PCBs		
Total PCBs	µg/L	0.03 [(d)]
Organotins		
Tributyltin (TBT)	µg/L	0.1 [(e)] (maximum concentration)

Notes:

(a) UK Environment Agency, Environmental Quality Standards (EQS) for List 1 & 2 dangerous substances, EC Dangerous Substances Directive (76/464/EEC) (http://www.ukmarinesac.org.uk/activities/water-quality/wq4_1.htm).

(1) The recommended assessment criteria were adopted in both approved EIAs in the Western Waters (e.g. Hong Kong Boundary Crossing Facilities) and in the Southern Waters (e.g. Integrated Waste Management Facilities).

(2) Maunsell (2002). EIA for Decommissioning of Cheoy Lee Shipyard at Penny's Bay. For Civil Engineering Department, Hong Kong SAR Government.. Register No.: AEIAR-055/2002

(3) ERM – Hong Kong (1997). EIA for Disposal of Contaminated Mud in the East Sha Chau Marine Borrow Pit. For Civil Engineering Department, Hong Kong SAR Government. . Register No.: EIA-106/BC

(4) Maunsell (2001). EIA for Wanchai Development Phase II - Comprehensive Feasibility Study. For Territory Development Department, Hong Kong SAR Government. . Register No.: AEIAR-042/2001

(5) ERM - Hong Kong, Ltd (2006). EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities. Register No.: AEIAR-106/2007

(6) BMT Asia Pacific Ltd (2009). EIA for Hong Kong Offshore Wind Farm in Southeastern Waters. For HK Offshore Wind Limited. Register No.: AEIAR-140/2009

(7) AECOM (2011). EIA for Shatin to Central Link Cross Harbour Section (Phase II - Hung Hom to Admiralty) for MTR. Register No.: AEIAR-166/2012

(b) Annual average dissolved concentration (i.e. usually involving filtration a 0.45-um membrane filter before analysis).

(c) Annual average total concentration (i.e. without filtration).

(d) U.S. Environmental Protection Agency, National Recommended Water Quality Criteria, 2017. (https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table). The Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water (i.e. saltwater) to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. CMC is used as the criterion of the respective compounds in this study.

(e) Salazar MH, Salazar SM (1996) Mussels as Bioindicators: Effects of TBT on Survival, Bioaccumulation, and Growth under Natural Conditions. In Organotin, edited by M.A. Champ and P.F. Seligman. Chapman & Hall, London.

(f) Australian and New Zealand Environment and Conservation Council (ANZECC), Australian and New Zealand Guidelines for Fresh and Marine Water Quality (1992)

There are no existing regulatory standards or guidelines for total PCBs, total PAHs and TBT in water and hence reference has been made to the USEPA water quality criteria, Australian water quality guidelines, and international literature, respectively. The assessment criteria for total PCBs, total PAHs and TBT are 0.03 µg/L, 3.0 µg/L and 0.1 µg/L respectively. The same assessment criteria for these three chemicals are adopted in past approved EIA such as the approved *EIA of Shatin to Central Link (AEIAR-166/2012)* (1), *Desalination Plant at Tseung Kwan O* (AEIAR-192/2015) (2), and *Additional Gas-fired Generation Units Project* (AEIAR-197/2016) (3).

3.3 *WORKING TIME*

The proposed works programme for pipeline trenching activities varies based on location, plants used and other constraints. The proposed works programme at different sections of the pipelines is summarized in *Table 3.3*. For the purpose of a conservative and worst case assessment, an assumption of 24 working hours per day with 7 working days per week has been adopted for modelling all pipeline trenching activities. Please refer to *Figure 3.1* for the KP of the pipeline sections.

Table 3.3 Summary of Works Programme at Different Sections of the Pipelines

Location (Kilometer Point)	**Plant Used**	**Work Rate (m^3/day) (1)**	**Working Hours per Day**
From LPS to Double Berth Jetty			
Pipeline shore approach at LPS (KP17.4-18.2)	1 Grab Dredger	1,600	24
West Lamma Channel (KP14.5-17.4)	1 Jetting Machine	1,000m/day	24

(1) AECOM (2011). EIA for Shatin to Central Link Cross Harbour Section (Phase II - Hung Hom to Admiralty) for MTR. Register No.: AEIAR-166/2012

(2) ERM (2016). Desalination Plant at Tseung Kwan O. Register No.: AEIAR-192/2015

(3) ERM (2016). Additional Gas-fired Generation Units Project. EIA Report. Environmental Permit EP-507/2016

Location (Kilometer Point)	Plant Used	Work Rate (m^3/day) [1]	Working Hours per Day
South of Shek Kwu Chau to West Lamma Channel (KP5.0-14.5)	1 Jetting Machine	7,000m/day	24
Double Berth Jetty to South of Shek Kwu Chau (KP0.1-5.0)	1 Jetting Machine	720m/day	24
Pipeline Riser Sections at Double Berth Jetty			
Pipeline Riser (KP0.0 – 0.1 for both pipelines)	1 Grab Dredger	8,000	24
From Double Berth Jetty to BPPS			
Jetty Approach (KP0.1 – 5.0)	1 Jetting Machine	1,000m/day	24
South of Soko Islands (KP5.0 – 8.9)	1 Jetting Machine	1,000m/day	24
Southwest of Soko Islands (KP8.9 - 12.1)	1 Jetting Machine	1,000m/day	24
Adamasta Channel (KP12.1 - 15.6)	1 Jetting Machine	1,000m/day	24
Southwest Lantau (KP15.6 - 21.3)	2 Grab Dredgers OR 1 TSHD [2]	Total 16,000 OR 57,600	24
West of Tai O to West of HKIA (KP21.3 – 31.5)	1 Jetting Machine	1,500m/day	24
Sha Chau to Lung Kwu Chau (KP31.5 - 36.0)	1 Jetting Machine	720m/day	24
Sha Chau to Lung Kwu Chau (KP36.0 – 37.5)	1 Grab Dredger	8,000	24
Lung Kwu Chau to Urmston Anchorage (37.5 - 41.1)	1 Jetting Machine	1,000m/day	24
Urmston Road (KP41.1 – 42.9)	1 Grab Dredger OR 1 TSHD [2]	8,000 OR 64,800	24
West of BPPS (KP42.9 - 44.9)	1 Jetting Machine	1,000m/day	24
Pipeline shore approach at BPPS (KP44.9 - 45.0)	1 Grab Dredger	1,500	24

Note:

(1) For jetting, the values are provided in different units.

(2) TSHD: trailing suction hopper dredger

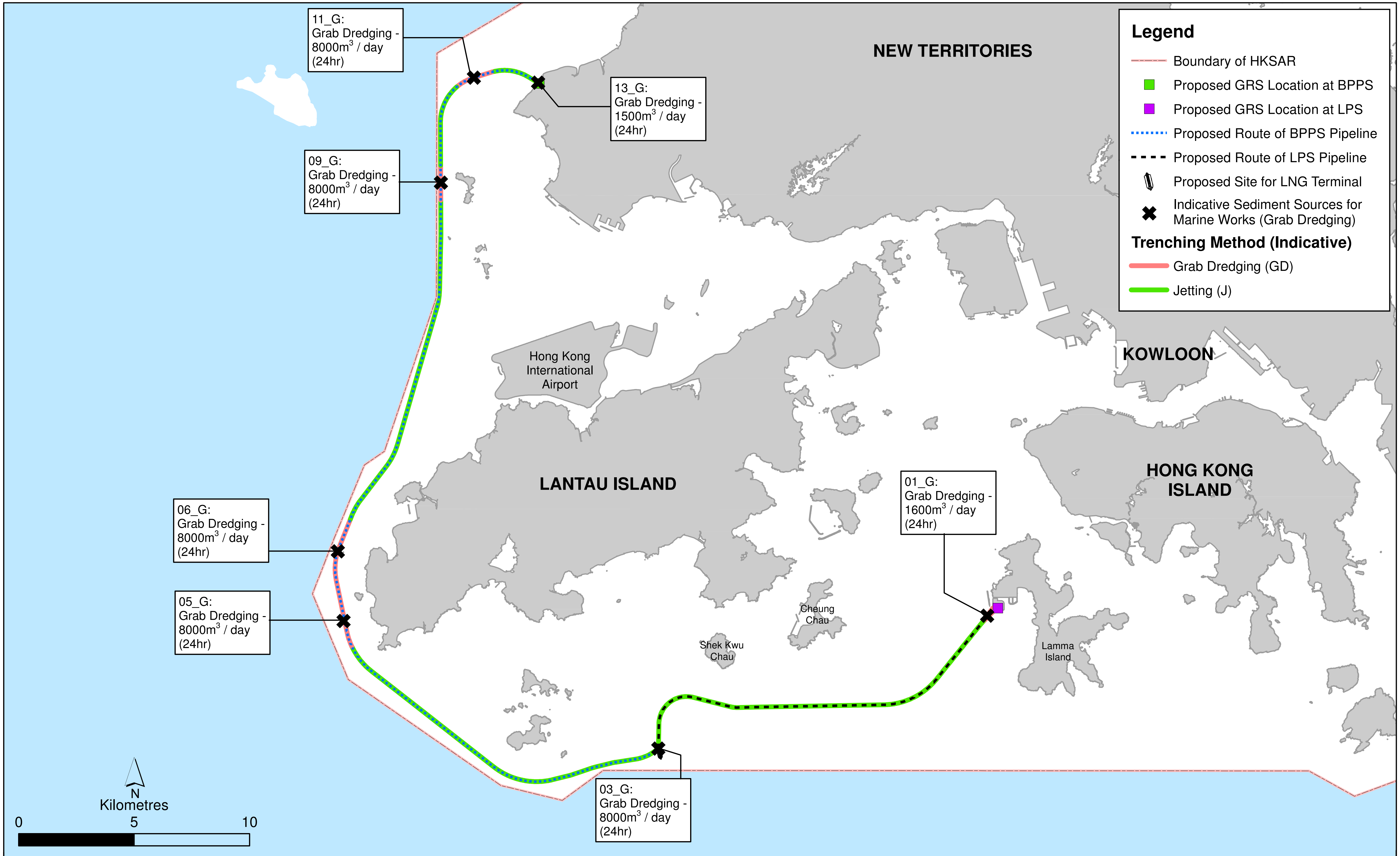

Figure 3.1a

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 1A

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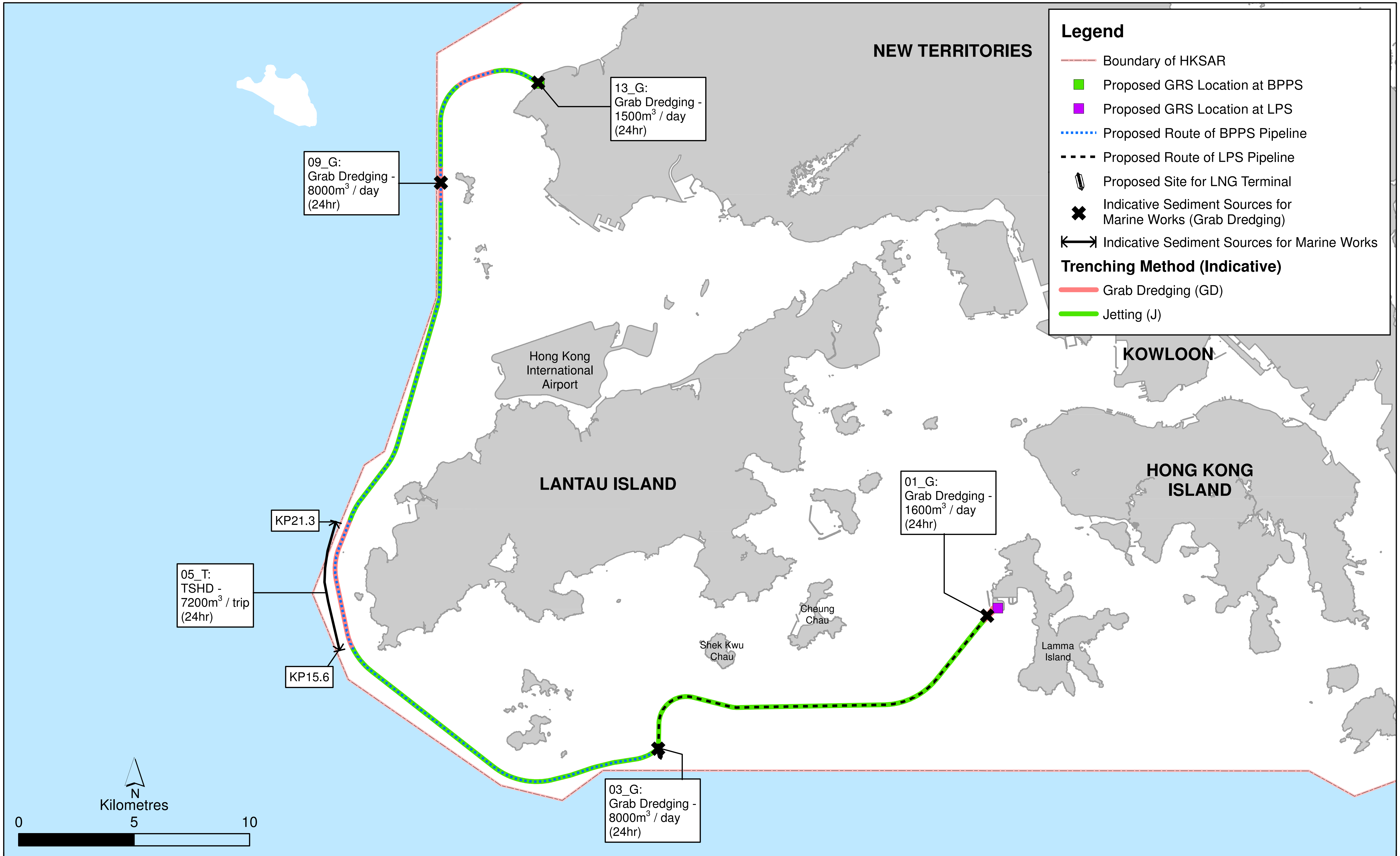

Figure 3.1b

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 1B

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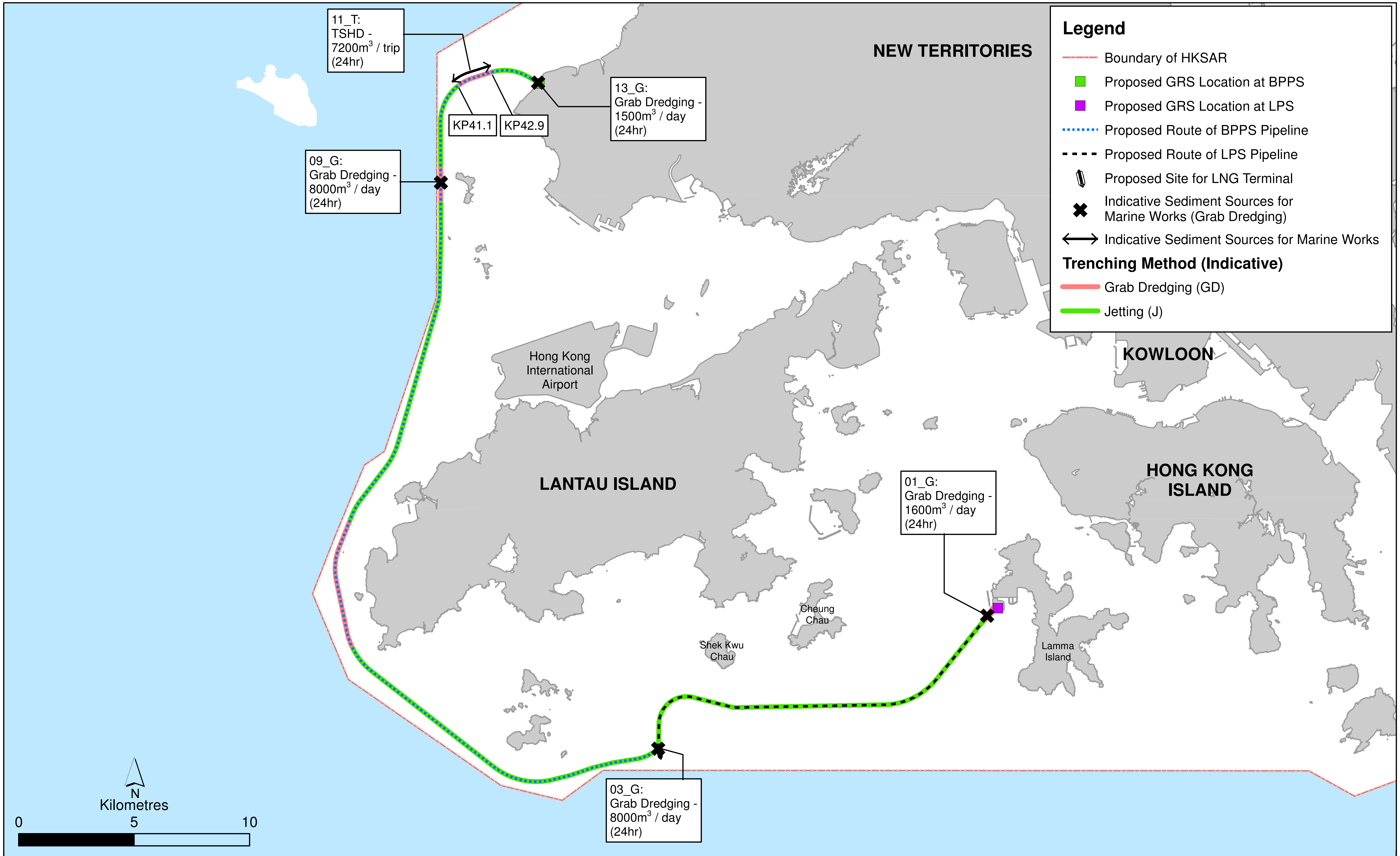

Figure 3.1c

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 1C

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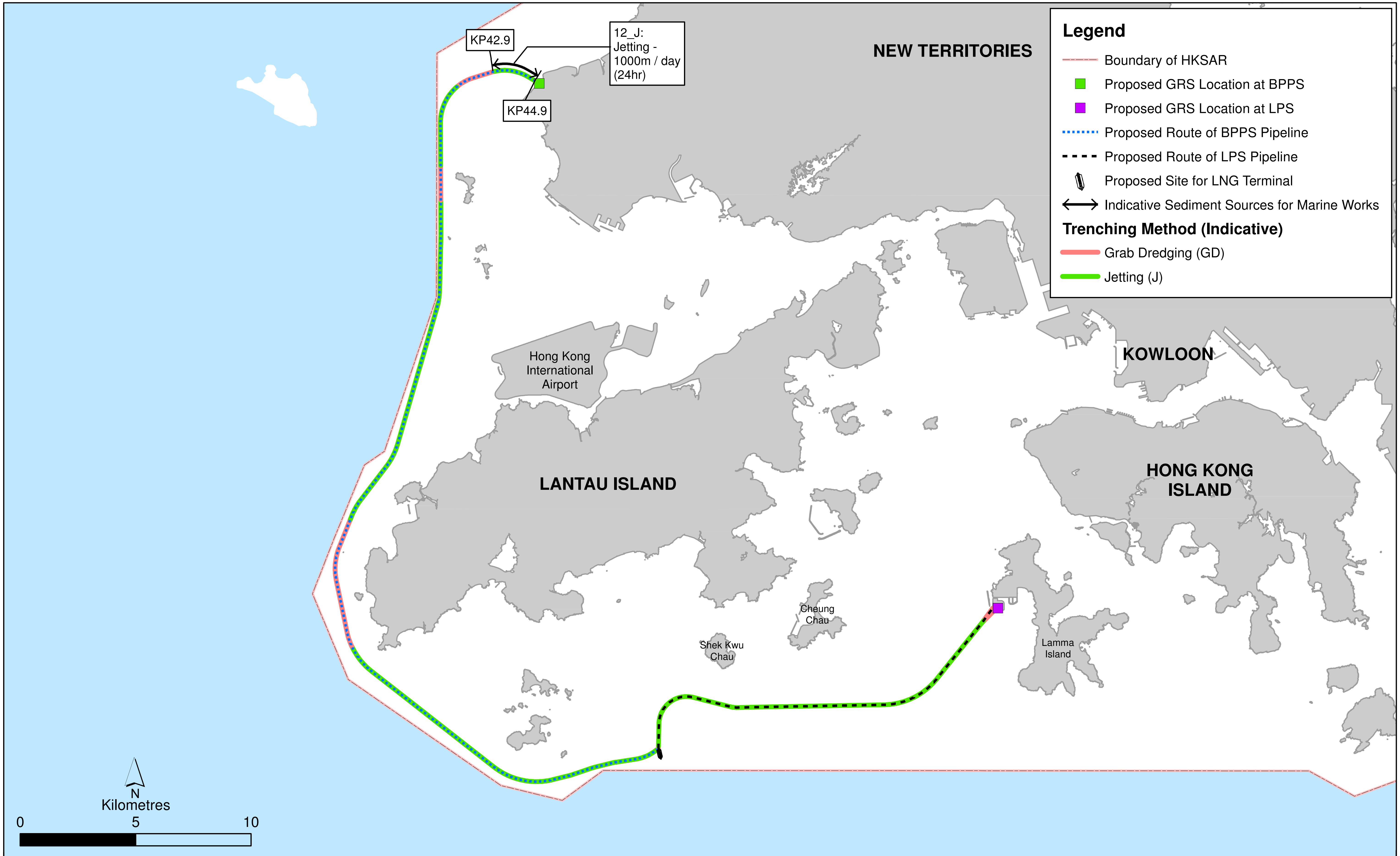

Figure 3.1d

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 2

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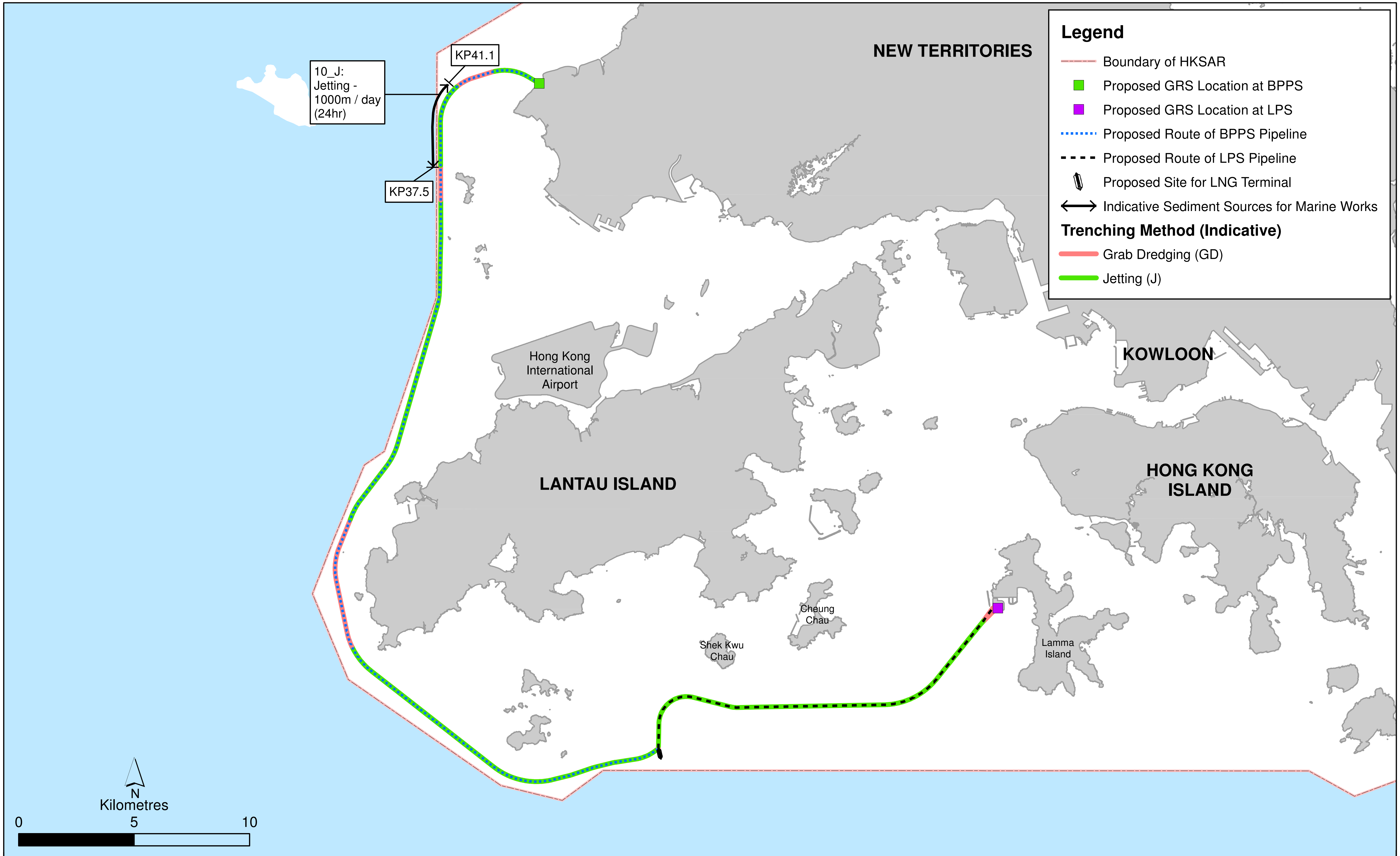

Figure 3.1e

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 3

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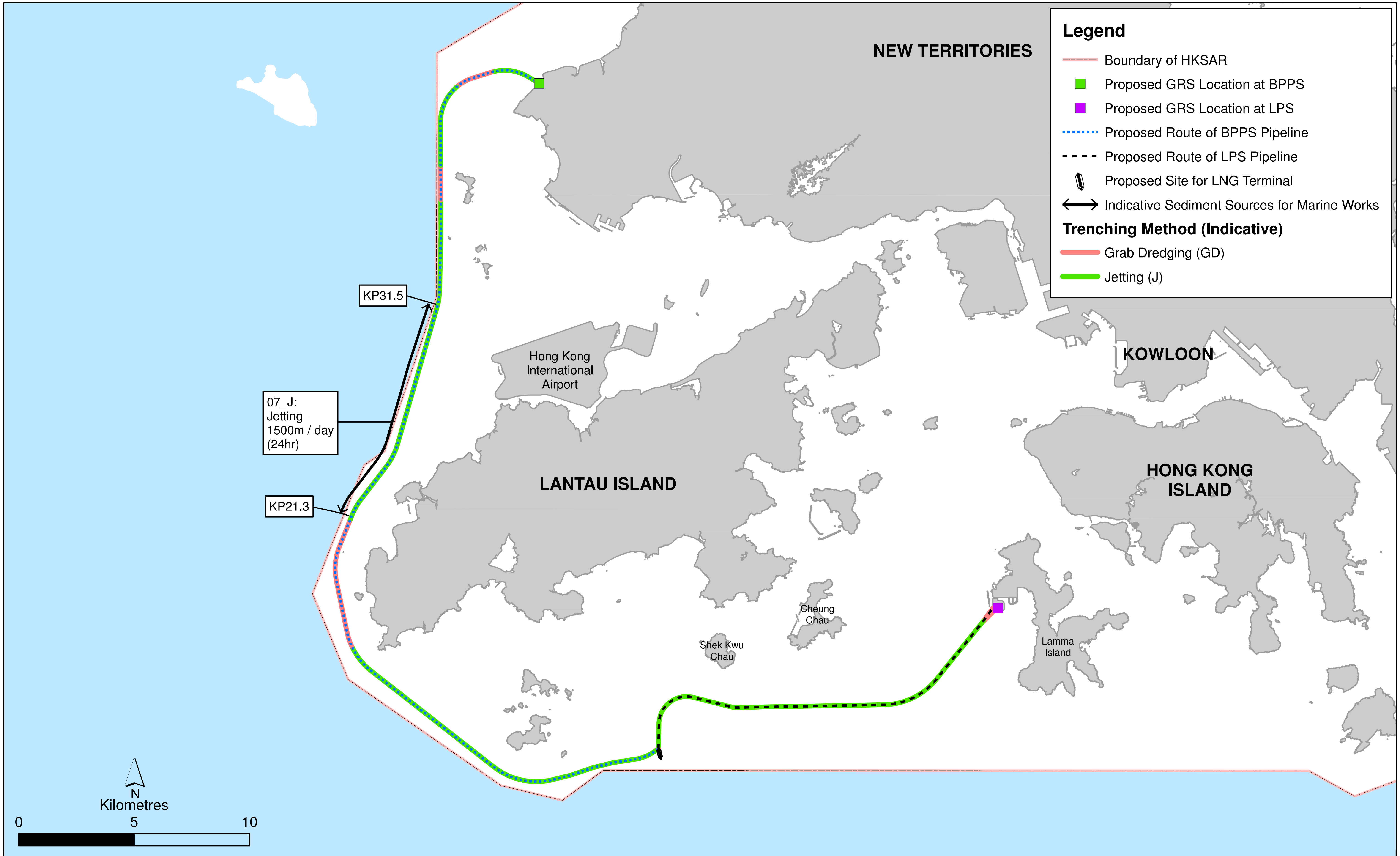

Figure 3.1f

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 4

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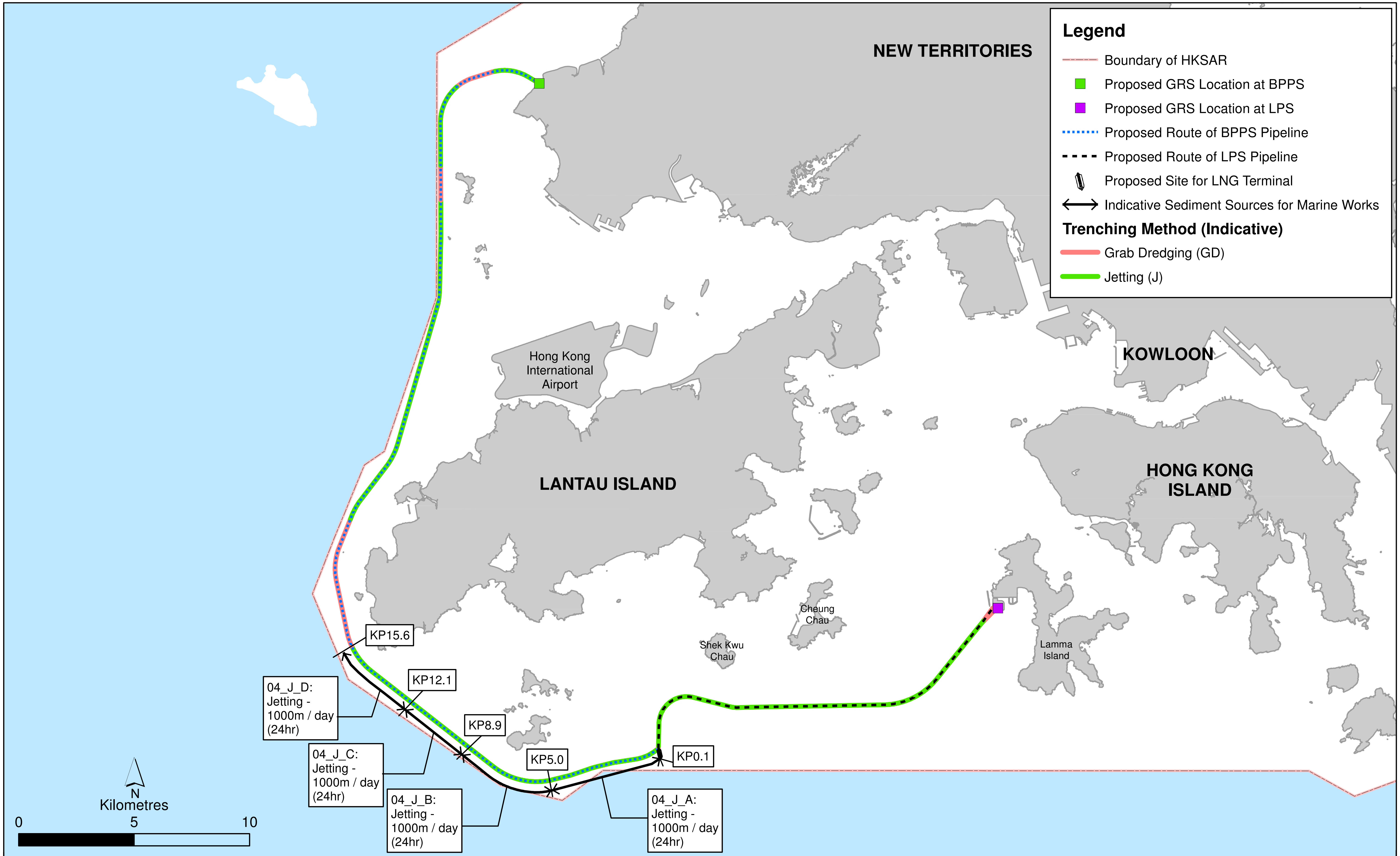

Figure 3.1g

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 5

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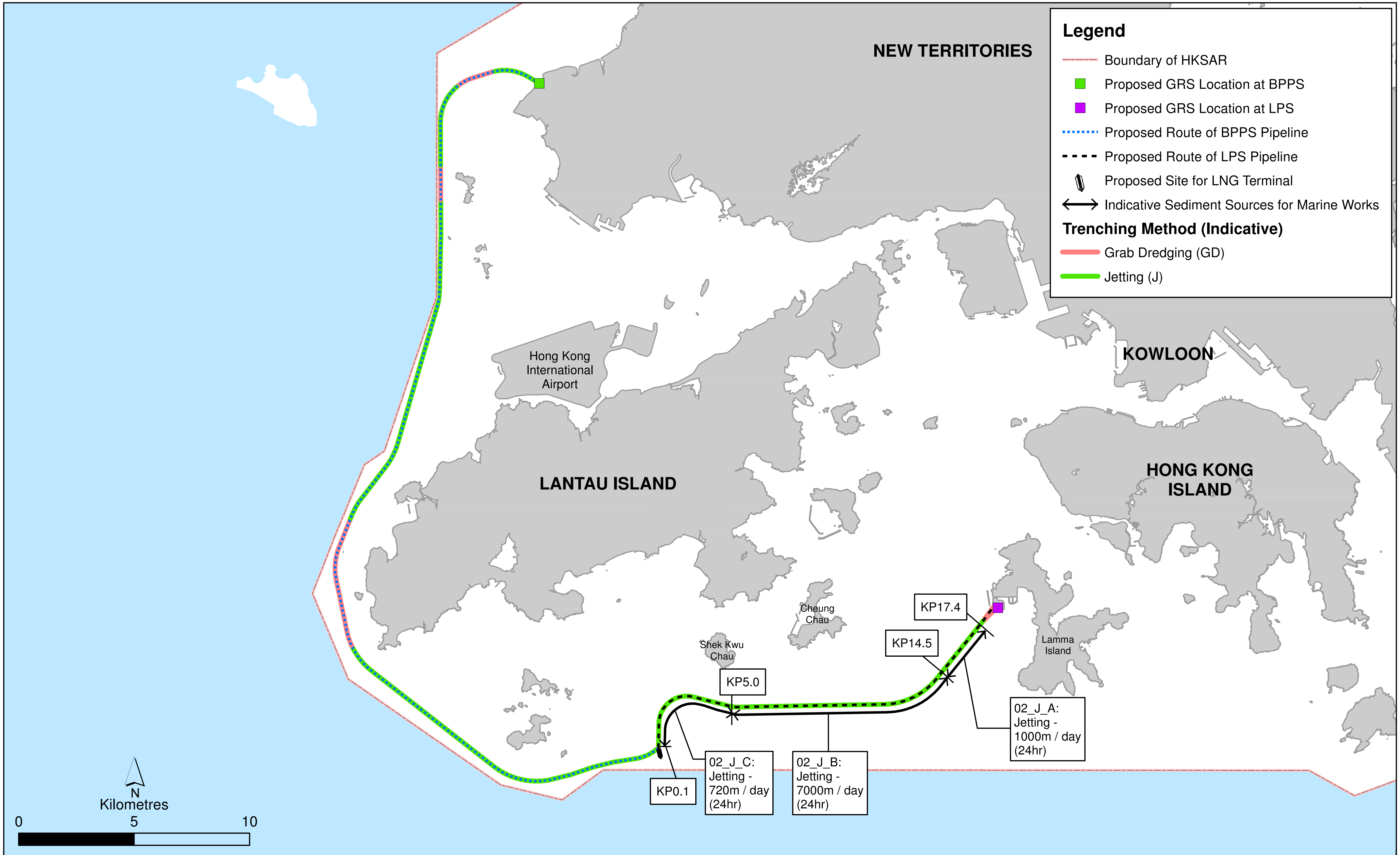

Figure 3.1h

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 6

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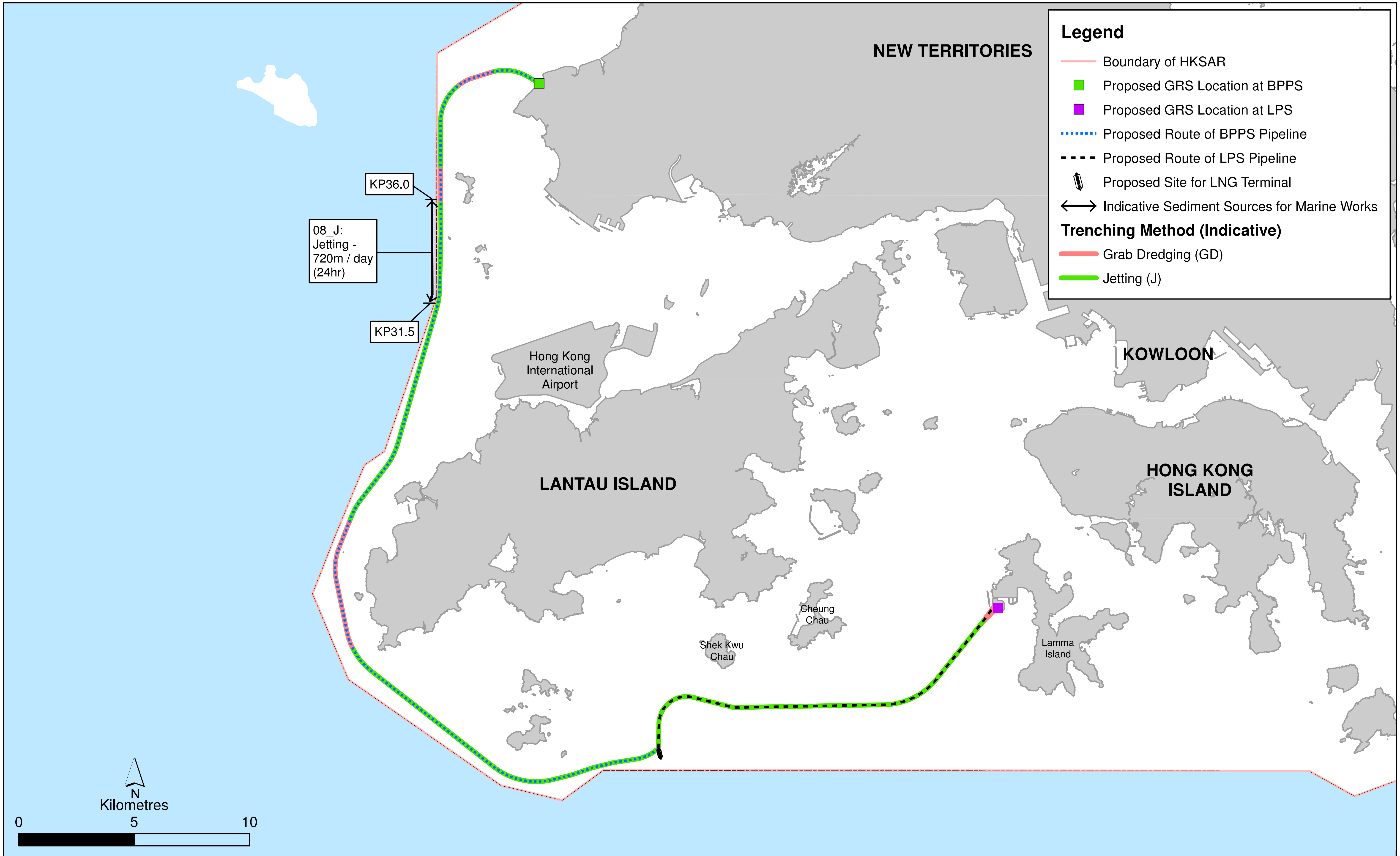

Figure 3.1i

Indicative Sediment Sources for Marine Works to be Modelled - Scenario 7

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3.4 *OVERVIEW OF WORKING PLANTS*

3.4.1 *Grab Dredger*

Grab dredgers may release sediment into suspension by the following mechanisms:

- Impact of the grab on the seabed as it is lowered;
- Washing of sediment off the outside of the grab as it is raised through the water column and when it is lowered again after being emptied;
- Leakage of water from the grab as it is hauled above the water surface;
- Spillage of sediment from over-full grabs;
- Loss from grabs which cannot be fully closed due to the presence of debris;
- Release by splashing when loading barges by careless, inaccurate methods; and
- Disturbance of the seabed as the closed grab is removed.

In the transport of dredged materials, sediment may be lost through leakage from barges. However, dumping permits in Hong Kong include requirements that barges used for the transport of dredging materials have bottom-doors that are properly maintained and have tight-fitting seals in order to prevent leakage. Given this requirement, sediment release during transport is not proposed for modelling and its impact on water quality will not be addressed under this EIA Study.

Sediment is also lost to the water column when discharging material at disposal sites. The amount that is lost depends on a number of factors including material characteristics, the speed and manner in which it is discharged from the vessel, and the characteristics of the disposal sites. It is considered that potential water quality issues associated with disposal at the intended government disposal site(s) have already been assessed by Civil Engineering and Development Department (CEDD) and permitted by EPD, hence and the environmental acceptability of such disposal operations is demonstrated. Therefore modelling of impacts at disposal sites does not need to be addressed and reference to relevant studies will be provided in the EIA for this Project where appropriate.

Loss rates have been taken from previously accepted EIAs in Hong Kong [1][2][3][4] and have been based on a review of worldwide data on loss rates from dredging operations undertaken as part of assessing the impacts of dredging areas of Kellett Bank for mooring buoys [5]. The assessment concluded that for 8 m^3 (minimum) grab dredgers working in areas with significant amounts of debris on the seabed (such as in the vicinity of existing mooring buoys) that the loss rates would be 25 kg/m^3 dredged, while the grab dredger bucket size in areas where debris is less likely to hinder operations would be 17 kg m^{-3}. In comparison, the Contaminated Spoil Management Study (Mott MacDonald, 1991, Table 6.12) reviewed relevant literature and concluded that losses from closed grab dredgers were estimated at 11 – 20 kg/m^3. For conservative reason, the value of 20 kg m^{-3} will be used for this Study. The same sediment loss rate was adopted in a number of approved EIAs, including EIA for Shatin to Central Link - Hung Hom to Admiralty Section (AEIAR-166/2012),

3.4.2 *Trailing Suction Hopper Dredger*

Trailing suction hopper dredger (TSHD) will be considered as one of the methods for dredging some sections of the subsea gas pipeline. The hopper dry density for a TSHD is typically 0.75 ton/m^3. TSHD could dredge at a faster rate than grab dredgers (typical maximum dredging rate up to 7,200 m^3 per trip depending on the vessel size).

Table 3.4 Cycle Time for a TSHD

Item		Details		
TSHD Works Site	**(a)**	Urmston Road	Southwest Lantau and Adamasta Channel	Adamasta Channel,
Disposal Site	(b)	East Sha Chau	East Sha Chau	South Cheung Chau
Distance from Disposal Site (km)	(c)	10 (average)	38 (average)	< 14 (average)
Sailing Speed (km hr^{-1})	(d)		28.34	
Off-site (Travel) Time (hr)	(e) = 2×(c) ÷(d)	0.71	2.68	0.99
On-site Dredging Time (hr)	(f)	0.75	0.75	0.75
On-site Idle Time (hr)	(g) = 2 hr - (f)	1.25	1.25	1.25
Total Cycle Time (hr)	(h) = (e) + (f) + (g)	2.71	4.68	2.99
Working hours per day (hr)	(i)	24	24	24
Number of Cycles per day	(j) = (i)÷(h)	9 (1)	6 (1)	8 (1)

Note: (1) Value rounded up to for conservative assessment

(1) ERM - Hong Kong, Ltd (2006) *EIA Study for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities.* For CAPCO. Register No.: AEIAR-106/2007, http://www.epd.gov.hk/eia/register/report/eiareport/eia_1252006/html/index.htm

(2) ERM (2005). *Detailed Site Selection Study for a Contaminated Mud Disposal Facility within the Airport East/East of Sha Chau Area. EIA and Final Site Selection Report*. For CEDD. Approved on 1 September 2005. Register No.: AEIAR-089/2005, http://www.epd.gov.hk/eia/register/report/eiareport/eia_1062005/index.htm

(3) ERM (2000). *Construction of an International Theme Park in Penny's Bay of North Lantau together with its Essential Associated Infrastructures – Final EIA Report*. For CEDD. Approved on 28 April 2000. Register No.: AEIAR-032/2000 http://www.epd.gov.hk/eia/register/report/eiareport/eia_0412000/index.html

(4) ERM - Hong Kong, Ltd (2010) EIA Study for Black Point Gas Supply Project. For CAPCO. Register No. AEIAR-150/2010, http://www.epd.gov.hk/eia/register/report/eiareport/eia_1782009/index.html

(5) ERM (1997). *EIA: Dredging an Area of Kellett Bank for Reprovisioning of Six Government Mooring Bays. Working Paper on Design Scenarios.* For CEDD.

Based on the results of the sediment sampling and testing exercise along BPPS Pipeline under this Study, some sediment at Adamasta Channel is uncontaminated and is suitable for disposal at South Cheung Chau disposal site. As shown in *Table 3.4*, disposal at South Cheung Chau disposal site would also result in higher number of dredging trips per day by TSHD than disposal at East Sha Chau disposal site. For conservative assessment in the modelling exercise, it is assumed TSHD dredging along southwest Lantau and Adamasta Channel would adopt eight cycles per day.

Sediment losses from TSHD of 4 kg/m^3 dredged would be adopted based on past EIAs, assuming no overflowing but that the Lean Mixture Overboard (LMOB) systems are in operation [(1)(2)]. LMOB is used at the beginning and end of the dredging cycle when the suction arm is being lowered and raised. At these times the majority of the material entering the hopper will be water with small amounts of fine sediments, which is discharged to the sea via the overflow system.

Overflowing refers to the discharge of fine sediment and water during bulk dredging and results in high losses of sediment to suspension. Overflowing is not usually permitted when dredging in marine mud and is usually only allowed during dredging of sand deposits, when overflowing is utilised to increase the density of the material in the hopper. It has also been assumed that only one THSD dredger will be operating at any time.

3.4.3 *Jetting Machine*

The pipeline burial depth is about 3 m to 6 m [(3)] and it is envisaged that it would typically require three passes of the jetting machine to reach the required burial depth. During operation, a pair of jetting nozzles would be inserted into the sediment layer underneath the pipeline. Water jet from the nozzles would fluidize sediment underneath the pipeline and the pipeline sinks under its own weight. For the first pass, the pipeline would rest on the surface of the seabed and the nozzles would be inserted relatively shallow. The nozzles would be inserted deeper in subsequent passes as the pipeline sinks deeper into the seabed to fluidize sediment underneath the pipeline. The consecutive passes may uplift the bottom sediments in a short period of time. However, this will be temporary and instantaneous disturbances to the seabed since the disturbed sediments are expected to settle on the seabed in a short period after the jetting machine has passed. The disturbed sediments will constitute a layer of fluid mud flowing across the seabed either side of the jetting machine and only a small portion of this sediment will enter the water column.

(1) Mott MacDonald (2016). EIA for Improvement Dredging for Lamma Power Station Navigation Channel. Register No.: EIA-251/2017

(2) Hyder (2003). EIA for Lamma Power Station Navigation Channel Improvement. Register No.: AEIAR-069/2003

(3) Actual depth is subject to detailed design and further site investigations.

3.5 *Construction Scenario – Grab Dredging, TSHD and Jetting along Pipelines*

3.5.1 *Grab Dredging*

Based on the preliminary engineering information provided, one or more dredgers would be working concurrently at different sections of the pipeline. Dredging rates may vary at different pipeline sections and the maximum daily rate of 8,000 m^3/day for 24 hr/day (i.e. 0.0926 m^3/s per dredger) would be adopted. The rate of release (in kg/s) of sediment for one dredger working at the above maximum rate is calculated as follows:

Loss Rate (kg/s)

= Dredging Rate (m^3/s) × Loss Rate (kg/m^3)

= 0.0926 m^3/s × 20 kg/m^3

= 1.8519 kg/s

Therefore, at the above maximum rate, a continuous release rate of **1.8519 kg/s** for one dredger will be adopted in the model for release throughout the whole water column. Sediment release rates for dredgers working at lower rates would be lower.

3.5.2 *TSHD*

Based on the preliminary engineering information provided, one TSHD sized 7,200 m^3 would be used and with each trip lasting for about 45 minutes. The filled TSHD will than head to the designated disposal ground to offload the sediment. Sediment losses from TSHD of 4 kg/m^3 dredged would be adopted based on past EIAs, assuming no overflowing but that the Lean Mixture Overboard (LMOB) systems are in operation [(1)]. The rate of release (in kg/s) of sediment for one TSHD is calculated as follows:

Loss Rate (kg/s)

= Volume per trip (m^3/trip) × Loss Rate (kg/m^3) ÷ Time Required per trip (hour/trip)

= 7200 m^3/trip × 4 kg/m^3 ÷ 0.75 hour/trip

= 10.6667 kg/s

During dredging the drag head will sink below the level of the surrounding seabed and the seabed sediments will be extracted from the base of the trench formed by the passage of the draghead. The main source of sediment release is the bulldozing effect of the draghead when it is immersed in the mud. This mechanism means that sediment is lost to suspension very close to the level of

(1) Mott MacDonald (2016). EIA for Improvement Dredging for Lamma Power Station Navigation Channel. Register No.: EIA-251/2017

the surrounding seabed and a height of 1 m has been adopted for the initial location of sediment release in the model, i.e. releasing at the bed layer about 10% of the water column.

3.5.3 *Jetting Machine*

Based on the preliminary engineering information provided, jetting will be conducted at various rates depending on the construction type as well as sediment condition (*Table 3.3*). It is assumed jetting would be conducted for 24 hours per day.

It is conservatively assumed that 20% of the disturbed sediment enters suspension and this would give a loss rate. The loss rate used here has been used in previous projects for subsea utility installations under the EIAO that have been installed using jetting methods. Of particular relevance, the same loss rate was adopted in the approved EIAs of Liquefied Natural Gas Receiving Terminal and Associated Facilities (AEIAR-106/2007), Black Point Gas Supply Project (AEIAR-150/2010) and Development of an Offshore Wind Farm in Hong Kong (AEIAR-152/2010), both involve jetting at locations close to the jetting alignment under this Project. In these approved EIAs, sediment dry density was assumed to be 700 and 600 kg/m^3 respectively. For this EIA Study, sediment dry density of 700 kg/m^3 would be adopted.

The following assumes jetting at a maximum rate of 1,500 m/day (24 hours work day) which fluidizes (1) the entire cross-section of the pipeline trench for worst case scenario for the BPPS Pipeline:

Loss Rate (kg/s)

= Jetting Rate (m/s) × Cross Section of Jetting Trench (m^3/m) × % Mud Entrained × Dry Mud Density (kg/m^3)

= 0.01736 m/s ×16 m^3/m × 20% × 700 kg/m^3

*= **38.8889kg/s***

For the LPS Pipeline, loss rate based on maximum jetting rate of 7,000 m/day (24 hours work day) for worst case scenario would be:

Loss Rate (kg/s)

= Jetting Rate (m/s) × Cross Section of Jetting Trench (m^3/m) × % Mud Entrained × Dry Mud Density (kg/m^3)

= 0.08102 m/s ×10.6667 m^3/m × 20% × 700 kg/m^3

(1) Based on the latest design information, cross-section of jetting trench for the 30 inch BPPS Pipeline ranges from 12 m^2 to 16 m^2, depending on trench depth requirement along the pipeline. The value of 16 m^2 is therefore considered to be the worst case scenario and would be adopted for the jetting modelling scenarios for BPPS Pipeline. Similarly, the cross-section of jetting trench for the 20 inch LPS Pipeline ranges from 8 m^2 to 10.6667 m^2. The value of 10.6667 m^2 is therefore taken for the worst case scenario calculation for LPS jetting modelling scenarios.

= ***120.9877kg/s***

Sediment release rates for jetting machine working at lower rates would be lower.

The sediment will be entered into the model within a series of grid cells to represent the jetting machine moving along the pipeline route. Thus each grid cell will represent a section of the pipeline route and sediment will be entered into that grid cell for the length of time it takes the jetting machine to pass the length of that cell, based on the jetting machine speeds given above. Once the jetting machine has passed that grid cell, sediment will then be entered in the next grid cell on the route. The sediment release in the bed layer (constitute 10 %) of the water column is assumed in the model. This assumption has been adopted in the approved EIAs of Liquefied Natural Gas Receiving Terminal and Associated Facilities (AEIAR-106/2007), Black Point Gas Supply Project (AEIAR-150/2010) and Development of an Offshore Wind Farm in Hong Kong (AEIAR-152/2010).

It should be noted that the assumptions in the model has been adopted in the previous approved EIAs (1)(2)(3) and was based on the best available information provided by the contractors when this document was prepared. Therefore the assumptions adopted in the model for the jetting are reasonable and practical.

For this modelling exercise, grab dredgers are modelled as stationary sediment sources, while jetting machines and TSHD are modelled as moving sediment sources. The moving speed of jetting machines (under "Typical Rate") is stated above. In the model, the jetting machine and TSHD (as a sediment source) would be staying in the same model grid cell for the period of time calculated by [(Length of pipeline section ÷ Forward speed of jetting machine/TSHD) ÷ Number of model grid cells along that pipeline section]. The calculated time would be round to the nearest multiples of 15 minutes to facilitate modelling input.

The TSHD dredging and jetting works would be assumed to be working along the pipeline direction until the sediment source completed the whole pipeline section which uses the same construction method. For jetting, a total of three passes would be modelled, and the sediment loss rate would remain to be the highest loss rate calculated based on the entire cross-section. When the jetting machine reaches the end of the pipeline section, the work is assumed to resume at the starting position and proceed to the next pass until the end of the third pass. For TSHD, the dredging works would resume in the next 45 min dredging cycle in the starting position after reaching the end of the pipeline section until the end of the 15-day spring-neap cycle.

(1) ERM - Hong Kong, Ltd (2006). EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities. Register No.: AEIAR-106/2007

(2) ERM - Hong Kong, Ltd (2010) EIA Study for Black Point Gas Supply Project. For CAPCO. Register No. AEIAR-150/2010, http://www.epd.gov.hk/eia/register/report/eiareport/eia_1782009/index.html

(3) BMT Asia Pacific Ltd (2009). EIA for Hong Kong Offshore Wind Farm in Southeastern Waters. For HK Offshore Wind Limited. Register No.: AEIAR-140/2009

3.6 *SEDIMENT INPUT PARAMETERS*

For simulating sediment impacts the following general parameters will be assumed:

- Settling velocity – 0.5 mm/s
- Critical shear stress for deposition – 0.2 N/m^2
- Critical shear stress for erosion – 0.3 N/m^2
- Minimum depth where deposition allowed – 0.1 m
- Resuspension rate – 30 g/m^2/d

The above parameters have been used to simulate the impacts from sediment plumes in Hong Kong associated with uncontaminated mud disposal into the Brothers MBA (1), dredging for the Permanent Aviation Fuel Facility at Sha Chau (2), dredging and jetting for the Development of an Offshore Wind Farm in Hong Kong (3) and the recently approved Additional Gas-fired Generation Units Project (4). The critical shear stress values for erosion and deposition were determined by laboratory testing of a large sample of marine mud from Hong Kong as part of the original Water Quality and Hydraulic Mathematical Model (WAHMO) studies associated with the new airport at Chek Lap Kok.

3.7 *CONSTRUCTION PHASE SEDIMENT DISPERSION MODELLING SCENARIOS*

In view of the large extent of marine waters covered by the Project, a number of scenarios are proposed to assess the water quality impacts associated with pipeline trenching works. A list of potential sediment sources are proposed based on the best available engineering information when this document was prepared and is presented in *Table 3.5*. The locations of sediment sources are shown in *Figure 3.1*.

Table 3.5 Summary of Modelling Sediment Sources

Sediment Source ID	Location (Kilometer Point)	Plant Used	Work Rate (m^3/day) (1)	Sediment Loss Rate (kg/s)
	From LPS to Double Berth Jetty			
01_G	Pipeline shore approach at LPS (KP17.4-18.2)	Grab Dredger	1,600	0.3704
02_J_A	West Lamma Channel (KP14.5-17.4)	Jetting Machine	1,000m/day	17.2840
02_J_B	South of Shek Kwu Chau to West Lamma Channel (KP5.0-14.5)	Jetting Machine	7,000m/day	120.9877
02_J_C	Double Berth Jetty to South of Shek Kwu Chau (KP0.1-5.0)	Jetting Machine	720m/day	12.4444
	Pipeline Riser Sections at Double Berth Jetty			

(1) Mouchel (2002a). *Environmental Assessment Study for Backfilling of Marine Borrow Pits at North of the Brothers. Environmental Assessment Report*.

(2) Mouchel (2002b). *Permanent Aviation Fuel Facility. EIA Report*. Environmental Permit EP-139/20

(3) BMT Asia Pacific Ltd (2009). EIA for Hong Kong Offshore Wind Farm in Southeastern Waters. For HK Offshore Wind Limited. Register No.: AEIAR-140/2009

(4) ERM (2016). Additional Gas-fired Generation Units Project. EIA Report. Environmental Permit EP-507/2016

Sediment Source ID	Location (Kilometer Point)	Plant Used	Work Rate (m³/day) (1)	Sediment Loss Rate (kg/s)
03_G	Pipeline Riser (KP0.0 – 0.1 for both pipelines)	Grab Dredger	8,000	1.8519
	From Double Berth Jetty to BPPS			
04_J_A	Jetty Approach (KP0.1 - 5.0)	Jetting Machine	1,000m/day	25.9259
04_J_B	South of Soko Islands (KP5.0 - 8.9)	Jetting Machine	1,000m/day	25.9259
04_J_C	Southwest of Soko Islands (KP8.9 - 12.1)	Jetting Machine	1,000m/day	25.9259
04_J_D	Adamasta Channel (KP12.1 - 15.6)	Jetting Machine	1,000m/day	25.9259
05_G	Southwest Lantau (KP15.6 - 21.3) – Location 1	Grab Dredger	8,000	1.8519
06_G	Southwest Lantau (KP15.6 - 21.3) – Location 2	Grab Dredger	8,000	1.8519
05_T	Southwest Lantau (KP15.6 - 21.3)	TSHD	57,600	10.6667
07_J	West of Tai O to West of HKIA (KP21.3 – 31.5)	Jetting Machine	1,500m/day	38.8889
08_J	Sha Chau to Lung Kwu Chau (KP31.5 - 36.0)	Jetting Machine	720m/day	18.6667
09_G	Sha Chau to Lung Kwu Chau (KP36.0 - 37.5)	Grab Dredger	8,000	1.8519
10_J	Lung Kwu Chau to Urmston Anchorage (KP37.5 - 41.1)	Jetting Machine	1,000m/day	25.9259
11_G	Urmston Road (KP41.1 – 42.9)	Grab Dredger	8,000	1.8519
11_T	Urmston Road (KP41.1 – 42.9)	TSHD	64,800	10.6667
12_J	West of BPPS (KP42.9 - 44.9)	Jetting Machine	1,000m/day	25.9259
13_G	Pipeline landing at BPPS (KP44.9 - 45.0)	Grab Dredger	1,500	0.3472

Note:
(1) For jetting, the values provided are m/day.

The modelling scenarios assume that grab dredging and TSHD dredging using one TSHD dredger (for alternative construction method) operations along all sections of both pipelines will be conducted concurrently, followed by jetting operations on each pipeline individually, i.e. jetting of different sections of the same pipeline will not be concurrent. This arrangement is in line with the construction sequence and implementation activities proposed for pipeline installation works. Based on this assumption, the modelling scenarios proposed for this EIA Study are summarised in *Table 3.6*.

Table 3.6 Proposed Construction Phase Modelling Scenarios

No.	Scenario	Detail	Concurrent Project
C01A	Concurrent Dredging with Grab Dredgers (Figure 3.1a)	Sediment sources under this Project include: 01_G, 03_G, 05_G, 06_G, 09_G, 11_G and 13_G Sediment source 01_G represents the grab dredging works at the shore approach of LPS. As discussed previously under *Section 3.1* an alternative construction approach for the pipeline landing would involve de-burial of an existing pipeline using mass flow excavator, extract the pipeline for surface tie-in and then re-buried in with jetting machine. Since the estimated sediment loss rates from the use of mass flow excavator is lower than that from jetting along LPS pipeline, the use of mass flow excavator for de-burial would not be modelled as the worst case scenario under this scenario as well as scenario C06. Please refer to further discuss for scenario C06 below.	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.

No.	Scenario	Detail	Concurrent Project
C01B	Concurrent Dredging with Grab Dredgers and TSHD (Alternative construction method) (Figure 3.1b)	Sediment sources under this Project include: 01_G, 03_G, 05_T, 09_G, and 13_G Similar to C01, some sediment sources for grab dredging (05_G and 06_G) are replaced by TSHD dredging at the same sections as alternative construction method. TSHD would also be adopted for dredging Section of sediment dredging at 11_G but would not be conducted concurrently thus is not included in this scenario.	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.
C01C	Concurrent Dredging with Grab Dredgers and TSHD (Alternative construction method) (Figure 3.1c)	Sediment sources under this Project include: 01_G, 03_G, 09_G, 11_T and 13_G Similar to C01, one sediment source for grab dredging (11_G) are replaced by TSHD dredging at the same sections as alternative construction method. TSHD would also be adopted for dredging Section of sediment dredging at 05_G and 06_G but would not be conducted concurrently thus is not included in this scenario.	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.
C02	Jetting – Worst Case near BPPS (Figure 3.1d)	Sediment sources under this Project include: 12_J Sediment source represents jetting at 12_J would start from BPPS. Upon reaching the end of the pipeline section under 12_J, the sediment source would then proceed again from the starting position. A total of 3 passes would be modelled, and the sediment loss rate would remain to be the highest loss rate calculated based on the entire cross-section.	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.
C03	Jetting – Worst Case west of Urmston Road(Figure 3.1e)	Sediment sources under this Project include: 10_J Sediment source represents jetting at 10_J would start from KP41.1. Upon reaching the end of the pipeline section under 10_J, the sediment source would then proceed again from the starting position. A total of 3 passes would be modelled, and the sediment loss rate would remain to be the highest loss rate calculated based on the entire cross-section.	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.
C04	Jetting – Worst Case west of HKIA (Figure 3.1f)	Sediment sources under this Project include: 07_J Sediment source represents jetting at 07_J would start from KP31.5 and proceed to the south. Upon reaching the end of the pipeline section under 07_J, the jetting at this section would then proceed again from the starting position. A total of 3 passes would be modelled, and the sediment loss rate would	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the

No.	Scenario	Detail	Concurrent Project
		remain to be the highest loss rate calculated based on the entire cross-section.	navigation channel west to the Lamma Island.
C05	Jetting – Worst Case of South Lantau (Figure 3.1g)	Sediment sources under this Project include: 04_J_A, 04_J_B, 04_J_C and 04_J_D Sediment source represents jetting at 04_J_D would start from KP15.6. Upon reaching the end of the corresponding pipeline section (KP12.1), the jetting at this section would then proceed again from the starting position. After the completion of Section under 04_J_D, sediment source for 04_J_C would proceed from KP12.1 toward KP8.9 at the prescribed forward speed. Upon reaching end of the corresponding pipeline section (KP8.9), the sediment source would then proceed again at KP12.1. The jetting would then proceed to 04_J_B section and 04_J_A section in a similar manner. A total of 3 passes would be modelled, and the sediment loss rate would remain to be the highest loss rate calculated based on the entire cross-section.	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.
C06	Jetting – Worst Case of West Lamma (Figure 3.1h)	Sediment sources under this Project include: 02_J_A, 02_J_B, 02_J_C Sediment source represents jetting at 02_J_A would start from LPS and proceed to the west. Upon reaching the end of the corresponding pipeline section (KP14.5), the jetting at this section would then proceed again from the starting position. After the completion of Section under 02_J_A, sediment source for 02_J_B would proceed from KP14.5 toward KP5.0 at the prescribed forward speed. The jetting would then proceed to 02_J_C section in a similar manner. A total of 3 passes would be modelled, and the sediment loss rates would remain to be the highest loss rate calculated based on the entire cross-section for each section. As discussed in previous sections, sediment loss from the re-burial of the existing pipeline at the LPS shore approach by jetting after surface tie-in would be significantly higher than that from the de-burial using mass flow excavator. As such, the re-burial of the existing pipeline at the LPS shore approach by jetting machine would be modelled as the worst case scenario for the pipeline installation for the LPS.	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.
C07	Jetting – Worst Case of West of Sha Chau and Lung Kwu Chau (Figure 3.1i)	Sediment sources under this Project include: 08_J Sediment source represents jetting at 08_J would start from BPPS KP36.0 and proceed to	Sediment sources from concurrent projects include: deep cement mixing (DCM) activities and TSHD filling from 3RS-HKIA; sediment disposal activities at the contaminated mud

No.	Scenario	Detail	Concurrent Project
		the south. Upon reaching the end of the corresponding pipeline section (KP31.5), the jetting at this section would then proceed again from the starting position. A total of 3 passes would be modelled, and the sediment loss rate would remain to be the highest loss rate calculated based on the entire cross-section.	marine disposal facility at East Sha Chau; sediment disposal activities at the marine mud disposal facilities at South Cheung Chau dredging at the navigation channel west to the Lamma Island.

It should be noted that there is no separate modelling scenario for the de-burial and subsequent re-burial of about 100 m of existing pipeline section east of LPS KP17.4. The sediment release from this case is considered covered under other scenarios as detailed below:

- For the de-burial and re-burial of about 100 m of existing pipeline end section east of LPS KP17.4, the relevant work area for the use of mass flow excavator would be in the immediate vicinity of jetting source 02_J_A. The grid resolution allows the sediment source for jetting 02_J_A to cover an additional ~100 m beyond LPS17.4 (for conservative reason), which is the area for the use of mass flow excavator. Since the sediment loss from mass flow excavator is expected to be below that of sediment loss 02_J_A and the de-burial and re-burial will not be conducted at the same time as the jetting at 02_J_A, the worst case water quality impact from the use of mass flow excavator is considered covered under construction scenario C06. For the same reason, the subsequent re-burial of pipeline after tie-in by jetting is considered covered given the forward speed for that section does not exceed the forward speed by 02_J_A (i.e. 1,000 m/day).

3.8 *HYDROTEST DISCHARGE*

Hydrotest would be required for checking the integrity of the pipelines laid from BPPS and LPS to the OLNG Terminal (1). At the time of preparing this *Method Statement*, information provided by CLP and HKE suggested that that seawater added with corrosion inhibitor compound such as WFT9371 from Weatherford (or equivalent, subject to final engineering design), would be used for hydrotesting. Discharge concentration of ≤ 10 mg/L is expected. Although the discharge location for hydrotest water has not been confirmed, it is expected to be within the Jetty to ensure good dispersion and far away from the shoreline where more WSRs are located.

WFT9371 is a cocktail product that consists of active ingredient of 1.32% α-2095 which is the only constituent of potential ecotoxicological concern. Other constituents are water and other "PLONOR" (i.e. Pose Little Or NO Risk) substances. Material safety data sheet of WFT9371 is provided in *Appendix D*.

(1) LNG tanks of the FSRU vessel will be hydrotested for integrity. This will be carried out outside Hong Kong and hence outside of the scope of this *Method Statement*.

At discharge concentration of ≤ 10 mg/L of WFT9371, the corresponding concentration of α-2095 would be only ≤ 0.132 mg/L. Review of results of toxicity tests indicates:

- The highest concentration of α-2095 producing no mortalities of marine copepod *Acartia tonsa* is 2 mg/L. (1)

- The highest concentration of α-2095 producing no mortalities of Juvenile Turbot *Scophthalmus maximus* is 0.316 mg/L. (2)

- The lowest concentration of α-2095 producing complete inhibition of marine alga *Skeletonema costatum* is 0.178 mg/L. (3)

Therefore, the concentration of α-2095 at discharge would be below the toxicity levels determined by toxicity studies. The discharge of hydrotest water is unlikely to result in notable ecotoxicity in the receiving waters at end-of-pipe. No unacceptable water quality impact from the discharge of hydrotest water would be expected and no quantitative assessment would be required.

(1) The Acute Toxicity of ALPHA 2095 AKA WFT-9346C to the Marine Invertebrate *Acartia tonsa*. November 2004

(2) The Acute Toxicity of ALPHA 2095 AKA WFT-9346C to the Juvenile Turbot *Scophthalmus maximus*. November 2004

(3) The Acute Toxicity of ALPHA 2095 AKA WFT-9346C to the Marine Alga *Skeletonema costatum*. November 2004

4 OPERATION PHASE

4.1 OUTLINE OF MARINE OPERATIONAL ACTIVITIES

Based on the engineering information available when this document was prepared, major sources of impact in operation phase include the discharge of cooled water from the regasification units. Sewage effluent generated onboard (maximum 14.4 m^3/day, equivalent to 0.1667 L/s) would be treated by a sewage treatment unit onboard and be discharged overboard together with concentrated seawater from the freshwater generator (for the provision of potable water for staff onsite). Minor wastewater discharges including seawater/rain deck drains (1), engine cooling water, other waste waters such as wastewater / chemical waste/bilge water generated from the OLNG terminal operation will be stored in storage tank(s) on board and discharged into a barge for handling ashore by licensed contractor(s). The installation of the proposed OLNG facilities would not result in notable change in the seabed level therefore notable change in flow regime would not be expected and hence not modelled.

The discharge of cooled water from the regasification units would affect the nearby marine waters. Based on the latest design information, the maximum FSRU intake / discharge rate of the regasification unit is 20,000 m^3/hr (5.5556 m^3/s). Computational modelling using Delft3D FLOW (assisted by CORMIX for taking into account the near field effect if necessary) is proposed to be conducted to simulate the potential change in ambient water temperature due to the operation of the OLNG terminal. Electrochlorination of seawater would be conducted to control biofouling of the regasification. Maximum residual chlorine level is 0.5 mg/L for cooled water discharge of the proposed FSRU is expected. The dispersion and decay of residual chlorine would be simulated using Delft3D WAQ as a decayable tracer. A past HK study by the City University of Hong Kong (2) suggested that ecotoxicity may arise at marine ecological WSRs for residual chlorine level above 0.02 mg/L. This would be adopted as the assessment criterion for marine ecological WSRs under this EIA.

For the freshwater generator, the seawater intake rate and freshwater production rate are approximately 3,360 m^3/day and 60 m^3/day respectively. The freshwater generator would employ vacuum distillation for freshwater production. No addition of chemical additive would be required for the normal operation of the freshwater generator. Salinity elevation estimated based on mass balance method (3) indicates salinity elevation would only be below 2%, which is below the corresponding WQO criteria of 10%, therefore no unacceptable change in salinity due to freshwater generation is expected. Low

(1) Detailed design of the FSRU vessel is not currently available. It is expected containment bunds and appropriate drainage system would be provided where necessary (e.g. where lube oil or other chemicals would be used or stored) to collect seawater/rain deck drains.

(2) Tender Ref. WP 98-567 Provision of Service for Ecotoxicity Testing of Marine Antifoulant – Chlorine in Hong Kong Final Report January 2000. Submitted to Environmental Protection Department by the Centre for Coastal Pollution and Conservation, City University of Hong Kong.

(3) Based on mass balance, salinity change = 3,360 m^3/day ÷ (3,360 m^3/day - 60 m^3/day) – 100% = 1.818%

level of waste heat from the vacuum distillation process would be discharged into the sea through the concentrated seawater. However, given there is a much higher cooled discharge from the regasification unit, the thermal impact from the concentrated seawater (3,300 m^3/day = 0.0382 m^3/s, which is below 0.7% of the cooled water discharge) is expected to be eliminated soon after discharge. It is expected that there would not be any unacceptable water quality impact associated with increase in salinity (i.e. compliant with WQO) and increase in water temperature (i.e. major cooled water discharge nearby) due to the discharge of concentrated seawater. Quantitative assessment is therefore not deemed necessary.

There are other potential waste streams from the operation of the OLNG terminal, which include seawater/rain deck drains, engine cooling water, treated sewage/ wastewater / chemical waste/bilge water generated from the OLNG terminal operation. These waste streams would be collected for treatment and disposal at appropriate facilities on land and hence may not be discharged into the sea.

Fuel spillage from the OLNG terminal is not considered a major water quality issue because LNG handled in the FSRU and LNGC vaporizes at ambient temperature. Boiling point of the main component in LNG, methane, boils at −161.6°C at 1 atmospheric pressure. In any case of LNG spillage, there will not be any significant remnant in the receiving waters from the LNG, therefore quantitative modelling for LNG spillage is not considered necessary. Following the approach of the approved *EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities* (1), assessment for fuel spillage of LNG carrier (due to vessel collision) would be modelled to facilitate the development of an emergency contingency plan.

Maintenance dredging may be required for the OLNG terminal and modelling will be conducted to predict the potential impact on water quality from maintenance dredging. For the maintenance of gas pipelines if required during operation, dredging is not required.

4.2 *ASSESSMENT CRITERIA FOR OPERATION PHASE*

As discussed in the previous section, cooled water discharge would be required at the FSRU. The dispersion of these discharges would be assessed quantitatively using Delft3D model following the corresponding WQO criteria.

As discussed in the previous section, the potential change in salinity due to the discharge of concentrated seawater from the freshwater generator would comply with the corresponding WQO criteria at discharge and no quantitative assessment would be required. Also, the waste heat from the freshwater generator would not be taken into account in the operation phase cooled water

(1) ERM - Hong Kong, Ltd (2006). EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities. Register No.: AEIAR-106/2007

discharge modelling for worst case assessment of impact for cooled water discharge.

Table 4.1 *Summary of Assessment WQO Criteria for Operation Phase*

Parameters (1)	Southern WCZ	Second South Supplementary WCZ	North Western WCZ	North Western Supplementary WCZ	Deep Bay (Outer Subzone) WCZ
Temperature	Not to change the natural ambient level by 2°C				
Salinity	Not to change the natural ambient level by 10%				
Total Inorganic Nitrogen (mg/L)	< 0.1	< 0.1	< 0.5	< 0.5	<0.5

As discussed in the previous section, assessment criterion of 0.02 mg/L would be adopted for total residual chlorine (TRC) for marine ecological WSRs under this Study. Other WSRs, such as cooling water intakes and bathing beaches are not sensitive to TRC and this criterion would not be applicable to these non-ecological WSRs.

For operation phase maintenance dredging and discharge of treated sewage effluent, the same assessment criteria for construction phase assessment apply.

4.3 OPERATION PHASE THERMAL DISCHARGE

The characteristics of cooled discharge from the OLNG terminal are summarized in *Table 4.2*. The design for the discharge of concentrated seawater is not available at the time of preparing this document and will be provided in the EIA.

Table 4.2 *Characteristics of Cooled Discharge from the Proposed FSRU*

Effluent Characteristic	Cooled Seawater Discharge
Maximum Flow (m^3/hr)	20,000
Maximum Discharge Temperature Differential (°C)	- 9
Maximum Salinity (PSU)	Not changed
Maximum total residual chlorine (mg/L)	0.5

Based on the latest design information, the proposed discharge outfalls would be on the port (i.e. left) side of the FSRU, 9-10 m below surface with the outfall opens sideway to the FSRU.

4.4 OPERATION PHASE MAINTENANCE DREDGING

Maintenance dredging at the OLNG terminal site may be required once every 5 years (subjected to site condition) to maintain sufficient clearance for safe navigation of the LNG carriers. Details for maintenance dredging, including extent, volume and working rate are not currently available. Worst case assumptions for the purpose of EIA assessment would be made for the modelling exercise. These assumptions include:

- Sediment source selected to the closest to the nearby WSRs within the potential dredging area (i.e. at the western berth);
- Daily work rate (5,500 m^3/day, 24-hour workday) assumed.

The same modelling tool (Delft3D WAQ) and model settings described for the construction phase dredging modelling would be adopted for the operation phase maintenance dredging modelling.

4.5 *OPERATION PHASE DISCHARGE OF TREATED SEWAGE EFFLUENT*

As discussed in *Section 4.1*, discharge of treated effluent from the sewage treatment unit onboard may occur. The sewage treatment unit would only handle domestic sewage generated by the crew members stationed at the FSRU vessel therefore the discharge rate would be low (maximum 14.4 m^3/day, equivalent to 0.1667 L/s). In view of the small discharge rate and the open sea nature of the Project Area, an assessment of the initial dilution using CORMIX is deemed sufficient. The characteristics of the discharge are listed below in *Table 4.3*.

Table 4.3 Characteristics of Sewage Effluent Discharge

<table>
<tr><th>Item</th><th>Value</th></tr>
<tr><td>Discharge Location and Depth</td><td>Water surface at the jetty (1)</td></tr>
<tr><td>Discharge Rate</td><td>0.1667 L/s</td></tr>
<tr><td>Effluent Quality</td><td>Discharge quality would comply with the Standards for effluents discharged into the marine waters of Southern Water Control Zones under WPCO:
<table>
<tr><td>Determinand</td><td>Concentration (mg/L unless otherwise stated)</td></tr>
<tr><td>SS</td><td>500</td></tr>
<tr><td>BOD</td><td>500</td></tr>
<tr><td>TRC</td><td>1</td></tr>
<tr><td>Total nitrogen</td><td>100</td></tr>
<tr><td>E. coli</td><td>4,000 count/100ml</td></tr>
</table></td></tr>
</table>

Note: (1) The proposed surface discharge arrangement is deemed the worst case scenario because of the lack of buoyancy-driven initial mixing.

4.6 *OPERATION PHASE LNG CARRIER FUEL SPILL MODELLING*

As discussed previously, modelling for fuel spillage of LNG carrier due to collision would be conducted to facilitate the development of an emergency contingency plan. A similar exercise was conducted for carrier fuel spillage of similar nature for similar facilities in the vicinity under the approved *EIA for*

Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities [1]. For this Study, similar modelling exercise would be conducted for the potential LNG carrier fuel spillage based on the updated information regarding Project siting and meteorology data.

4.6.1 Location

It is expected that LNG carriers would approach to the OLNG terminal from the south and any potential vessel collision within HK waters can only happen south of the OLNG terminal area. For conservative assessment, the spillage location is assumed to be right at the southern boundary of the OLNG site area (HK1980 Easting: 814385; Northing 801383). Release at surface would be assumed.

4.6.2 Fuel Type

Based on the information, it is assumed that the fuel is Heavy Fuel Oil (HFO; also known as Number 6 fuel oil).

4.6.3 Volume Spilled and Discharge Rate

Conservative scenario would be modelled for spillage from the single HFO storage tank from the LNGC of tank capacity about 3,500 to 6,700 m^3. The inventory released is assumed to equate to 60% of the maximum tank contents (i.e. 4,020 m^3). Release rate for large spill collision event for LNGC of 8,060 kg/s would be adopted and the corresponding discharge duration would be about 8 min. [2]

4.6.4 Model Selection

The fuel spillage would be simulated using particle tracking model (oil module of Delft3D-PART) to assess the movement of the oil spill. The Delft3D Western Harbour Model (WHM), which was adopted for the same oil spill modelling exercise for the approved *EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities* would be adopted for the fuel spillage modelling. The WHM has been calibrated and approved for used in similar previous exercise and is considered appropriate for the purpose of this Study.

4.6.5 Key Modelling Assumptions

The same modelling assumptions under similar modelling exercise for the approved *EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities* would be adopted under this fuel spillage modelling study, including:

- Fuel spill is modelled as surface particles;

(1) ERM - Hong Kong, Ltd (2006). EIA for Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities. Register No.: AEIAR-106/2007

(2) Specific gravity of heavy fuel oil is 0.97. Release duration = 4,020 m^3 ÷ 0.97 kg/L ÷ 8060 kg/s = 514 s = 8.57 min.

- Fay and Hoult equation [(1)] would be adopted for the calculation of initial radius of the oil patch after gravitational spreading;
- No evaporation rate and emulsification is assumed in the model; and
- Wind data at Cheung Chau would be adopted for modelling.

4.6.6 Scenarios

The PART model would be simulated for the dry and wet seasons in high water and low water in spring tide to capture the maximum movement extent covered for worst case assessment of clean-up / containment effort. The simulations were run for periods of 5 days to capture the transport route of the oil spill in the first 24 hours to facilitate the development of an emergency contingency plan.

4.7 MODELLING SCENARIOS FOR OPERATION PHASE

For the study of operational effects, the approach requires several steps:

1) Running Delft3D FLOW model without any cooled water discharge (i.e. baseline) to provide ambient condition water temperature.
2) Running CORMIX to characterize the near field dispersion, particularly the vertical profile of the effluent plume of cooled water discharge based on predicted flow conditions from the Delft3D-FLOW baseline scenario.
3) Running Delft3D FLOW model with cooled water discharge from the proposed OLNG terminal discharge condition covering a spring-neap cycle. The predicted vertical profile of the effluent plume by CORMIX will be taken into account.
4) Running Delft3D WAQ model to simulate the dispersion and decay of TRC explicitly. In the modelling process, it is assumed that TRC will be modelled as decayable tracer with decay value T90 = 8289s, which were adopted in approved EIAs of Additional Gas-fired Generation Unit Project, HATS 2A and Express Rail Link. This T90 factor is the most conservative value and upon our review of relevant past EIA studies.
5) Running Delft3D FLOW and PART models for the fuel spill modelling.
6) Running CORMIX to characterize the near field dispersion, number of dilution achieved, plume height and thickness based on predicted flow conditions from the Delft3D-FLOW project scenario.

(1) Fay, J. and D. Hoult, 1971. Physical processes in the spread of oil on a water surface, Report DOT-CG-01 381-A, U.S. Coast Guard, Washington, D.C.

5 *CUMULATIVE IMPACTS*

According to publicly available sources, a list of identified projects in the vicinity of the Project is summarized below in *Table 5.1*. These projects are described in more detail in the following sections [1].

Table 5.1 Nearby Projects Identified

Project	**Duration**	**Location**	**Major Marine Activity**
Engineering Feasibility Study for Industrial Estate at Tuen Mun Area 38 (EPD Study Brief ESB-277/2014)	Construction: 2019 to 2023	Tuen Mun Area 38 (6 km away from pipeline alignment)	(1) Construction of subsea outfall (2) Treated sewage effluent discharge from new sewage treatment works
West New Territories (WENT) Landfill Extensions (Register No.: AEIAR-147/2009)	Uncertain	West New Territories (WENT) Landfill (2 km away from pipeline alignment)	nil
Expansion of Hong Kong International Airport into a Three-Runway System (Register No.: AEIAR-185/2014)	Construction: 2016 to 2023	HKIA and the marine waters north to the HKIA (960 m away from pipeline alignment)	(1) Marine ground treatment, seawall construction, reclamation for the proposed third runway (2) Dredging for approach beacons and subsea cable field joint excavation (3) Cooling water intake and thermal discharge
Pyrolysis Plant at EcoPark (EPD Study Brief ESB-259/2013)	Construction:2015	EcoPark of Tuen Mun (6 km away from pipeline alignment)	Nil
Potential Reclamation Site at Lung Kwu Tan	Uncertain	Lung Kwu Tan (1.5 km away from pipeline alignment)	Reclamation
Enhanced Ash Utilisation and Water Management Facilities at Castle Peak Power Station (CPPS) (EP-441/2012)	Construction: 2016 to 2019	Castle Peak Power Station (4 km away from pipeline alignment)	Nil

(1) Certain projects in the vicinity of this Project, such as TM-CLKL, HKBCF and HKLR involved significant reclamation works which are substantially completed when this document was prepared. These are considered in the existing coastline and therefore not included in the list.

Project	Duration	Location	Major Marine Activity
Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun (Register No.: AEIAR-186/2015)	Decommission: September 2015 to March 2016	Tsang Tsui Ash Lagoon (1 km away from pipeline alignment)	Nil
Sludge Treatment Facilities (STF) (Register No. AEIAR-129/2009)	Existing operation	Tsang Tsui (1.6 km away from pipeline alignment)	Nil
Permanent Aviation Fuel Facility (PAFF) for Hong Kong International Airport (Register No.: AEIAR-107/2007)	Existing operation	Castle Peak, Tuen Mun (4.5 km away from pipeline alignment)	Nil
Black Point Power Station (BPPS) and the Additional Gas-Fired Generation Units	Existing operation	At the immediate vicinity	Cooling water discharge
Castle Peak Power Station (CPPS)	Existing operation	Castle Peak, Tuen Mun (4 km away from)	Cooling water discharge
Lamma Power Station (LPS)	Existing operation	At the immediate vicinity	Cooling water discharge
Green Island Cement Plant	Existing operation	Castle Peak, Tuen Mun (4 km away from pipeline alignment)	Nil
Shiu Wing Steel Mill	Existing operation	Castle Peak, Tuen Mun (4 km away from pipeline alignment)	Nil
Outlying Islands Sewerage Stage 2 - South Lantau Sewerage Works	Planned operation	South of Lantau Island (>6 km away from pipeline alignment)	(1) Minor marine construction for subsea outfall (2) Discharge of treated effluent at outfall
Outlying Islands Sewerage Stage 2 - Upgrading of Tai O Sewage Collection, Treatment and Disposal Facilities	Planned operation	Tai O (1 km away from pipeline alignment)	(1) Minor marine construction for subsea outfall (2) Discharge of treated effluent at outfall
Outlying Island Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Collection, Treatment and Disposal Facilities	Planned operation	Cheung Chau (4.5 km away from pipeline alignment)	Discharge of treated effluent at outfall

Project	Duration	Location	Major Marine Activity
Development of a 100MW Offshore Wind Farm in Hong Kong	Uncertain	South West Lamma	Construction and Operation of offshore wind farm and associated facilities, including cable leading to the Lamma Power Station
Integrated Waste Management Facilities at Shek Kwu Chau	Uncertain	South West Shek Kwu Chau (1 km away)	(1) Reclamation of about 11.8 hectares with cellular cofferdam, as well as minor marine works including cable installation with jetting and installation of anti-scouring layer at the toe of artificial seawall. (2) Discharge of concentrated saline from desalination plant
Integrated Waste Management Facilities at Tsang Tsui	Uncertain	Tsang Tsui (600 m away)	Discharge of concentrated saline from desalination plant
Tung Chung New Town Extension	2017-2030	Tung Chung Northeast	Reclamation including seawall construction by non-dredged method and marine filling.
New Contaminated Mud Marine Disposal Facility at Airport East / East Sha Chau Area	Existing operation	East Sha Chau Area	Dredging, backfill and disposal of sediment at disposal facilities
Improvement Dredging for Lamma Power Station Navigation Channel	2nd quarter of 2019 to the 3rd quarter of 2020	West Lamma	Dredging
Planning and Engineering Study on Future Land Use at Ex-Lamma Quarry Area at Sok Kwu Wan, Lamma Island - Feasibility Study	Planned to commence in 2019 for completion in 2024	Sok Kwu Wan, Lamma Island	No major marine construction. Minor construction works including a public pier, a refuse transfer station, fireboat pier, a submarine outfall from sewage treatment works and modification works to existing seawall

Project	Duration	Location	Major Marine Activity
Providing Sufficient Water Depth for Kwai Tsing Container Basin and its Approach Channel	Capital dredging planned completion in 2017	Kwai Tsing Container Basin, the northern and western fairways	Capital and maintenance marine dredging
Open Sea Disposal Area for Uncontaminated Sediment at South Cheung Chau	Existing operation	South of Cheung Chau	Disposal of sediment at disposal facilities
Tonggu Channel Maintenance Dredging	Not more than 12 weeks each year	Tonggu Channel	Maintenance dredging using TSHD
Landfill Gas Power Generation Project at the West New Territories (WENT) Landfill	Construction in Q2 2017 Operation in Q3 2018	West New Territories Landfill	None
Planning and Engineering Study for Tuen Mun Areas 40 and 46 and the Adjoining Areas	Uncertain	Tuen Mun Areas 40 and 46	None
Southwest Lantau Marine Park (SWLMP) and South Lantau Marine Park (SLMP)	Mid 2018 (SWLMP) Mid 2019 (SLMP)	Marine waters around South West Lantau and Soko Island	None
Potential Spa and Resort Development at Soko Islands	Uncertain	Soko Island	Uncertain
Potential Reclamation Sites at Siu Ho Wan and Sunny Bay, and Artificial Islands Southeast of Lantau Island	Uncertain	Siu Ho Wan, Sunny Bay, artificial islands potentially in the central waters southeast of Lantau Island	Uncertain

5.1 *ENGINEERING FEASIBILITY STUDY FOR INDUSTRIAL ESTATE AT TUEN MUN AREA 38 (EPD STUDY BRIEF ESB-277/2014)*

The proposed development of the industrial estate at Tuen Mun Area 38 includes the development of an industrial estate with temporary loading and storage of petrochemical feedstock site and other road modification works in Tuen Mun Area 38 and is currently under EIA stage. This potential concurrent project is about 5 km away from the BPPS, and its construction period is tentatively scheduled from 2019 to 2023.

Letter was issued to the corresponding project proponent (the Hong Kong Science and Technology Parks Corporation) under AEIAR-197/2016 to confirm the need of construction of marine sewage outfall (as stated in the Project

Profile), the construction period and other details. The project proponent replied there is no further update in design and project programme available. Further clarification with the project proponent would be conducted to obtain any further update of the project. The potential cumulative impact from this project would be taken into account appropriately in the EIA assessment based on the information received.

5.2 *WEST NEW TERRITORIES (WENT) LANDFILL EXTENSIONS (REGISTER NO.: AEIAR-147/2009)*

This WENT landfill extension is at least 60m away (at the nearest site boundary) from the BPPS, and is likely to commence in the near future, but the programme remains uncertain. Based on the approved EIA, there will not be any direct discharge of sewage or landfill leachate from the expanded operation. All additional landfill leachate would be collected and treated in local sewage treatment plants. Treated effluent would be diverted to the North Western New Territory Sewage Outfall at the Urmston Road. No thermal discharge or discharge of chlorine or biocide would be involved. No cumulative water quality impact is expected.

5.3 *EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM (REGISTER NO.: AEIAR- 185/2014)*

The proposed 3RS-HKIA is about 960 m away from the pipeline alignment, and its construction has been commenced in Aug 2016. Major marine construction works include (1) marine ground treatment such as deep cement mixing and sand compaction pile at contaminated mud pits, (2) construction of seawall at the perimeter of the proposed land formation, (3) filling for reclamation; (4) dredging for installation of approach beacons and (5) dredging for subsea cable field joint installation. Based on the latest available construction programme on its dedicated webpage (1), the reclamation work under this project would be completed by 2021 with substantial completion of seawall by Q3 of 2018. By Q3 of 2018, the seawall for the reclamation of the 3RS would be mostly completed with two small openings at the southern and eastern end close to the HKIA. The opening on the eastern side of the 3RS reclamation will be closed by Q1 of 2019. Throughout 2019, ground treatment would be conducted at area near the south opening, followed by seawall construction along the reclamation perimeter and then marine filling of reclamation behind advance seawall. The potential water quality impact from the HKIA-3RS construction would be taken into account in the cumulative assessment. Detailed considerations are presented in the following sections. To account for the potential change in flow regime due to the presence of reclamation for 3RS-

(1) Updated Detailed Phasing Plan for Land Formation Works for Expansion of Hong Kong International Airport into a Three-Runway System (Oct 2016), Available at: http://env.threerunwaysystem.com/ep%20submissions/201610%20Construction%20Works%20Schedule%20and%20Location%20Plan/CWSLP_2nd%20Sub_rev%20E%20(full)_files/Attachment%20V.pdf

HKIA, the reclamation would be taken into account in both construction phase and operation phase modelling exercise under this Study.

Based on the latest available construction programme, ground treatment by deep cement mixing (DCM) will be conducted at work area G1 to G4 close to the opening while marine filling will be conducted at the north eastern end of G1 and progress outward behind the advance seawall. The works involved and coastline configuration (with some incomplete seawall and reclamation) would be similar to the case of 2020 Q4 to 2021 Q2 as depicted in Appendix 8.4 of the approved EIA, which would be the after the worst case scenario B modelled under the EIA. When compared with the worst case scenario B modelled under the EIA, the latest 2019 construction programme indicated substantial completion of seawall and most of the reclamation behind. The only potential remaining sediment source would be those in area G1 to G4. The corresponding sediment sources within area G1 to G2 assumed under worst case scenario B include 8 DCM barges working at 60 cycles per day and 1 trailing suction hopper dredger (TSHD) working at 8,996 m^3/day for sand filling. The corresponding sediment loss rate is 0.51 kg/s for each DCM barge and 15.29 kg/s for the TSHD. Silt curtain would be implemented around the marine work site to control the dispersion of fine. These sediment sources will be incorporated in the construction phase water quality modelling exercise to assess the cumulative impact from this potentially concurrent project. Other filling works for the 3RS reclamation would be conducted behind completed seawall therefore no other sediment source from 3RS would be expected. For the construction and operation phase of the OLNG modelling, the entire reclamation of the 3RS would be taken into account for conservative assessment. Also, the proposed marine park under this project would be taken into account as WSR for water quality impact assessment.

5.4 *PYROLYSIS PLANT AT ECOPARK (EPD STUDY BRIEF ESB-259/2013)*

The proposed pyrolysis plant at EcoPark consists of four pyrolysis furnace systems, with each system having a handling capacity of 5 tonnes of waste plastics per day. It is currently under the EIA stage and has no known construction programme (although the corresponding EIA Project Profile submitted by the project proponent indicated the construction is expected to commence in 2015). It is located approximately 6 km away from the pipeline alignment. No marine works would be required for the pyrolysis plant development. Based on its EIA Project Profile, the cooling water for the pyrolysis plant would be reused in closed circuit system. Therefore, no thermal discharge and discharge of associated chlorine or biocides would be expected. No cumulative impact with the construction and operation of the proposed OLNG terminal is expected.

5.5 *POTENTIAL RECLAMATION SITE AT LUNG KWU TAN*

This site is located along the coastal waters of Lung Kwu Tan and Lung Kwu Sheung Tan. With an area of about 200 – 300 ha, this proposed site would potentially be used for residential development [1]. Information on project implementation is very limited. A cumulative environmental study (*Cumulative Environmental Impact Assessment for the Three Potential Reclamation Sites in Western Waters*) was conducted to assess the potential impact from the reclamations at three potential sites in the western water and Lung Kwu Tan was one of the potential sites assessed under the cumulative study. Based on the approved EIA AEIAR-197/2016 of Additional Gas-fired Generation Units Project, CEDD suggested the reclamation at Lung Kwu Chau would be commenced in 2021 the earliest, and could be subjected to changes. Further clarification with CEDD will be conducted to obtain any update for the project. The potential cumulative impact from this project would be taken into account appropriately in the EIA assessment based on the information received.

5.6 ENHANCED ASH UTILISATION AND WATER MANAGEMENT FACILITIES AT CASTLE PEAK POWER STATION (CPPS) (EP-441/2012)

The Enhanced Ash Utilisation and Water Management Facilities at Castle Peak Power Station involves the re-construction of the two existing water lagoons at CPPS by lowering their base slabs and the construction of a new one to increase the storage capacities of the water lagoons at CPPS. The water lagoons are used for temporary storage of storm water runoff collected from the coal stockyard and process water from the operation of the CPPS which in turn can be reused for the operation of the CPPS. The project is expected to be constructed between 2017 and 2020. It is more than 3.5 km away from the BPPS Pipeline. No marine construction would be required. No discharge of effluent, cooling water, chlorine or biocide would be required for project operation. No cumulative water quality impact would be expected.

5.7 DECOMMISSIONING OF WEST PORTION OF THE MIDDLE ASH LAGOON AT TSANG TSUI, TUEN MUN (REGISTER NO.: AEIAR-186/2015)

The Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun involves the decommissioning of the pulverized fuel ash (PFA) lagoon at the west portion of the Middle Ash Lagoon at Tsang Tsui, Tuen Mun, which was operated by CAPCO for the placement of water and PFA. The decommissioning will provide buildable land for future developments by the HKSAR Government. The tentative decommissioning period would be from early 2016 and the construction of columbarium is targeted for completion by 2018/2019. It is about 500m away from the BPPS (at the nearest site boundary). No marine construction works would be involved. Since this is a decommissioning project, there will not be an operation phase and no discharge of cooling water, chlorine or biocide would be expected after the completion of construction phase. No cumulative water quality impact would be expected.

(1) http://www.cedd.gov.hk/eng/landsupply/doc/Executive%20Summary%20on%20Final%20Report(S2)b.pdf

5.8 *SLUDGE TREATMENT FACILITIES (STF) (REGISTER NO. AEIAR-129/2009)*

The STF is located about 1.6 km away from BPPS. It serves to treat dewatered sewage sludge from the public sewage treatment works by high temperature incineration and reduce the volume of sludge requiring final disposal at landfill by up to 90% through the thermal process (1). The sewage effluent from the STF operation would be treated and reused onsite. No sewage discharge would be required. A small scale desalination plant is installed onsite with saline discharge of about 1,000 m^3/day at about 1.7 times salinity of ambient seawater salinity. The discharge rate is quite low (about 11.6 L/s) and is considered negligible from over 30 km away (geodesic distance). The seawater intake for the desalination plant would be taken into account in the modelling exercise as a WSR (C1). Recent communications with the respective contractor in November 2017 indicated that, the upper limit for SS tolerance of the seawater intake is 130 mg/L and therefore will be adopted as the assessment criterion for the seawater intake in the water quality modelling assessment. No cumulative water quality impact from the operation of STF would be expected.

5.9 *PERMANENT AVIATION FUEL FACILITY (PAFF) FOR HONG KONG INTERNATIONAL AIRPORT (REGISTER NO.: AEIAR-107/2007)*

The PAFF is located about 4.5 km away from the pipeline alignment. It consists of a tank farm providing jet fuel to the Hong Kong International Airport via subsea fuel pipelines. There is no routine discharge of wastewater or contaminated surface drainage to sea or surface watercourse in the operational phase. Sewage from site offices is stored in a sump pit and be removed by specialist contractor with tanker. There is no discharge of cooling water, chlorine or biocide. No cumulative water quality impact from the operation of PAFF is expected.

5.10 *BLACK POINT POWER STATION (BPPS) AND THE ADDITIONAL GAS-FIRED GENERATION UNITS*

The BPPS is one of the landing locations of the gas pipeline of this Project. The existing operation of BPPS involves thermal discharge into the sea from multiple generation units. CLP proposed to install up to two additional gas-fired generation units in BPPS and the project was assessed under approved EIA of AEIAR-197/2016. The potential water quality impact from the existing BPPS and the proposed additional generation units have been assessed in detail in the corresponding EIA.

Based on the latest available information, the construction of the project is implemented in stages commencing from the second half of 2016, with commercial operation of the first unit anticipated by the end of 2019. The implementation of the second unit remains to be confirmed. The timing for

(1) http://www.epd.gov.hk/epd/english/environmentinhk/waste/prob_solutions/WFdev_TMSTF.html

the installation of the second generation unit remains to be confirmed. Since the installation of the first additional generation unit will not require marine dredging, no cumulative construction phase water quality impact would be expected. The cooling water intake of the BPPS would be taken into account as a water sensitive receiver (C2).

The physical separation of BPPS and the proposed OLNG terminal is more than 30 km of geodesic distance. The distance would be even greater if the distance by sea is considered. Therefore, any discharge from the BPPS is not expected to result in cumulative impact for the operation phase cooled water discharge of this Project. It should be noted that the discharge from BPPS may however affect the sediment dispersion pattern near its outfall for the construction phase modelling and thus would be taken into account in the modelling exercise.

5.11 *CASTLE PEAK POWER STATION (CPPS)*

CPPS is a coal-fired power plant located in Tap Shek Kok in Tuen Mun, approximately 4 km away from BPPS. Cooling water from multiple generation units are discharged into the sea as part of the normal operation. The operation of CPPS is regulated under a Specified Process licence. Similar to the case of BPPS, the physical separation of BPPS and the proposed OLNG terminal is more than 30 km of geodesic distance. Therefore, any discharge from the CPPS is not expected to result in cumulative impact for the operation phase cooled water discharge of this Project. For construction phase assessment, the existing seawater intake of the CPPS would be taken into account as WSR (C3) in the water quality modelling exercise.

5.12 *LAMMA POWER STATION (LPS) AND ADDITIONAL GAS-FIRED GENERATION UNITS*

The LPS is the other landing location of the gas pipeline of this Project. Similar to BPPS and CPPS, cooling water from multiple generation units in LPS is discharged into the sea as part of the normal operation.

In addition to the existing generation units, HK Electric has started the construction of two new gas-fired units (known as "L10" and "L11") at the Lamma Power Station Extension, which are expected to be commissioned in 2020 and 2022 respectively. No marine works would be required for the construction of this project.

Considering the large separation from the LPS to the proposed OLNG terminal (around 19 km) any discharge from the LPS is not expected to result in cumulative impact for the operation phase cooled water discharge of this Project. For construction phase assessment, the existing seawater intake of the LPS would be taken into account as WSR (C13) in the water quality modelling exercise.

5.13 *GREEN ISLAND CEMENT PLANT*

This site produces cement and is more than 4 km away from the BPPS site. There is no known discharge of cooling water, chlorine or biocide to marine water from this current operation (1). No cumulative water quality impact from the operation of the Green Island Cement Plant is expected.

5.14 *SHIU WING STEEL MILL*

This site manufactures steel bars is more than 4 km away from the BPPS site. There is no known discharge of cooling water, chlorine or biocide to marine water from this current operation. No cumulative water quality impact from the operation of the Shiu Wing Steel Mill is expected. The seawater intake for Shiu Wing Steel Mill is taken into account as a WSR (C4) in the water quality modelling exercise.

5.15 *OUTLYING ISLANDS SEWERAGE STAGE 2 - SOUTH LANTAU SEWERAGE WORKS (REGISTER NO. AEIAR-210/2017)*

This project involves the construction and operation of a sewerage system for proper collection, treatment and disposal of the sewage arising from South Lantau, which includes the areas in Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and Ham Tin. Major water quality issues associated with the project include marine construction of a subsea outfall during construction as well as the discharge of treated effluent at the outfall during operation.

According to the approved EIA of this project, the marine construction of the subsea outfall, which is about 6.5km from the LPS Pipeline (at the nearest site boundary), would be conducted in 2018. No temporal overlapping would be expected between marine construction under this project and the LNG terminal. Furthermore, the proposed sewage discharge from the LNG terminal would only be approximately 14.4 m^3 and would be over 10 km from the outfall of the proposed sewerage system at Tai O. No cumulative water quality impact is expected from the construction and operation of this project.

5.16 *OUTLYING ISLANDS SEWERAGE STAGE 2 - UPGRADING OF TAI O SEWAGE COLLECTION, TREATMENT AND DISPOSAL FACILITIES (AEIAR-209/2017)*

This project provides new sewers to unsewered areas in Tai O, upgrading the sewage treatment level of the existing Tai O STW from primary to secondary, expanding the STW by increasing its design capacity, and replacing the existing subsea outfall with a new subsea outfall. According to the approved EIA of this project, the marine construction of the subsea outfall, which is about 1.5km

(1) http://www.gich.com.hk/Facilities/f_manflow.htm

from the BPPS Pipeline (at the nearest site boundary), would be completed before 2019.

Based on the results of sediment plume modelling for outfall construction (1), potential impact from the proposed marine dredging for outfall under this project would be confined within 400 m from the dredging area, which will not encroach into the WSRs identified under this Study. The sediment loss rate is also low (2). Therefore, potential cumulative water quality from the marine construction under this project is not expected. Furthermore, the proposed sewage discharge from the LNG terminal would only be approximately 14.4 m^3 and would be over 5 km from the outfall of the proposed sewerage system at South Lantau. No cumulative water quality impact is expected from the construction and operation of this project.

5.17 OUTLYING ISLAND SEWERAGE STAGE 2 - UPGRADING OF CHEUNG CHAU SEWAGE COLLECTION, TREATMENT AND DISPOSAL FACILITIES (REGISTER NO.: AEIAR-181/2013):

This project involves the expansion and upgrade of existing sewerage facilities in Cheung Chau. Treated effluent is proposed for non-potable reuse, with remaining portion discharged via an outfall. The project is about 4.5 km away from the LPS Pipeline and about 8.6 km from the jetty. According to the approved EIA, no marine dredging activities and marine based construction works would be required. Therefore, no cumulative construction phase water quality impact would be expected from this project. Since there is significant physical separation (~8.6 km) between this project and the proposed jetty, cumulative impact from the discharge of treated sewage effluent from this project is not expected from this project.

5.18 DEVELOPMENT OF A 100MW OFFSHORE WIND FARM IN HONG KONG (REGISTER NO.AEIAR-152/2010)

This Hongkong Electric Company Ltd (HKE) project involves the development of an offshore wind farm Southwest of the Lamma Island. The project will produce around 100 MW of electricity and the power will be supplied directly to the HKE grid. Major potential sources of impact include dredging and jetting from marine construction, scouring and change in flow regime during project operation, which were all modelled and found to be very minimal. The implementation programme for this Project remains to be confirmed.

In view of the uncertain programme as well as the minimum potential impact, no cumulative impact on water quality would be expected from this project.

(1) Appendix 5.3 of AEIAR-209/2017, available at: http://www.epd.gov.hk/eia/register/report/eiareport/eia_2432016/EIA%20HTML/Volume%202/Section%205/Appendix%205.3.pdf

(2) Sediment loss rate assumed under unmitigated scenario of AEIAR-209/2017 is 0.313 kg/s, and under mitigated scenario (with 75% silt removal by silt curtain) the assumed sediment loss rate is 0.078 kg/s.

The effect of this project will not be included in the construction phase and operation phase water quality modelling exercise.

5.19 *INTEGRATED WASTE MANAGEMENT FACILITIES (IWMF) AT SHEK KWU CHAU (REGISTER NO. AEIAR-163/2012)*

This project involves the construction of an incinerator as well as other waste handling facilities on an artificial island southwest of Shek Kwu Chau. Marine construction involves installation of cellular sheetpile cofferdam as seawall, reclamation within seawall as well as other minor marine works including jetting installation of subsea cable and installation of anti-scouring protection layer for the vertical seawall. Based on the approved EIA (AEIAR-163/2012), the extent of reclamation would be about 11.8 hectares.

As stated in the approved EIA, the potential sediment-generating work of marine filling for reclamation would be conducted behind seawall and confined by silt curtain. Therefore potential loss to the nearby marine water is expected to be limited. Furthermore, currently there is no confirmed schedule for the construction and operation of the IWMF. Communications will be carried out with EPD for updated programme for construction. The potential cumulative impact from the construction of this project would be taken into account as appropriate. On the other hand, the potential change in flow regime due to the reclamation would be taken into account in the operation phase modelling assessment in view of the long term operation of the proposed OLNG terminal.

5.20 *INTEGRATED WASTE MANAGEMENT FACILITIES (IWMF) AT TSANG TSUI (REGISTER NO. AEIAR-163/2012)*

This project is to construct and operate a modern facility for managing municipal solid waste through an advanced thermal incineration process. It comprises an incineration plant, a mechanical treatment plant, and ancillary facilities, which may be constructed at the Tsang Tsui Ash Lagoon in Nim Wan, about 600m from the BPPS (at the nearest site boundary). The construction programme at this site is yet to be confirmed.

According to the approved EIA of this project, no marine works would be required under this project. Therefore no cumulative water quality impact from this project would be expected for construction phase. During the operation phase, the only discharge from this project would be concentrated seawater from the proposed desalination plant on site at Tsang Tsui. Since no discharge from the operation phase of this Project would be expected in Deep Bay, no cumulative operation phase water quality impact would be expected from this project.

5.21 *TUNG CHUNG NEW TOWN EXTENSION (REGISTER NO. AEIAR-196/2016)*

This project involves reclamation along the shoreline northeast of Tung Chung, and the development of the new town on the reclaimed land as well as other interfacing works with the surrounding. Marine construction for reclamation would be non-dredge (installation of band drain to assist consolidation) and marine filling would be conducted behind seawall with at least 200 m leading edge and silt curtain. Based on the approved EIA (AEIAR-163/2012), the total area of reclamation under this Project would be about 129.1 hectares.

According to the approved EIA, the reclamation would be conducted from late 2017 to late 2023. Given that the reclamation works constructed under this Study would be over 7.5 km away from the nearest pipeline alignment (with the actual distance measured by sea in fact longer) as well as the land-locked shoreline around the reclamation (by the Lantau Island, HKIA (including the 3RS extension) as well as the HKBCF reclamation), there would not be significant potential cumulative construction phase water quality impact from this project. On the other hand, the Tung Chung East Reclamation would be taken into account in both the construction phase (1) and operation phase modelling of this Study.

5.22 *NEW CONTAMINATED MUD MARINE DISPOSAL FACILITY AT AIRPORT EAST / EAST SHA CHAU AREA (AEIAR-089/2005)*

This project involves the construction, backfilling and capping of contaminated mud marine disposal facility at East Sha Chau Area, which is around 7 km away from proposed pipeline alignment to BPPS. Based on the approved EIA, a number of mud pits (namely pit Va, Vb, Vc and Vd), were proposed to be dredged, backfilled and then capped consequentially to fulfill the demand for marine sediment disposal. Pit Vd is currently in operation in 2017 and it is expected that disposal at Pit Vd will be ended in 2019. Communications will be carried out with Civil Engineering and Development Department (CEDD) for the anticipated operation in 2019 and 2020. The dredging, backfilling and capping activities under this project would be taken into account as appropriate in the construction phase sediment plume modelling exercise according to the modelled maximum production rates.

5.23 *IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL (REGISTER NO.: AEIAR-212/2017)*

This project covers the dredging for navigation channel west to the Lamma Island for LPS. According to the EIA submitted for public inspection, the proposed maintenance dredging work involves deepening the existing Channel to -16.5 mPD. Based on the submitted EIA, the next maintenance dredging for this project is scheduled to commence in 2019 and last for 12 to 18 months, which would be concurrent with marine construction under the Project. According to the EIA, alternative dredging method using grab dredgers or

(1) Based on Appendix 5.4a of the approved EIA, in 2019, the reclamation for Tung Chung East Reclamation would be commenced for about half of the reclamation extent and the advance seawall would be completed by about 70% of the area. It is therefore considered conservative and appropriate to take into account the whole reclamation in the construction phase modelling under this Study.

TSHD were considered. Maximum allowable dredging rate using grab dredgers were determined to be 38,500 to 90,400 m^3/day (assuming 24 hours working day) for various dredging locations and seasons. For TSHD, maximum allowable dredging rate were determined to be 22,200 to 171,900 m^3/day (assuming 24 hours working day). Communications will be carried out with HKE to review the programme of maintenance dredging under this project to minimize potential cumulative impacts on water quality. This project would be modelled as appropriate when the information becomes available.

5.24 *PLANNING AND ENGINEERING STUDY ON FUTURE LAND USE AT EX-LAMMA QUARRY AREA AT SOK KWU WAN, LAMMA ISLAND – FEASIBILITY STUDY*

This planning study covers an area of approximately 34.3 hectares currently zoned "Undetermined" in the approved Lamma Island Outline Zoning Plan (OZP), as well as the adjacent "Comprehensive Development Area" ("CDA") site (former cement plant), and natural slopes and shorelines, accounting for a total area of approx. 59.9 hectares. According to EIA-251/2017, the project proponent advised in May 2016 that marine works under this planning study include construction of a public pier, a refuse transfer station / fireboat pier, a submarine outfall from sewage treatment works and modification works to existing seawall. Details of its implementation programme are uncertain at this stage. The distance by sea from the pipeline alignment to Sok Kwu Wan is over 8 km.

In view of the significant physical separation from the project site of this planning study to the Project alignment, potential cumulative water quality impact would not be expected. The potential cumulative water quality impact from the development under this planning study would not be taken into account in this Study.

5.25 *PROVIDING SUFFICIENT WATER DEPTH FOR KWAI TSING CONTAINER BASIN AND ITS APPROACH CHANNEL (AEIAR-156/2010)*

This project involves the deepening of seabed level at the Kwai Tsing Container Basin, the northern and western fairways to -17.5 mCD (Chart Datum). Based on publicly available information on the project EM&A website [(1)], the capital dredging works under this project would be completed by 2017 so the capital dredging works would not be concurrent with the construction works under the Project. Maintenance dredging under this project may be required in the construction phase of the Project, the nearest dredging area would be at least 4.4 km away from the pipeline alignment under this Study, while the majority of the dredging area would be more than 6.6 km away. The volume of marine mud for maintenance dredging would be much lower than the capital dredging, while the duration of maintenance dredging at the nearest dredging

(1) Project EM&A Website available at http://www.ktd-monitoring.com/

area would likely to be short. Also, the estimated sediment loss rate from this project is relatively low [1]. In view of the above, significant cumulative water quality impact from this project is not anticipated and therefore not included in the modelling assessment.

5.26 *Open Sea Disposal Area for Uncontaminated Sediment at South Cheung Chau*

This open sea disposal area covers a large swath of waters south of Cheung Chau and Shek Kwu Chau in the east of Soko Island and the Project Site. This open sea disposal area receives uncontaminated sediment from various projects and is operated on an as-needed basis by CEDD. Communications will be carried out with CEDD for the anticipated operation in 2019 and 2020. The disposal activities under this project would be taken into account as appropriate in the construction phase sediment plume modelling exercise based on the available information provided by CEDD.

5.27 *Tonggu Channel Maintenance Dredging*

The project is located northwest of the HKSAR Boundary between Lung Kwu Chau and Inner Lingding Island. According to the approved EIA of 3RS-HKIA, HKBCF, HKLR and TM-CLKL, the dredging area is divided into three zones. Dredging at Zone I is only permitted during flood tide and dredging at Zone II is only permitted only during ebb tide. No restriction on tidal conditions is imposed on dredging at Zone III. The period of maintenance dredging is expected to be not more than 12 weeks each year. In any instance there would be at most two TSHDs operating concurrently.

It should be noted that the maintenance dredging under this project has been modelled under the approved EIA of 3RS-HKIA [2] and HKBCF [3]. The results of these water quality modelling exercises consistently showed that only very limited and localized SS elevation can be observed in Hong Kong waters from the Maintenance Dredging at Tonggu Channel, as shown in the corresponding contour plots of construction phase sediment plume modelling results. This can be the effect of a combination of factors such as low sediment loss rate,

(1) Sediment loss rate = 4,000 m^3/day ÷ 24 hr/day × 20 kg/m^3 = 0.926 kg/s. Calculation based on information in approved EIA. Same assumption also adopted under EIA-251/2017.

(2) Appendix 8.11 of AEIAR-185/2014, available at: http://www.epd.gov.hk/eia/register/report/eiareport/eia_2232014/html/Appendix%208.11.pdf

(3) Appendices 9D8, 9D9 and 9D10 of AEIAR-145/2009, available at:

Appendix 9D8: http://www.epd.gov.hk/eia/register/report/eiareport/eia_1732009/pdf/Section%209%20(Water%20Quality)/Appendix%209D8.pdf

Appendix 9D9: http://www.epd.gov.hk/eia/register/report/eiareport/eia_1732009/pdf/Section%209%20(Water%20Quality)/Appendix%209D9.pdf

Appendix 9D10: http://www.epd.gov.hk/eia/register/report/eiareport/eia_1732009/pdf/Section%209%20(Water%20Quality)/Appendix%209D10.pdf mitigation measures in place (i.e. limitation on tidal conditions when dredging can be conducted), good tidal flushing, openness of marine water, etc. In view of the above, the project would unlikely result in notable change in water quality beyond its project site. It is therefore considered appropriate to not take into account this project because no noticeable impact on WSRs identified would be expected.

5.28 *LANDFILL GAS POWER GENERATION PROJECT AT THE WEST NEW TERRITORIES (WENT) LANDFILL (DIR-251/2017):*

This project involves the construction of up to seven containerised landfill gas power generation units (each with a generation capacity of 2MW) in the north-western part of the existing WENT Landfill for using unutilised landfill gas from the WENT Landfill as fuel for electricity generation. The project, which is located about 1.3km from the BPPS (at the nearest site boundary), is anticipated to be implemented in phases, with construction of the first phase tentatively scheduled to commence in Q2 2017 for operation in Q3 2018. According to the submitted project profile, no marine works would be required for the construction phase of this project and no direct discharge to marine environmental would be required for the operation phase of this project. In view of the above, significant cumulative water quality impact from this project is not anticipated.

5.29 *PLANNING AND ENGINEERING STUDY FOR TUEN MUN AREAS 40 AND 46 AND THE ADJOINING AREAS (EPD STUDY BRIEF ESB-255/2012):*

The study aims to investigate the potential for re-planning Tuen Mun Areas 40 and 46 and the adjoining areas for uses such as commercial, office and hotel uses, logistics uses, high technology, industry uses, residential use, etc.. According to the latest information from the project website, the feasibility study commenced in May 2013 and is completed in 2015; however the future development proposal is yet to be determined. It is about 5 km away from the BPPS (at the nearest site boundary). According to the submitted project profile, no marine works would be required for the construction phase of this project and no direct discharge to marine environmental would be required for the operation phase of this project. In view of the above, significant cumulative water quality impact from this project is not anticipated.

5.30 *SOUTHWEST LANTAU MARINE PARK (SWLMP) AND SOUTH LANTAU MARINE PARK (SLMP):*

Agriculture, Fisheries and Conservation Department (AFCD) is proceeding with the statutory approvals required to designate these two proposed Marine Parks. The draft map of the proposed SWLMP was published in the Gazette on 23 June 2017 [1], whereas the draft map of the SLMP is being prepared. Based on information available at the time of preparing this EIA report, the proposed boundaries of SWLMP and SLMP do not overlap with the proposed locations for the LNG Terminal and the two subsea pipeline routes. As advised by the AFCD, the designation of SWLMP and SLMP is anticipated to come in effect in mid 2018 and mid 2019 respectively. Both of these proposed marine parks would be taken into account at WSRs for water quality impact assessment.

5.31 *POTENTIAL SPA AND RESORT DEVELOPMENT AT SOKO ISLANDS:*

Civil Engineering and Development Department (CEDD) is undertaking a feasibility study on developing a spa and resort on South Soko which is over 1 km from the BPPS Pipeline and over 5km from the LNG Terminal. The development itself is on land and hence does not overlap with this Project. Details of its implementation programme are uncertain at this stage. It is noted that this potential development is not mentioned in the latest Sustainable Lantau Blueprint [2] by the Development Bureau (DevB). This project will not be taken into account for cumulative assessment of water quality in view of the lack of details and uncertainties in implementation.

5.32 *POTENTIAL RECLAMATION SITES AT SIU HO WAN AND SUNNY BAY, AND ARTIFICIAL ISLANDS SOUTHEAST OF LANTAU ISLAND*

As part of the Sustainable Lantau Blueprint and the Enhancing Land Supply Strategy studies, CEDD is investigating the feasibility of enhancing the long-term land supply through, amongst a number of options, reclamation outside the Victoria Harbour. Nearshore reclamation sites, namely Siu Ho Wan and Sunny Bay, artificial islands potentially in the central waters southeast of Lantau Island, are being considered. Details of the implementation programmes of these sites are uncertain at this stage.

Some potential reclamation sites have been studied in precedent studies (as discussed *Section 5.5*) and have been taken into account as discussed in *Section 1.7*.

(1) AFCD (2017) http://www.afcd.gov.hk/english/country/cou_vis/cou_vis_mar/cou_vis_mar_wha/mp_swl_draftmap.html. Accessed on 4 August 2017

(2) CEDD (2017) Sustainable Lantau Blueprint. 64 pp.

6 MODEL SCENARIOS

The water quality modelling exercise will commence with the set-up of hydrodynamic baseline models (covering a complete spring/neap cycle for both the dry and wet seasons). It will be conducted with regard to two main components, construction phase and operation phase as detailed below.

- **Construction Phase**: the assessment will examine potential water quality impacts arising from sediment dredging and jetting along the gas pipelines from the proposed OLNG Terminal to LPS and BPPS;

- **Operation Phase**: the assessment will examine potential water quality impacts arising primarily from the discharge of cooled water from the FSRU Vessel operation at the proposed OLNG terminal via the outfall, maintenance dredging, discharge of treated sewage effluent and spillage of LNGC fuel.

Table 6.1 summarizes the proposed water quality modelling scenarios below:

Table 6.1 *Proposed Modelling Scenarios*

Scenario ID	Modelling Activity	Project Activity	Seasons
CORMIX			
CORMIX-OD-1 CORMIX-OW-1	Near field dispersion modelling for cooled water discharge	Cooled water discharge	Wet Season Dry Season
CORMIX-OD-2 CORMIX-OW-2	Near field dispersion modelling for treated sewage effluent discharge	Treated sewage effluent discharge	Wet Season Dry Season
Delft3D FLOW Model			
O01W O01D	FLOW model for baseline	Baseline Model (no discharge)	Wet Season Dry Season
O02W O02D	FLOW model for project operation	Potential cooled water discharge only	Wet Season Dry Season
Delft3D WAQ Model			
C01W_A C01D_A	WAQ model for project construction – Concurrent Dredging with Grab Dredgers	Sediment sources under this Project include: 01_G, 03_G, 05_G, 06_G, 09_G, 11_G and 13_G Concurrent construction projects included	Wet Season Dry Season
C01W_B C01D_B	WAQ model for project construction – Concurrent Dredging with Grab Dredgers and TSHD (Alternative construction method)	Sediment sources under this Project include: 01_G, 03_G, 05_T, 09_G and 13_G Concurrent construction projects included	Wet Season Dry Season
C01W_C	WAQ model for project construction – Concurrent		Wet Season

Scenario ID	Modelling Activity	Project Activity	Seasons
C01D_C	Dredging with Grab Dredgers and TSHD (Alternative construction method)	Sediment sources under this Project include: 01_G, 03_G, 09_G, 11_T and 13_G Concurrent construction projects included	Dry Season
C02W C02D	WAQ model for project construction – Jetting – Worst Case near BPPS	Sediment sources under this Project include: 12_J Concurrent construction projects included	Wet Season Dry Season
C03W C03D	WAQ model for project construction – Jetting – Worst Case west of Urmston Road	Sediment sources under this Project include: 10_J Concurrent construction projects included	Wet Season Dry Season
C04W C04D	WAQ model for project construction – Jetting – Worst Case west of HKIA	Sediment sources under this Project include: 07_J Concurrent construction projects included	Wet Season Dry Season
C05W C05D	WAQ model for project construction – Jetting – Worst Case of South Lantau	Sediment sources under this Project include: 04_J_A, 04_J_B, 04_J_C and 04_J_D Concurrent construction projects included	Wet Season Dry Season
C06W C06D	WAQ model for project construction – Jetting – Worst Case of West Lamma	Sediment sources under this Project include: 02_J_A, 02_J_B and 02_J_C Concurrent construction projects included	Wet Season Dry Season
C07W C07D	WAQ model for project construction – Jetting – Worst Case of West Lamma	Sediment sources under this Project include: 08_J Concurrent construction projects included	Wet Season Dry Season
O_MD_W O_MD_D	WAQ model for operation phase maintenance dredging	Maintenance dredging at jetty	Wet Season Dry Season
O_Oil_W O_Oil_D	PART model for operation phase LNGC fuel spillage	LNGC fuel spillage	Wet Season Dry Season
O_TRC_W O_TRC_D	WQ model for operation phase TRC discharge	TRC discharge associated with cooled water	Wet Season Dry Season

Appendix A

Model Domains

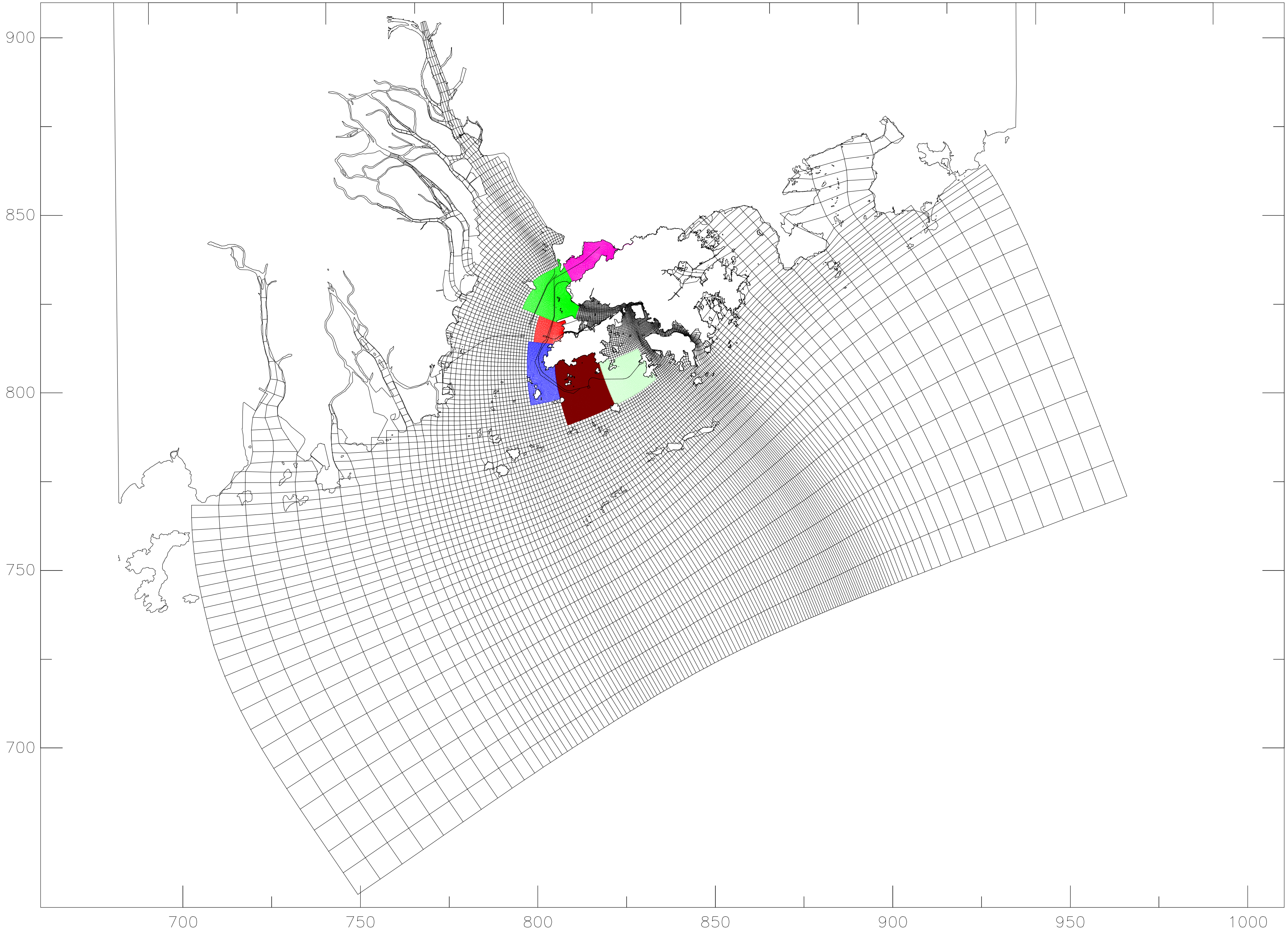
Hong Kong Offshore LNG Terminal
OLNG Model
Overview

ERM

Appendix A1

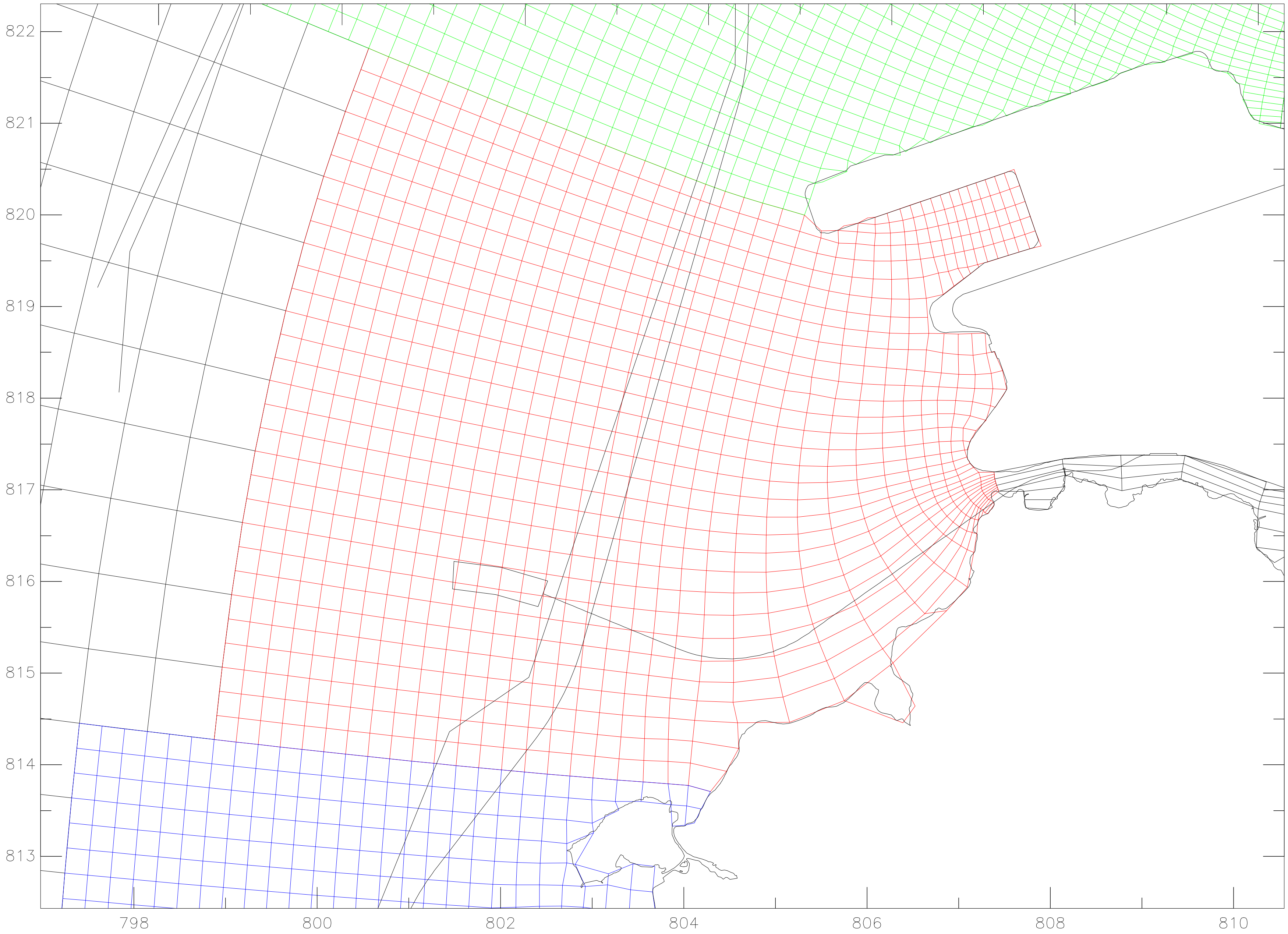
GPP/

Grid.ssn



Hong Kong Offshore LNG Terminal
OLNG Model
APW Subdomain

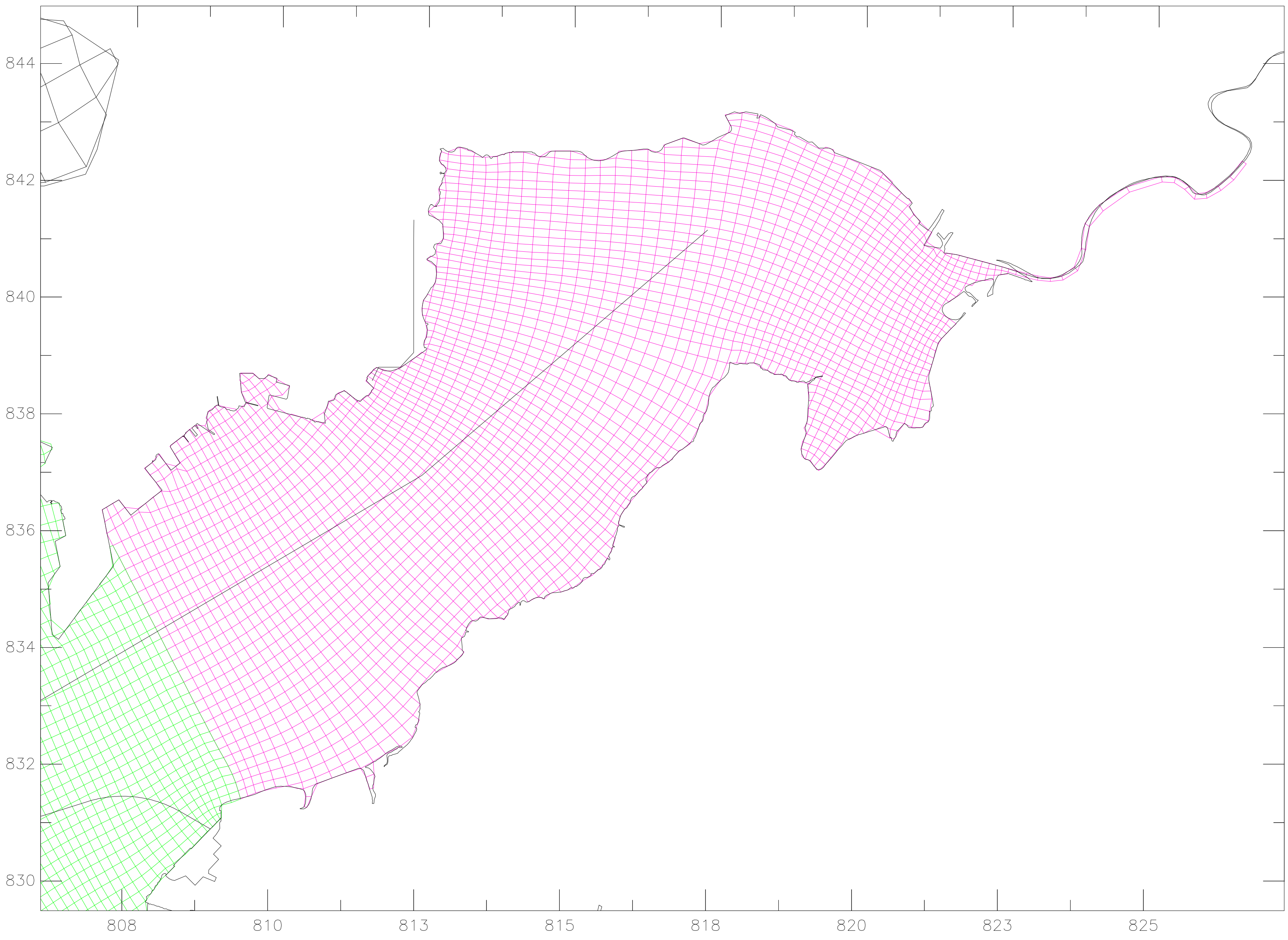
ERM



Appendix A2

GPP/

Grid.ssn



Hong Kong Offshore LNG Terminal
OLNG Model
DBM Subdomain

ERM

GPP/

Appendix A3

Grid.ssn

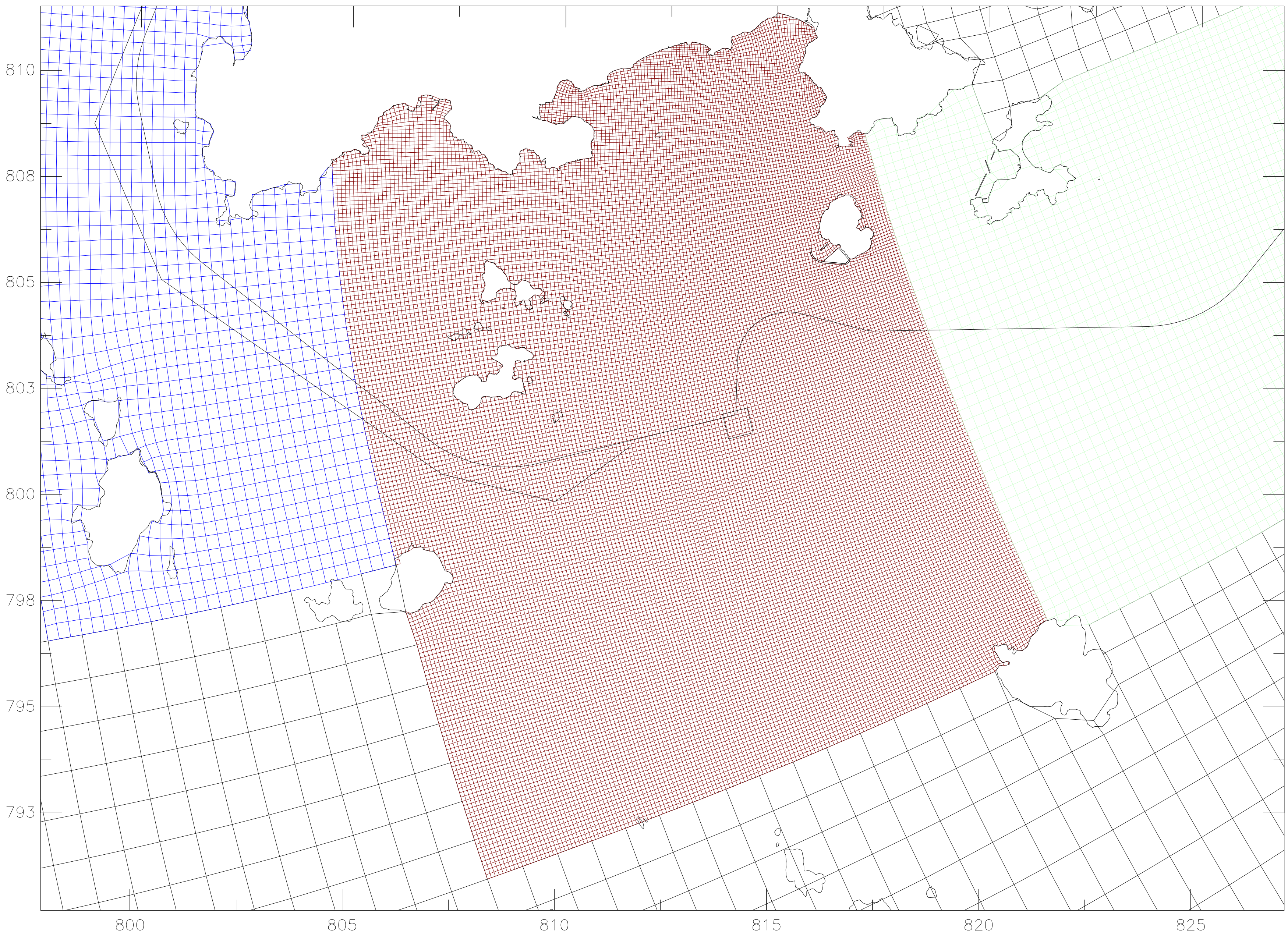
Hong Kong Offshore LNG Terminal
OLNG Model
SLT Subdomain

ERM

Appendix A4

GPP/

Grid.ssn



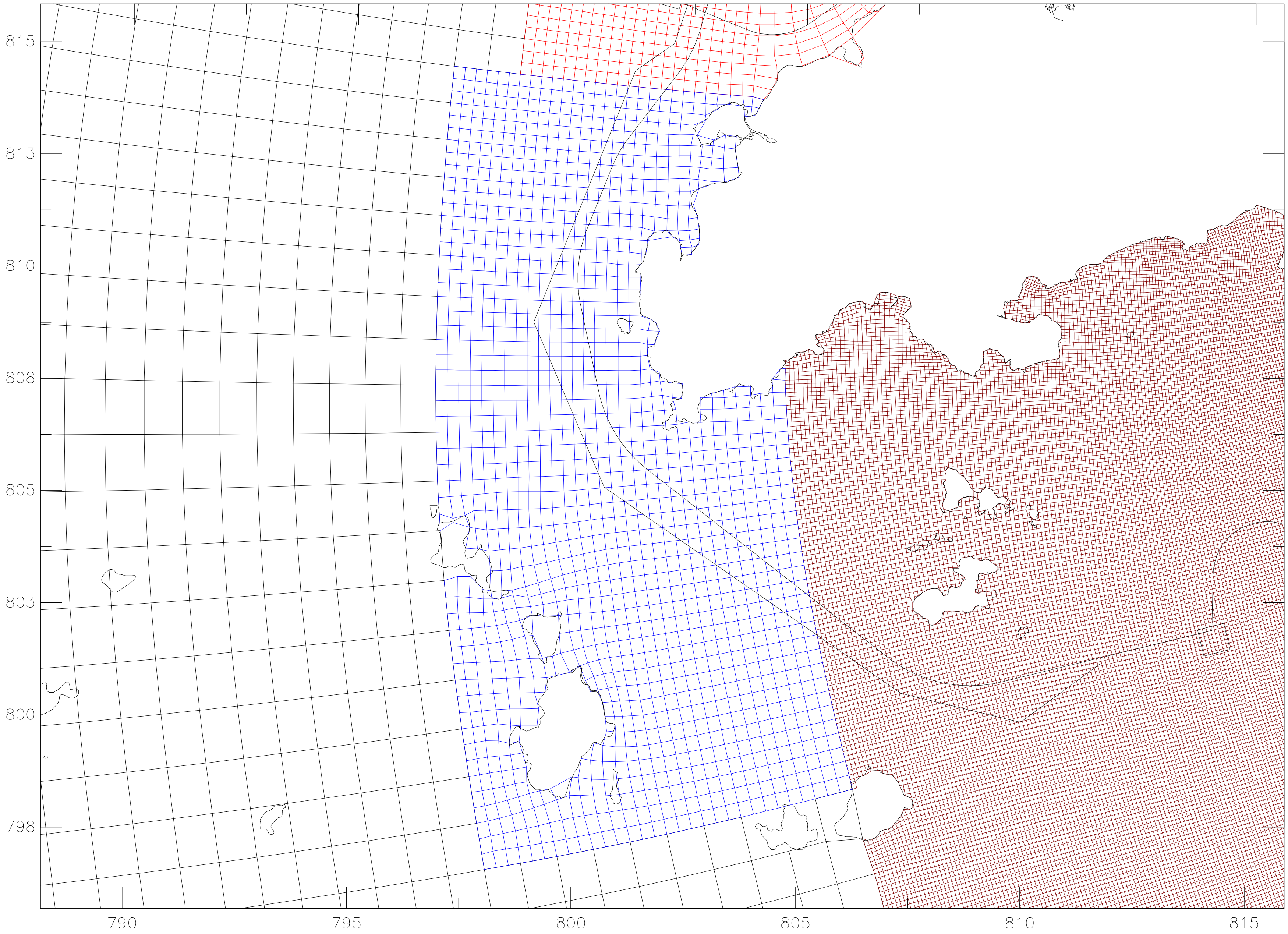
Hong Kong Offshore LNG Terminal
OLNG Model
SWL Subdomain

ERM

GPP/

Appendix A5

Grid.ssn



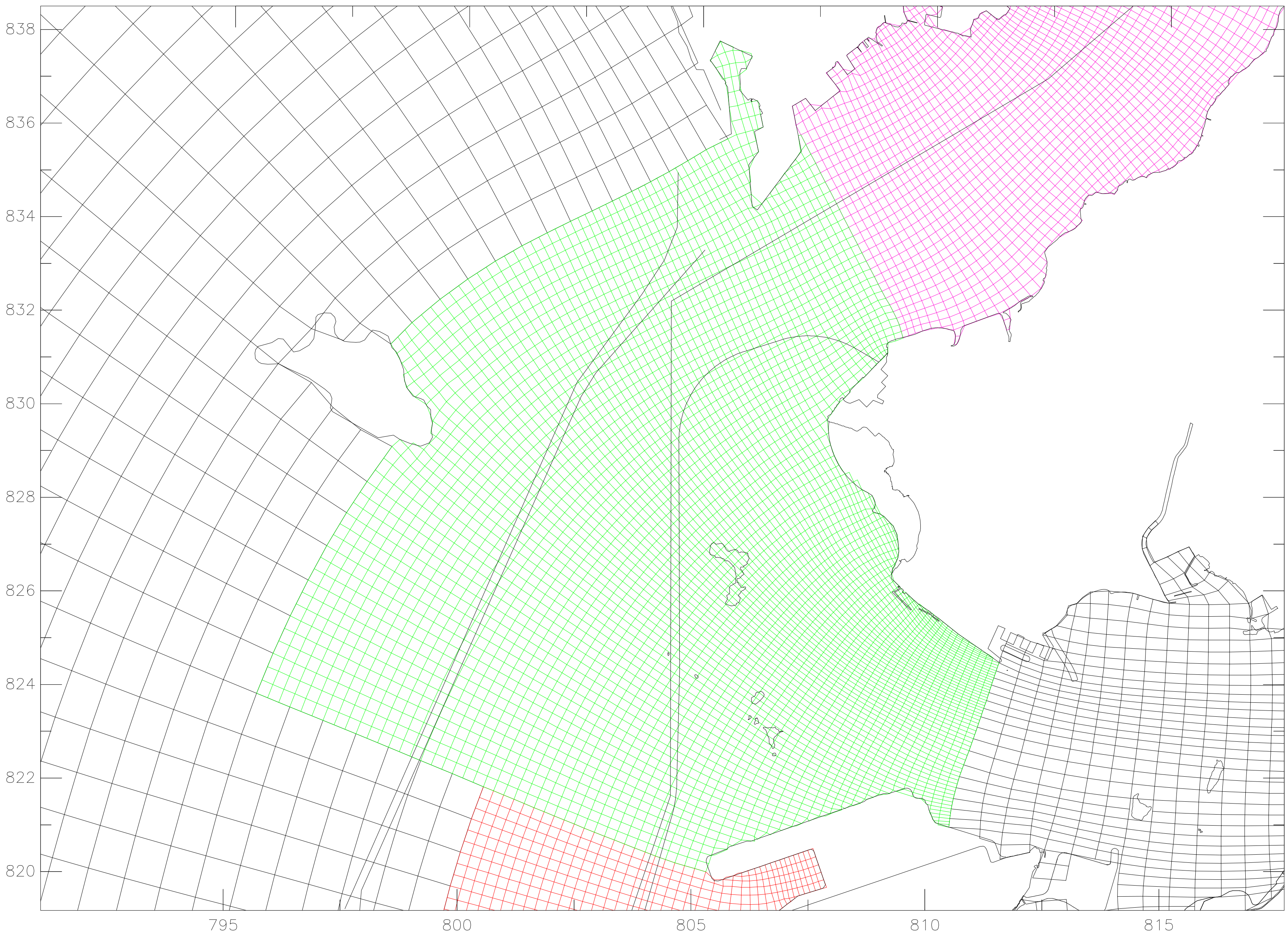
Hong Kong Offshore LNG Terminal
OLNG Model
URM Subdomain

ERM

Appendix A6

GPP/

Grid.ssn



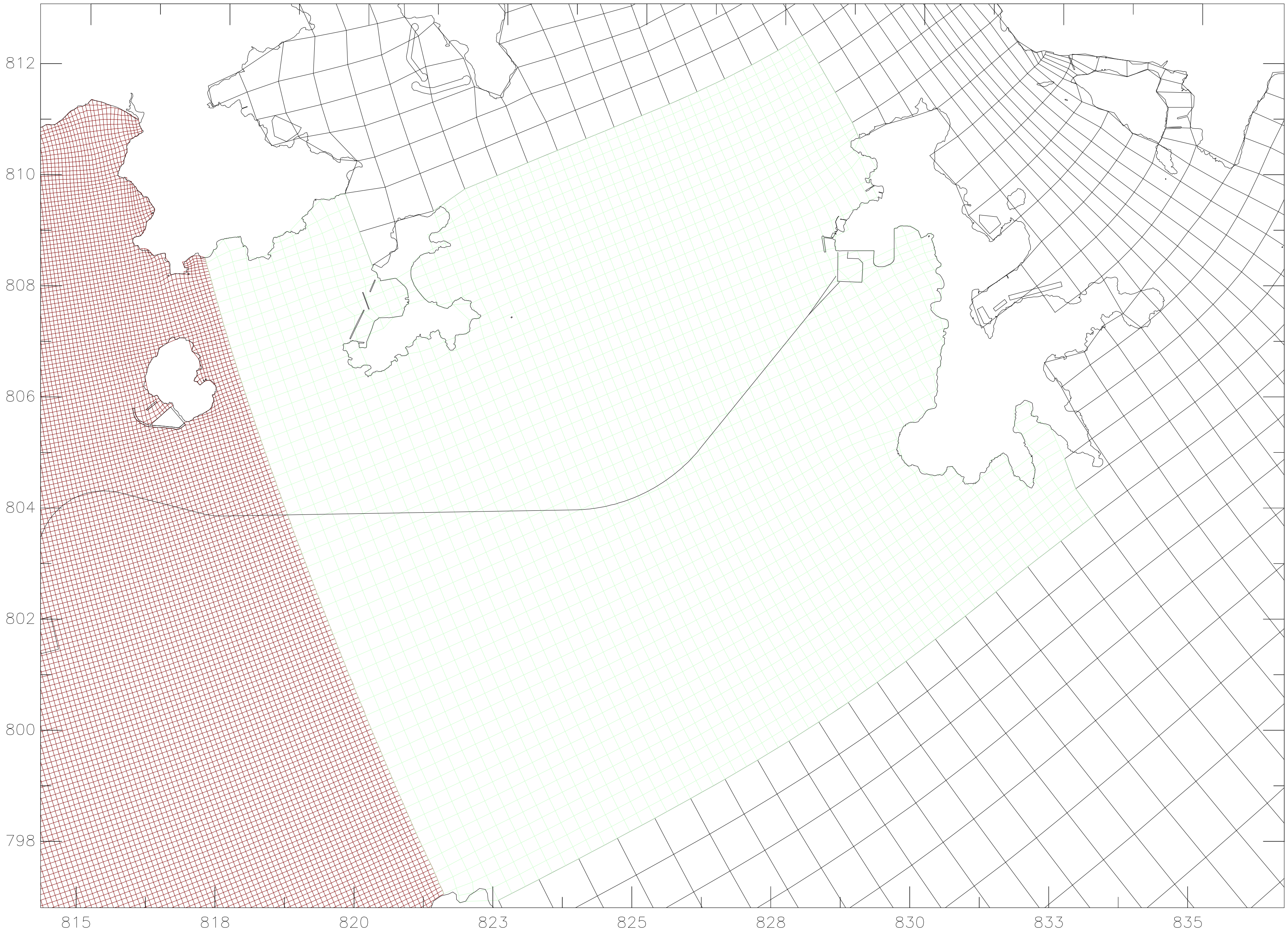
Hong Kong Offshore LNG Terminal
OLNG Model
WLM Subdomain

ERM

Appendix A7

GPP/

Grid.ssn



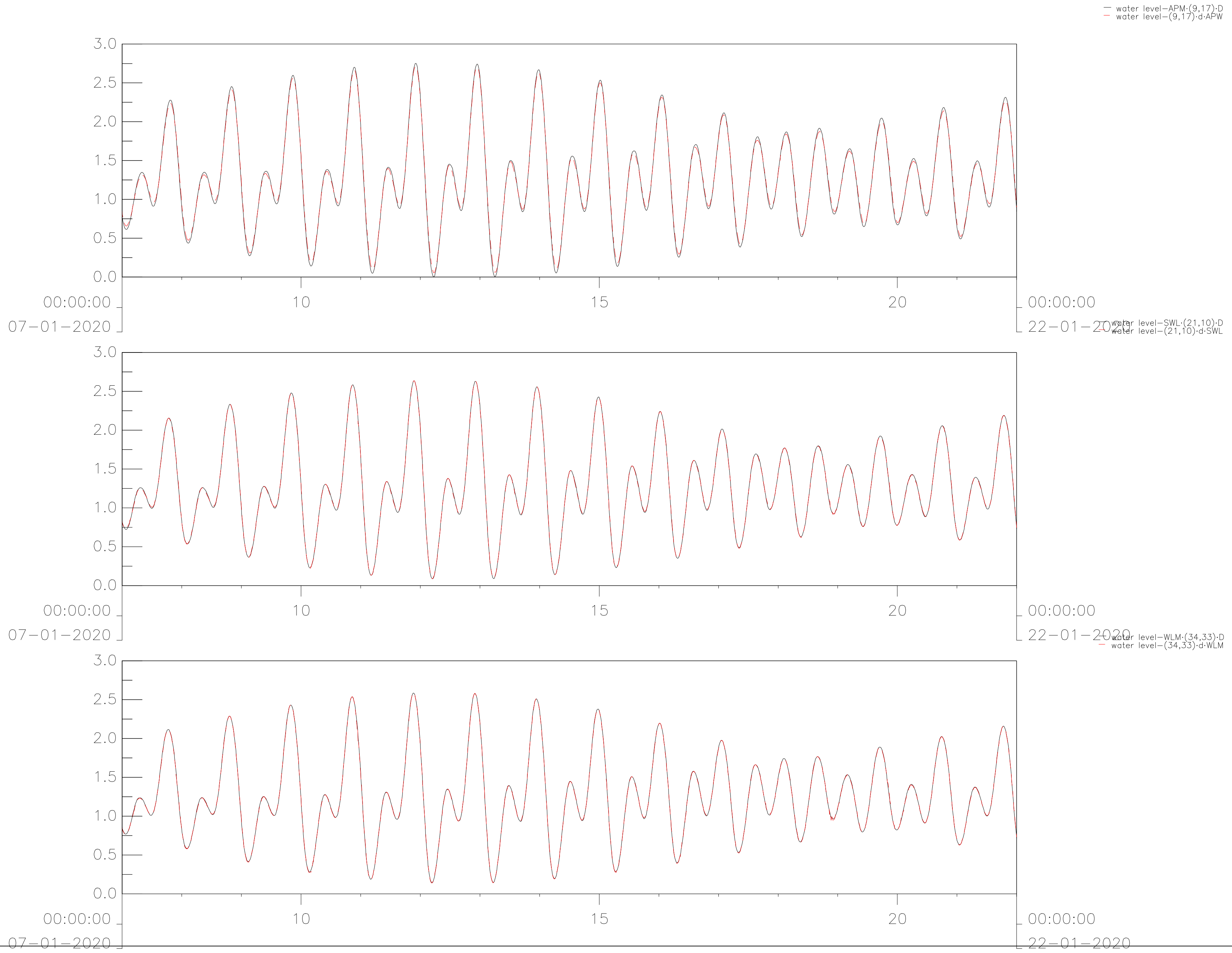
Appendix B

Model Verification

Hong Kong Offshore LNG Terminal

Hydrodynamic Model Verification – Water Level at NW, SW & SE Lantau

Black: Update Model; Dashed Red: OLNG Model



ERM

GPP/

2020

Dry

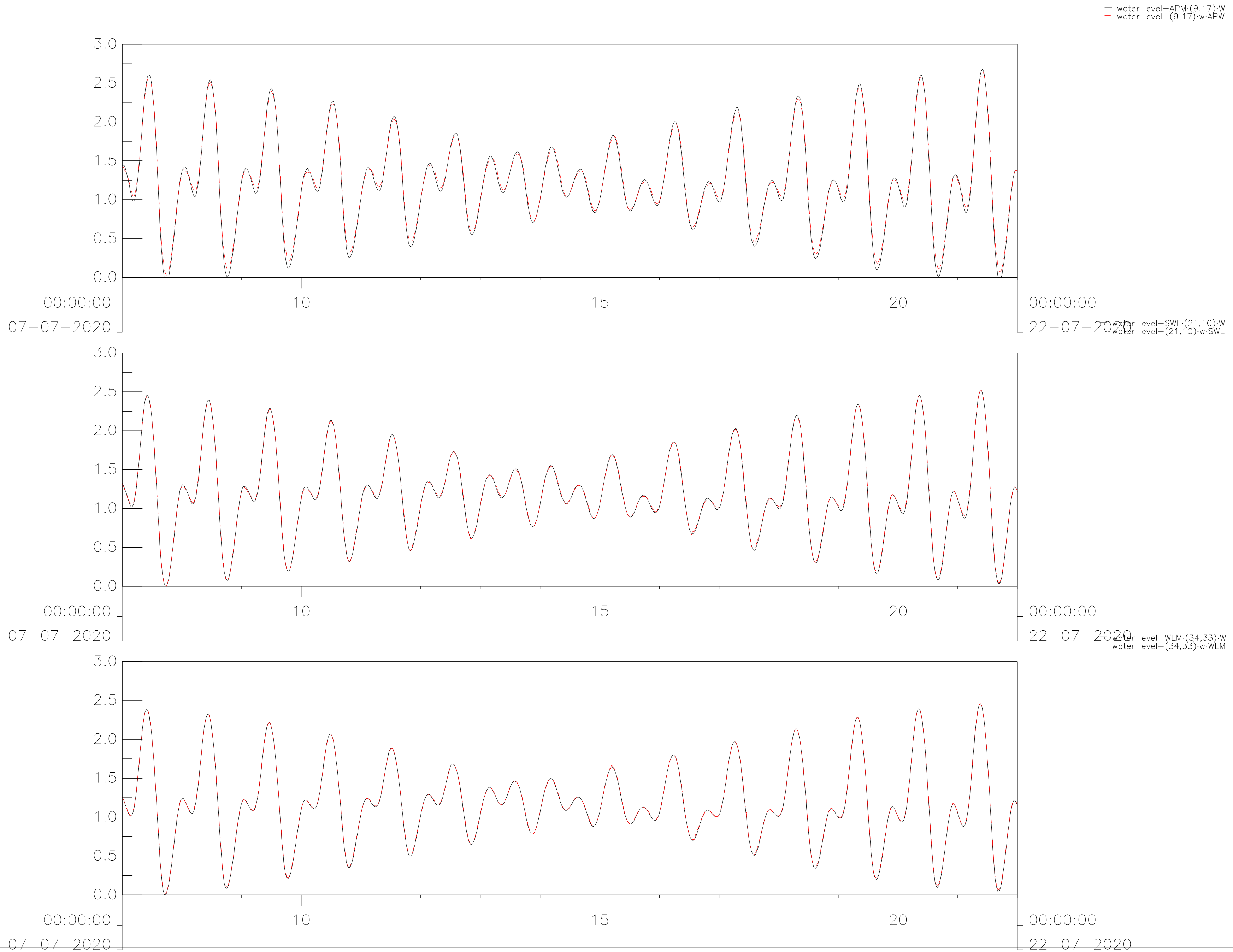
HD Verification.ssn

ERM

Hong Kong Offshore LNG Terminal

Hydrodynamic Model Verification – Water Level at NW, SW & SE Lantau

Black: Update Model; Washed Red: OLNG Model



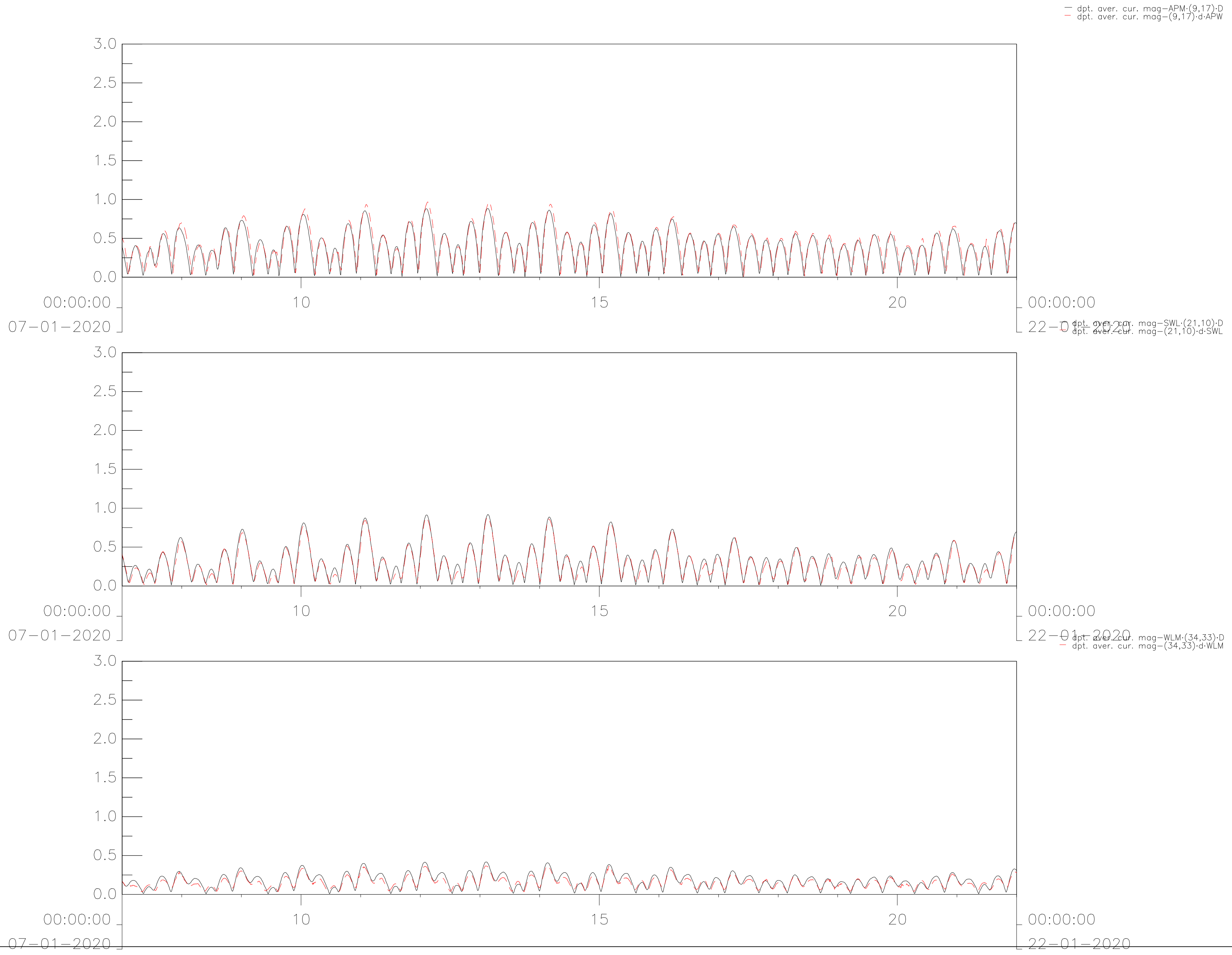
GPP/

2020

Wet

HW Verification.ssn

Hong Kong Offshore LNG Terminal
Hydrodynamic Model Verification – Current Magnitude at NW, SW & SE Lantau
Black: Update Model; Dashed Red: OLNG Model



ERM

GPP/

2020

Dry

HD Verification.ssn

Hong Kong Offshore LNG Terminal

Hydrodynamic Model Verification – Current Magnitude at NW, SW & SE Lantau

Black: Update Model; Washed Red: OLNG Model

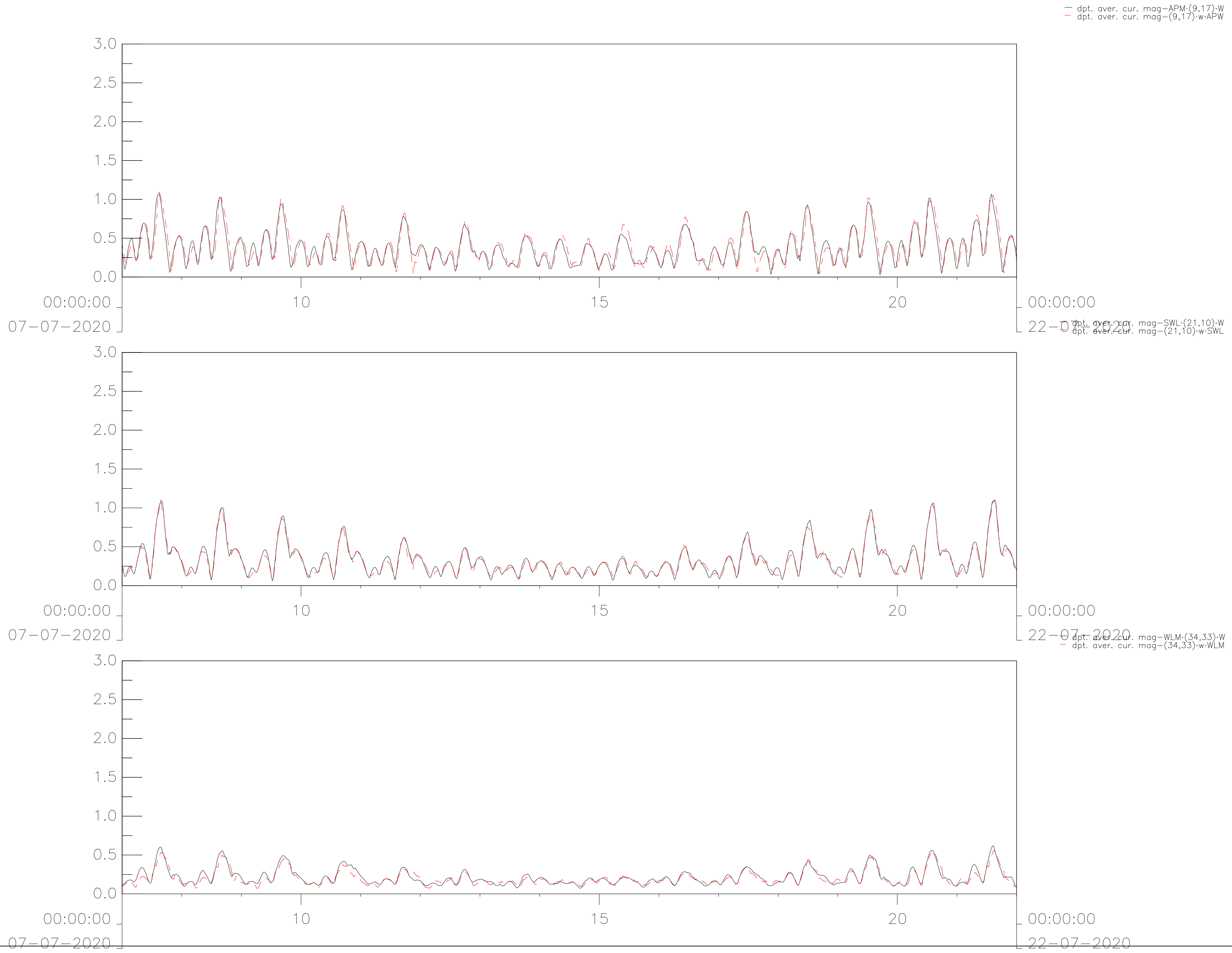
ERM

GPP/

2020

Wet

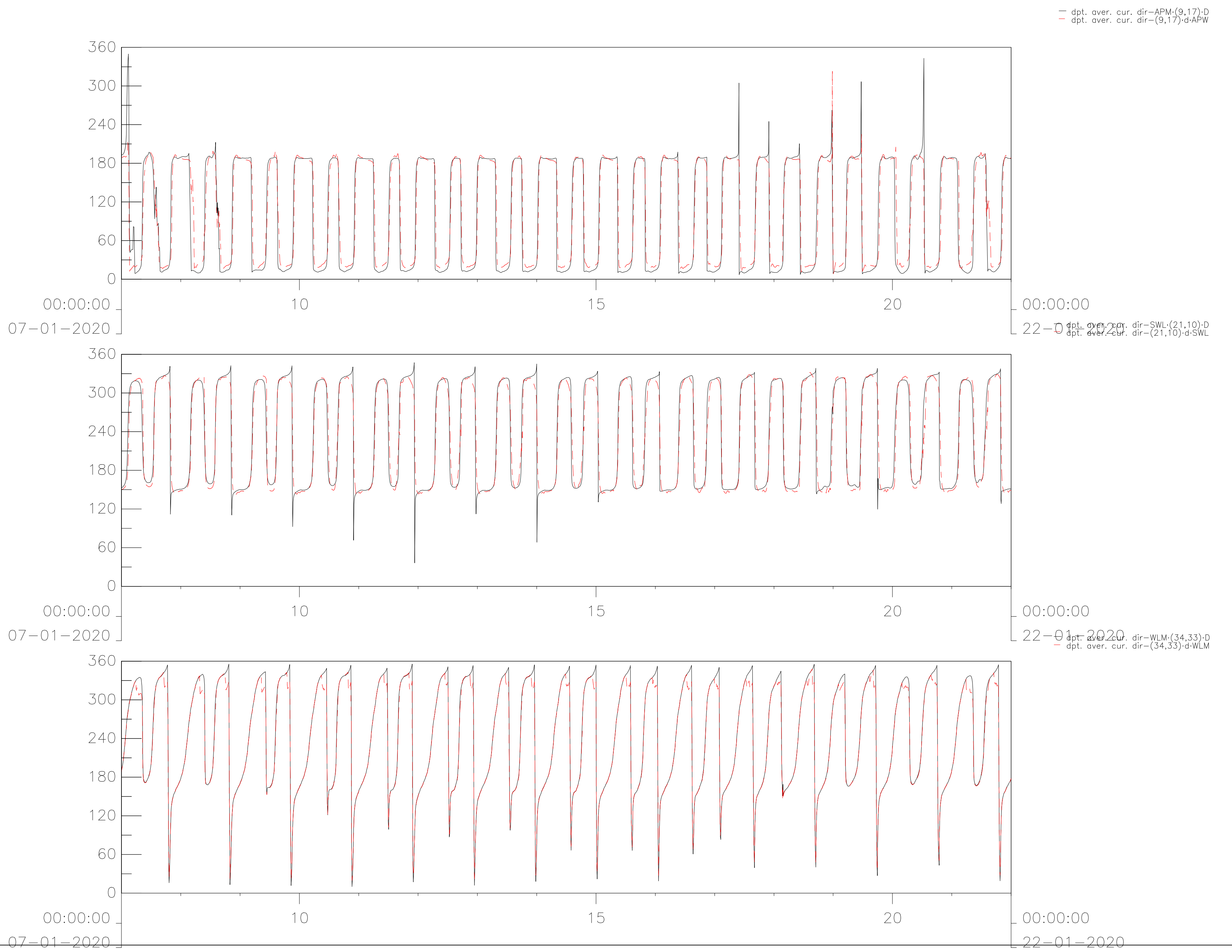
HW Verification.ssn



Hong Kong Offshore LNG Terminal

Hydrodynamic Model Verification – Current Direction at NW, SW & SE Lantau

Black: Update Model; Dashed Red: OLNG Model



ERM

GPP/

2020

Dry

HD Verification.ssn

Hong Kong Offshore LNG Terminal
Hydrodynamic Model Verification – Current Direction at NW, SW & SE Lantau
Black: Update Model; Washed Red: OLNG Model

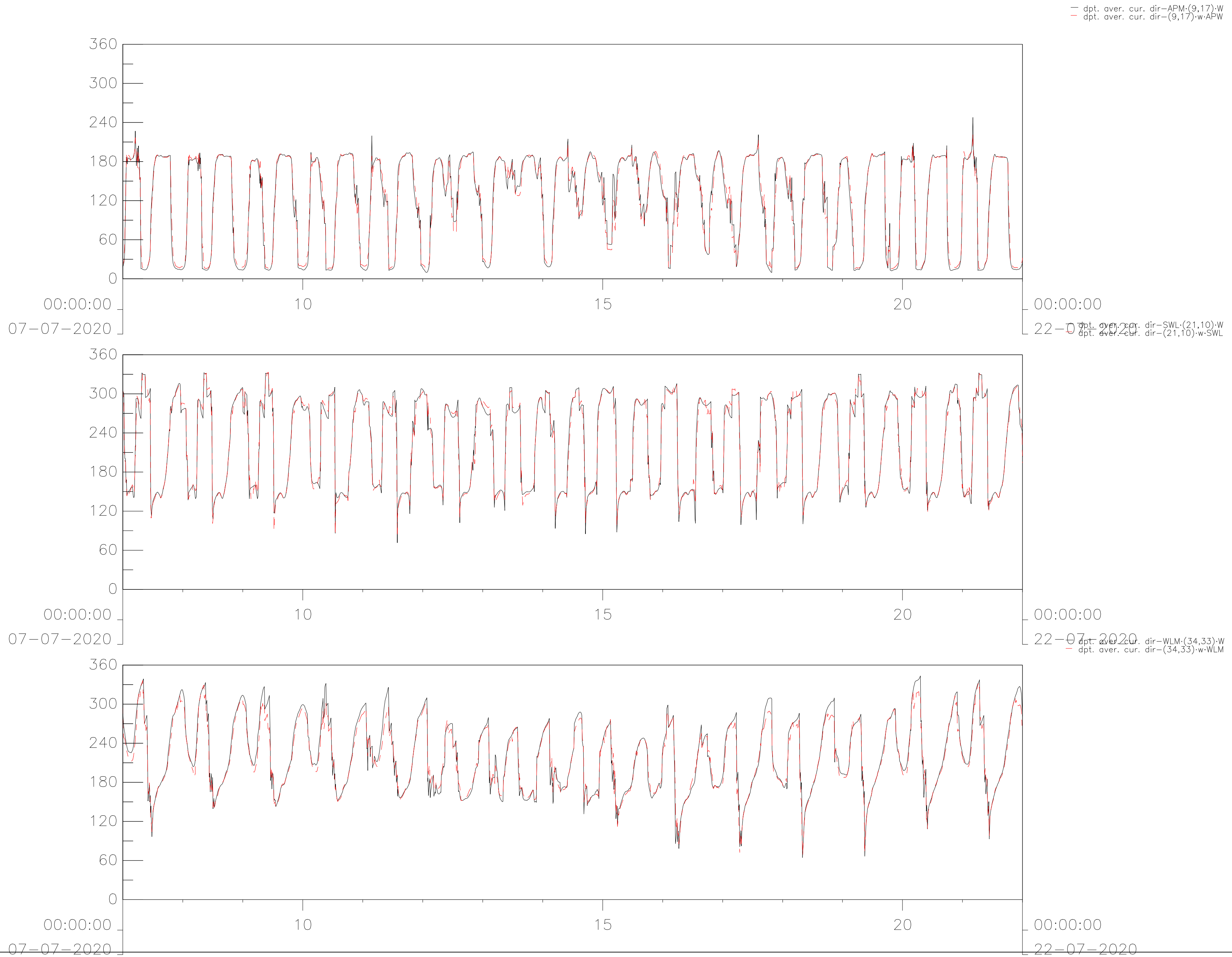
ERM

GPP/

2020

Wet

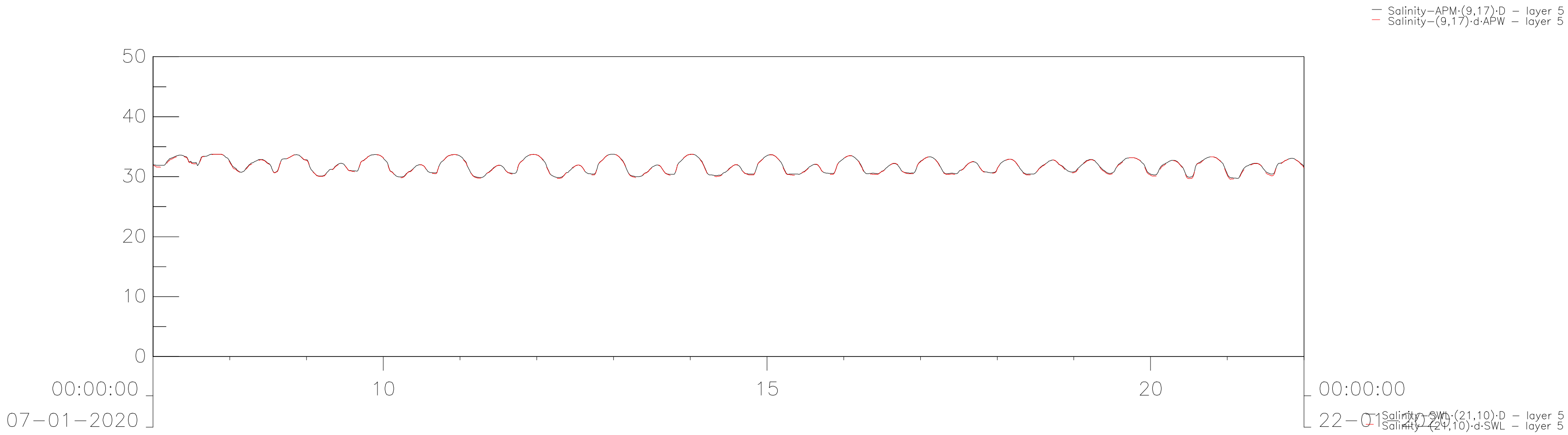
HW Verification.ssn

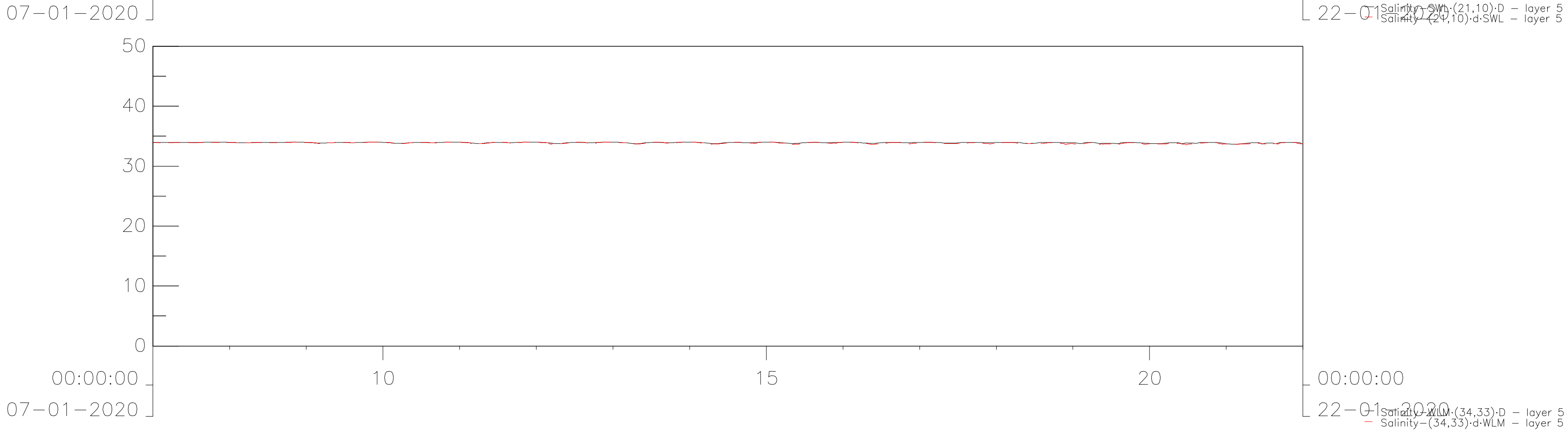


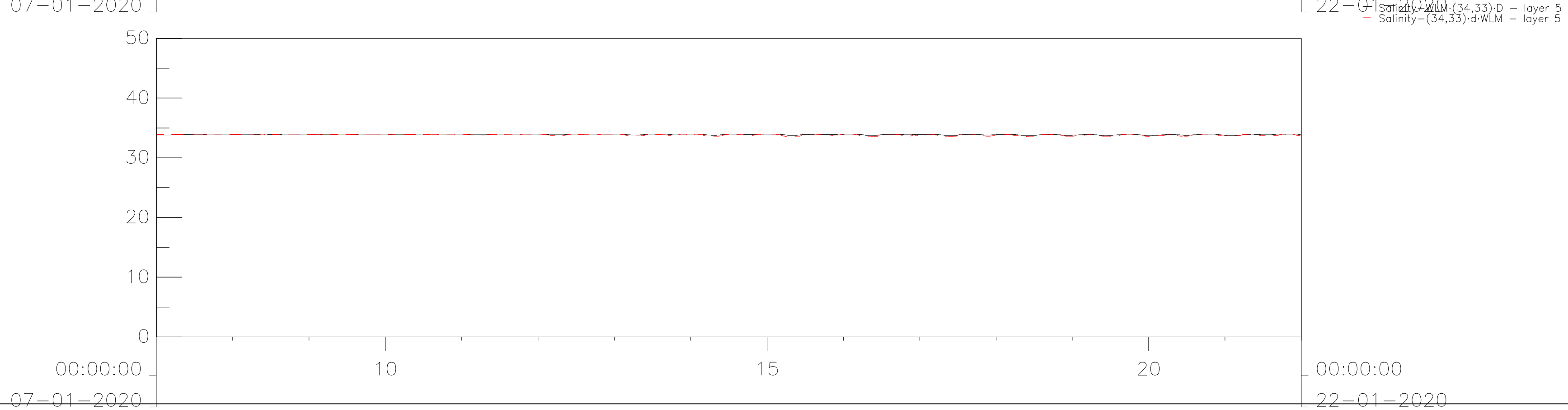
Hong Kong Offshore LNG Terminal

Hydrodynamic Model Verification – Salinity at NW, SW & SE Lantau

Black: Update Model; Dashed Red: OLNG Model







ERM

GPP/

2020

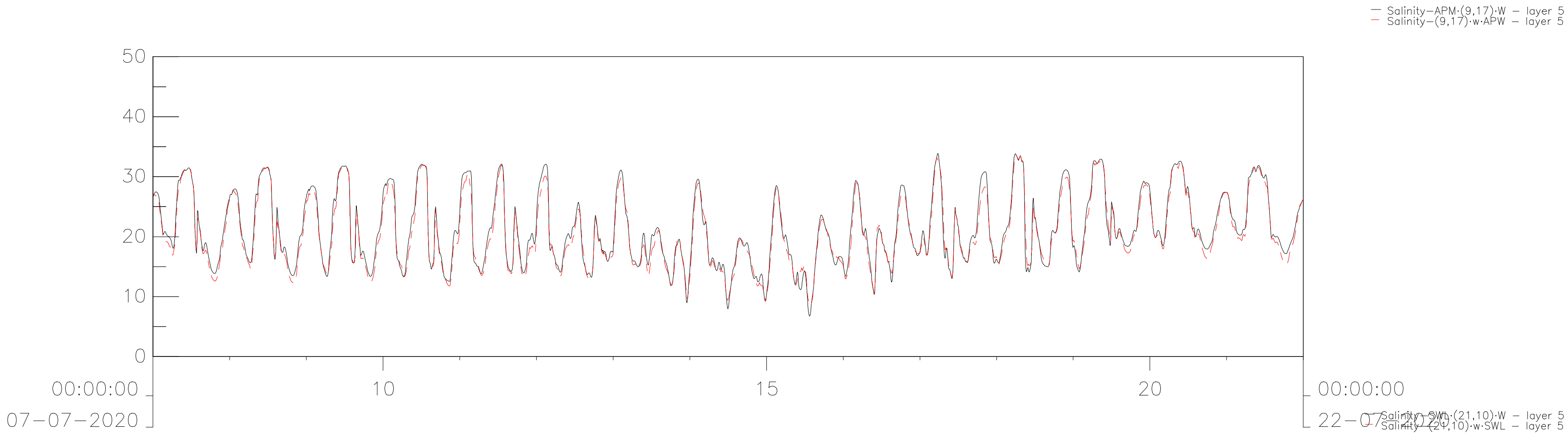
Dry

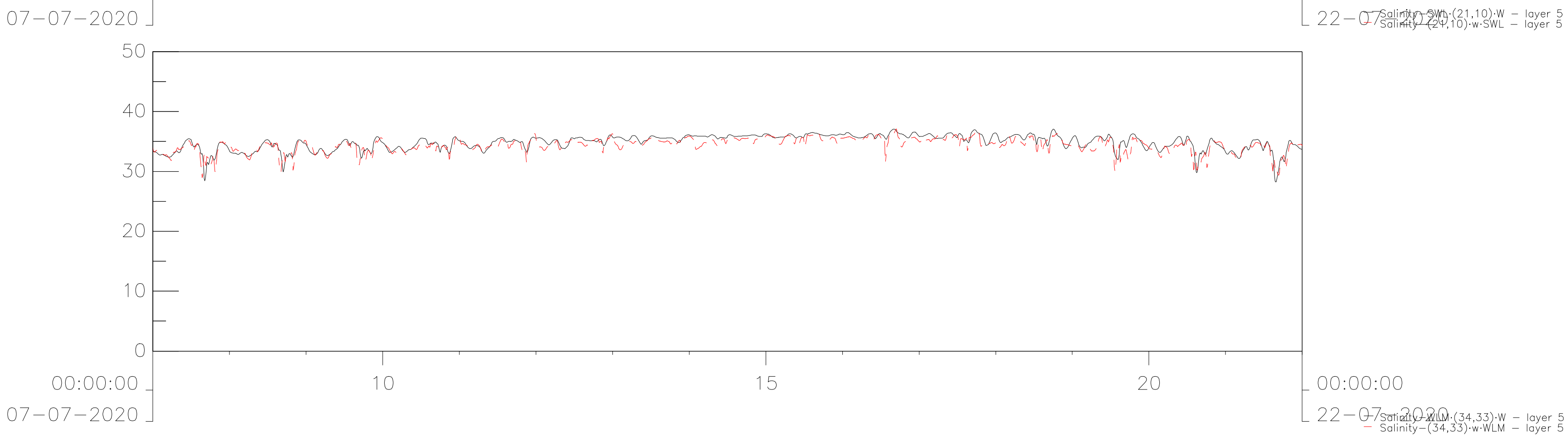
HD Verification.ssn

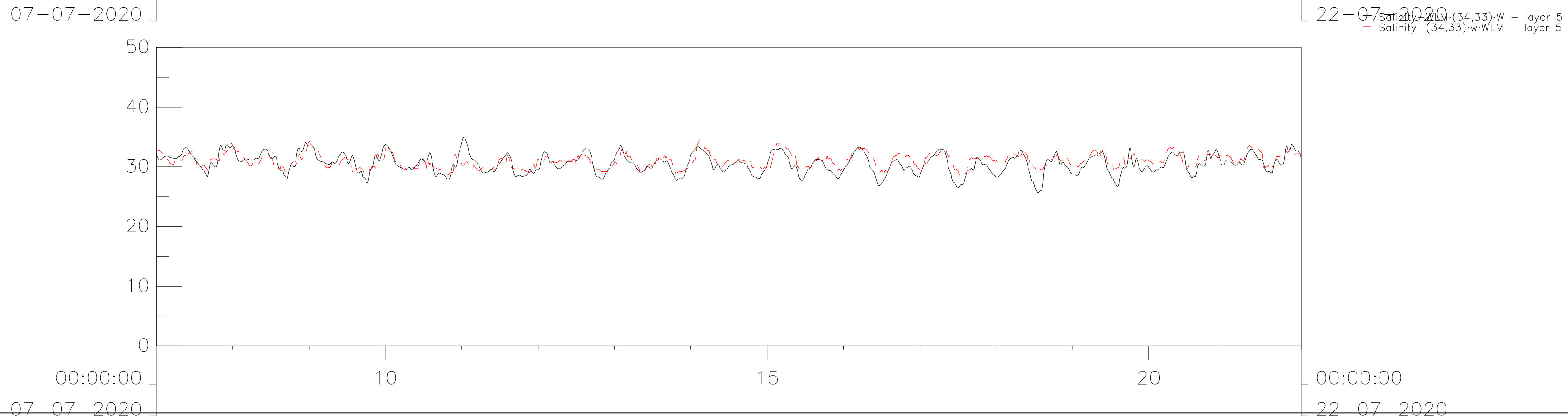
Hong Kong Offshore LNG Terminal

Hydrodynamic Model Verification – Salinity at NW, SW & SE Lantau

Black: Update Model; Washed Red: OLNG Model







ERM

GPP/

2020

Wet

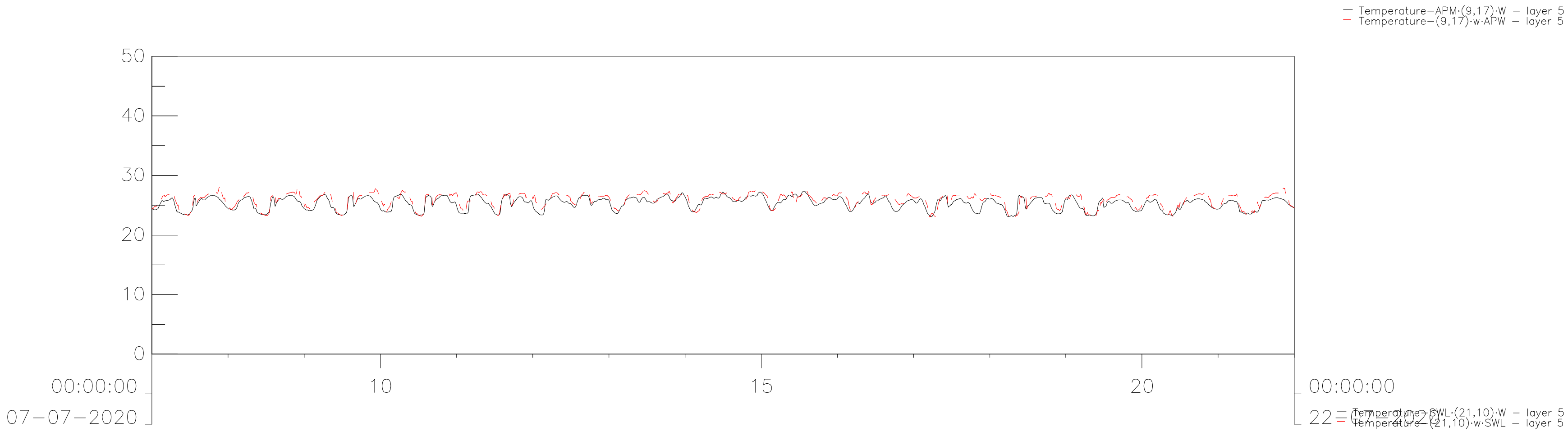
HW Verification.ssn

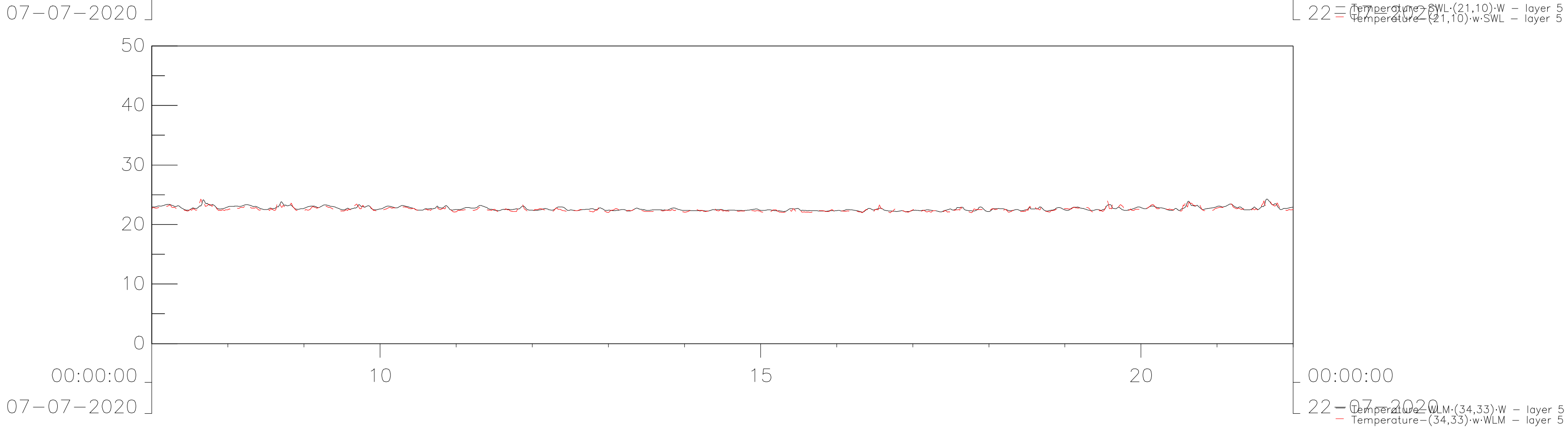
ERM

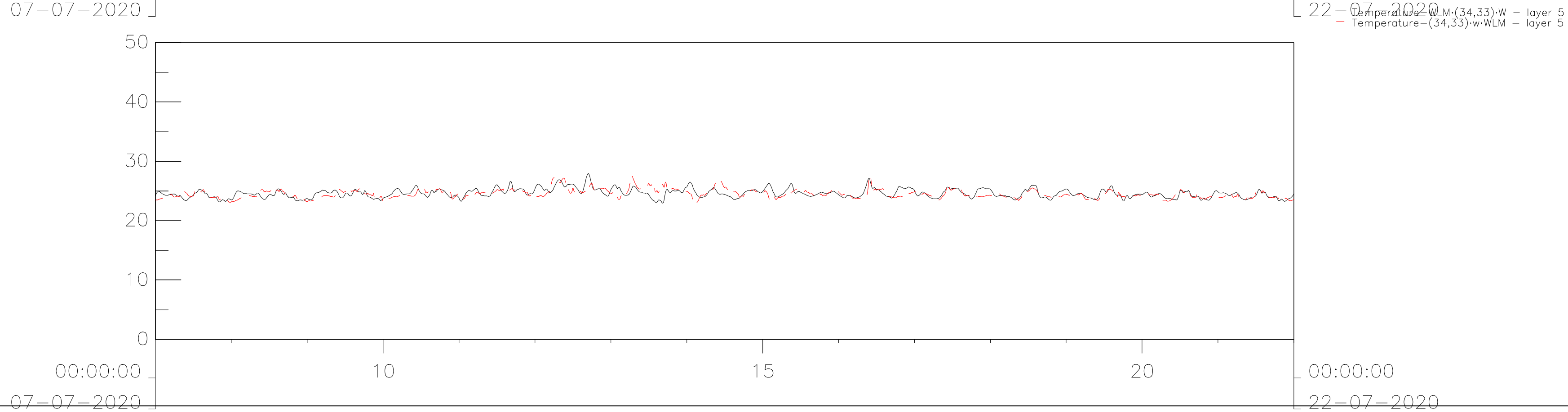
Hong Kong Offshore LNG Terminal

Hydrodynamic Model Verification – Temperature at NW, SW & SE Lantau

Black: Update Model; Washed Red: OLNG Model







GPP/

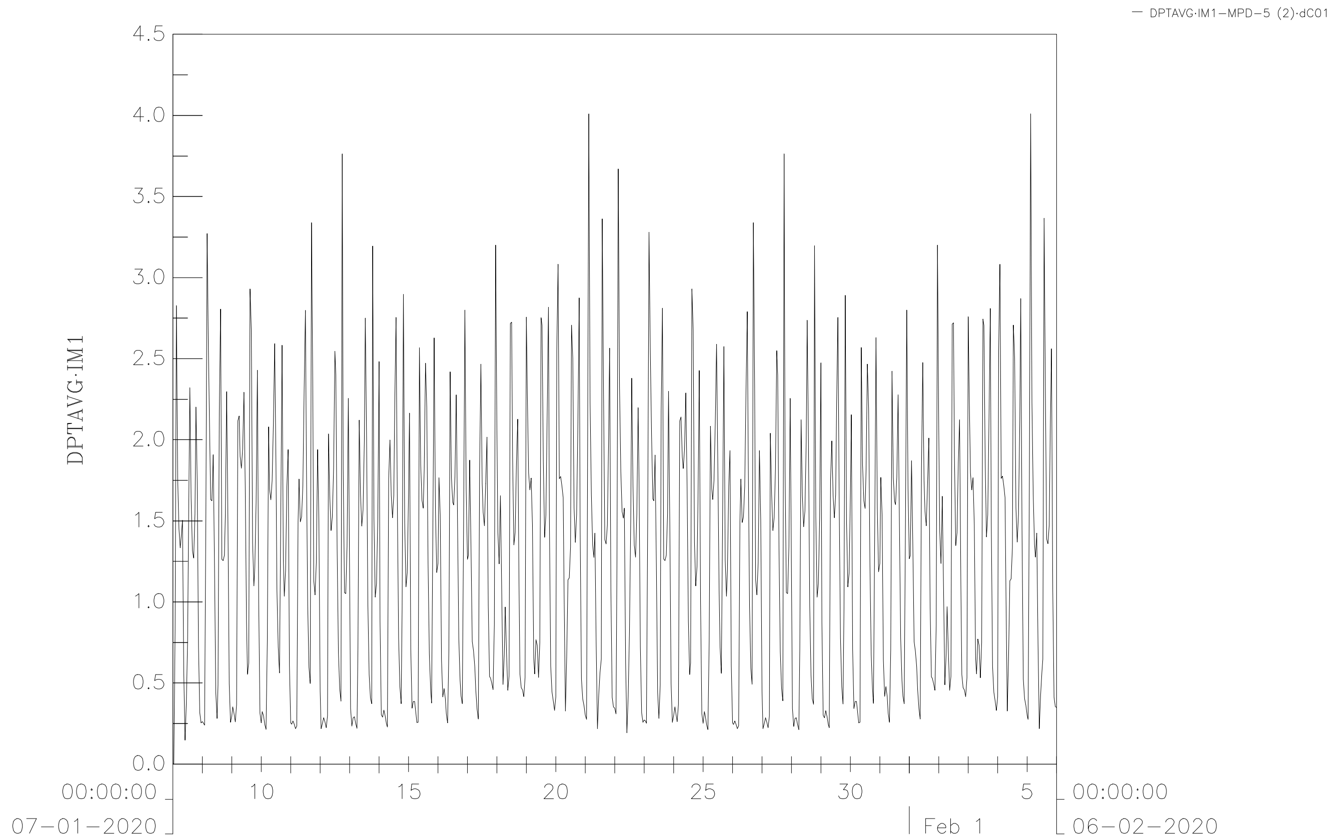
2020

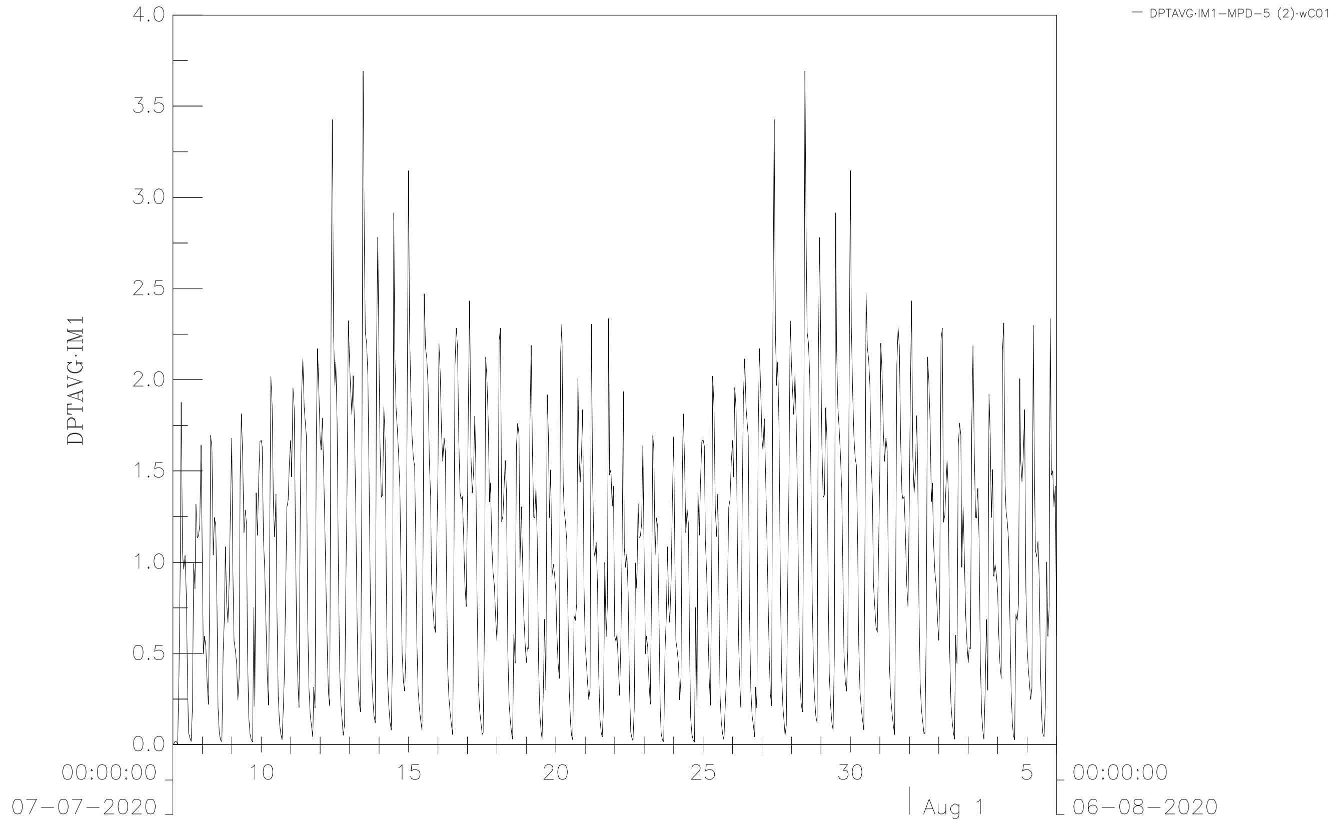
HW Verification.ssn

Wet

Appendix C

Spin up Check for Sediment Plume Model





Offshore LNG Terminal EIA Construction Phase Sediment Plume Modelling – Spinup Check Time Series for Depth–averaged SS at MPD–5; Top: Dry Season, Bottom: Wet Season		2019
ERM	GPP/	SS·Spinup.ssn

Appendix D

Material Safety Data Sheet for WFT-9371

Weatherford®

Material Safety Data Sheet
WFT 9371

HEALTH	1
FLAMMABILITY	0
REACTIVITY	0
PERSONAL PROTECTION	B

24 hr. Emergency Contact (CHEMTREC) US Tel: 1- 800 - 424-9300 - Int'l. Tel. 703 - 527 - 3887

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER: WEATHERFORD ENGINEERED CHEMISTRY®
515 POST OAK BLVD., SUITE 100
HOUSTON, TX 77027

MANUFACTURER: CLEARWATER INTERNATIONAL L.L.C.
4420 SOUTH FLORES ROAD
ELMENDORF,TEXAS 78112

PRODUCT NAME: WFT 9371
PRODUCT CODE:XCI3135B
PRODUCT USE/CLASS: PIPELINE HYDROTEST

MSDS REVISION DATE: 04/15/05 **PREPARER:** MJW **PHONE:** 724-318-1050

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	EXPOSURE LIMITS	CAS#	% BY WEIGHT
SODIUM METABISULFITE	ACGIH TLV – 5 MG/M3 TWA OSHA PEL – 5 MG/M3 TWA	7681-57-4	10-30 %

3. HAZARD IDENTIFICATION

EYE: Liquid, aerosols and vapors of this product may be irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes.

SKIN: May cause skin irritation. Allergic reactions are possible.

INGESTION: May be irritating to mouth throat and stomach.

INHALATION: May cause irritation to mucous membranes and lung tissue.

CHRONIC INFORMATION: None known

PRIMARY ROUTE(S) OF ENTRY: Eye contact.

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get medical attention, if irritation persists.

SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persist.

INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

INGESTION: : Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

5. FIRE FIGHTING MEASURES

FLASH POINT: NONE
(TAGLIABUE CLOSED CUP)

LOWER EXPLOSIVE LIMIT: N.D.
UPPER EXPLOSIVE LIMIT: N.D.

AUTOIGNITION TEMPERATURE: N.D.

EXTINGUISHING MEDIA: Use media suitable for surrounding materials.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Containers can build up pressure if exposed to heat (fire).

SPECIAL FIRE FIGHTING PROCEDURES: As in any fire, wear a self-contained breathing apparatus pressure-demand (MSHA/NIOSH approved or equivalent) and full protective gear.

6. ACCIDENTIAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. (See exposure controls / personal protection section) Spilled material should be disposed of according to applicable regulations.

7. HANDLING AND STORAGE

HANDLING: Handle all chemicals with care. Wash thoroughly after handling.

STORAGE: Keep container closed when not in use. Store in a cool, dry, well ventilated place away from incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their exposure limits.

RESPIRATORY PROTECTION: No protection needed under normal use and conditions. Use a NIOSH/MSHA approved air purifying respirator when high airborne concentrations are expected. High airborne concentrations are found in enclosed spaces or areas with poor ventilation. Protection by air purifying respirators is limited.

SKIN PROTECTION: When contact is likely wear chemical resistant gloves and boots.

EYE PROTECTION: Wear safety glasses with side shields or goggles.

OTHER PROTECTIVE EQUIPMENT: Emergency eye wash stations and deluge showers should be available in the work area.

HYGIENIC PRACTICES: Wash hands before eating. Use only with adequate ventilation. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless to Lt yellow
ODOR: sulfur Like
BOILING POINT (RANGE): Similar to water
FREEZE POINT: N/D
VAPOR DENSITY: N/A
VAPOR PRESSURE: N/D
PHYSICAL STATE: Liquid
SOLUBILITY IN WATER: Soluble
PH (AS IS): 7.2-7.8
SPECIFIC GRAVITY: 1.20-1.24

10. STABILITY AND REACTIVITY DATA

CONDITIONS TO AVOID: Avoid temperature extremes

INCOMPATIBILITY: Avoid contact with strong acids and oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon. sodium, sulfur, phosphorous, and nitrogen.

HAZARDOUS POLYMERIZATION: Will not occur under normal use and storage conditions.

CHEMICAL STABILITY: This product is stable under normal storage conditions.

11. TOXICOLOGICAL INFORMATION

ORAL: No product information is available.

DERMAL: No product information is available.

INHALATION: No product information is available.

12. ECOLOGICAL INFORMATION

ECOTOXICITY: (500 ppm test concentration) (EPA-821-R-02-012) *mysidopsis bahia* = 48hr NOEC = 100 %CTS
LOEC > 100 %CTS
Menidia beryllina = 48hr NOEC = 100 %CTS
LOEC > 100 %CTS

CHEMICAL FATE INFORMATION: No product information is available

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Consult local, state, or federal regulatory agencies for acceptable disposal procedures and disposal locations. Disposal in streams or sewers may be prohibited by federal, state, and local regulations.

RCRA STATUS: None

14. TRANSPORTATION INFORMATION

(NON-BULK SHIPMENTS)
D.O.T. PROPER SHIPPING NAME: Not Regulated
D.O.T. TECHNICAL NAME: Non-Hazardous for D.O.T. Purposes
D.O.T. HAZARD CLASS: N/A **HAZARD SUBCLASS:** N/A
D.O.T. UN NUMBER: N/A **PACKING GROUP:** N/A **RESP. GUIDE PAGE:** N/A

(BULK SHIPMENTS)
D.O.T. PROPER SHIPPING NAME: Not Regulated
D.O.T. TECHNICAL NAME: Non-Hazardous for D.O.T. Purposes
D.O.T. HAZARD CLASS: N/A **HAZARD SUBCLASS:** N/A
D.O.T. UN NUMBER: N/A **PACKING GROUP:** N/A **RESP. GUIDE PAGE:** N/A

T.D.G. PROPER SHIPPING NAME: Not Regulated
T.D.G. TECHNICAL NAME: N/A
T.D.G. HAZARD CLASS: N/A **HAZARD SUBCLASS:** N/A
T.D.G. UN NUMBER: N/A **PACKING GROUP:** N/A **RESP. GUIDE PAGE:** N/A

IMDG PROPER SHIPPING NAME: Not Regulated
IMDG TECHNICAL NAME: N/A
IMDG HAZARD CLASS: N/A **HAZARD SUBCLASS:** N/A
IMDG UN NUMBER: N/A **PACKING GROUP:** N/A **EmS No:** N/A

15. REGULATORY INFORMATION

CERCLA – SARA HAZARD CATEGORY:

SECTION 311/312: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendments and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

NONE

Material Safety Data Sheet
WFT 9371

SARA SECTION 313: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

COMPONENT	CAS#	% BY WEIGHT

No SARA Section 313 components exist in this product.

TSCA STATUS:

All components of this product are listed on the Toxic Substance Control Act Inventory or are excluded from the listing requirements.

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: D-2B

CANADIAN ENVIRONMENTAL PROTECTION ACT:

All components of this product are listed on the Canadian Domestic Substance List (DSL).

16. OTHER INFORMATION

HMIS RATING – HEALTH: 1 **FLAMMABILITY:** 0 **REACTIVITY:** 0 **PERSONAL PROTECTIVE RATING:** B

LEGEND: N.A. – NOT APPLICABLE, N.E. - NOT ESTABLISHED, N.D. – NOT DETERMINED

THIS PRODUCT'S HEALTH AND SAFETY INFORMATION IS PROVIDED TO ASSIST OUR CUSTOMERS IN ASSESSING COMPLIANCE WITH HEALTH, SAFETY AND ENVIRONMENTAL REGULATIONS. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US, AND IS BELIEVED TO BE ACCURATE, ALTHOUGH NO GUARANTEE OR WARRANTY IS PROVIDED OR IMPLIED BY THE COMPANY IN THIS RESPECT. SINCE THE USE OF THIS PRODUCT IS WITHIN THE EXCLUSIVE CONTROL OF THE USER, IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE CONDITIONS OF SAFE USE. SUCH CONDITIONS MUST COMPLY WITH ALL GOVERNMENTAL REGULATIONS.

Annex 7C

Part 1 - Result Tables for Construction Phase Sediment Plume Modelling

Unmitigated Scenarios

Table 7C.1 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C01A

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	0.9	100.0%	6.0	0.8	100.0%	-	-	-
	AR1	7.8	0.7	100.0%	4.3	0.5	100.0%	-	-	-
	CR3	6.6	0.6	100.0%	6.0	0.5	100.0%	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.1	100.0%	6.3	0.1	100.0%	-	-	-
	MPD-8	6.0	0.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.5	100.0%	3.1	0.9	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.1	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	0.8	100.0%	6.9	0.8	100.0%	200	20.3	21.2
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.1	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.3	100.0%	8.8	0.2	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	0.9	100.0%	6.0	0.8	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	0.3	100.0%	6.3	0.1	100.0%	-	-	-
Proposed Southwest Lantau MP	MPC-7	8.5	0.5	100.0%	6.3	0.3	100.0%	-	-	-
	MPC-8	6.0	0.1	100.0%	6.3	0.1	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	0.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.5	100.0%	3.1	0.9	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.1	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.2	-	-	0.1	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.1	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	0.3	-	-	0.3	-	-	-	-
Yi O	H4	-	0.4	-	-	0.3	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.2	-	-	0.3	-	-	-	-
	NB4	-	0.1	-	-	0.1	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	8.8	100.0%	7.2	6.3	100.0%	200	**295.4**	**260.9**
	CR2	11.6	3.8	100.0%	7.2	4.5	100.0%	200	136.7	172.6
Pak Chau	CR3	10.4	0.9	100.0%	12.1	1.1	100.0%	200	26.3	19.0
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.2
Siu A Chau	CR5	7.2	0.2	100.0%	10.6	0.0	100.0%	200	8.5	0.9
Tai A Chau	CR6	7.2	0.1	100.0%	10.6	0.1	100.0%	200	4.7	3.5

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.1
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.1
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.1	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Shek Kok Tsui	CR12	3.9	0.6	100.0%	5.6	0.4	100.0%	200	23.3	15.8
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	3.3	0.8
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.1
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.9	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.2
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	1.0	0.3
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.3
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.1	100.0%	200	0.5	2.3
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.1	100.0%	6.3	0.1	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Siu A Chau Wan	NB5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.8	100.0%	100.7	0.6	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.2	100.0%	734.7	0.4	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.2	100.0%	723.8	0.3	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.2	100.0%	12.1	0.2	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.2	100.0%	8.1	0.1	100.0%	-	-	-
Airport	C6	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C7	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.2	100.0%	6.0	0.2	100.0%	-	-	-
	MPA-2	6.6	0.4	100.0%	6.0	0.3	100.0%	-	-	-
	MPA-3	7.8	0.5	100.0%	4.3	0.2	100.0%	-	-	-
	MPA-4	7.8	0.1	100.0%	4.3	0.0	100.0%	-	-	-
	MPC-1	8.5	0.4	100.0%	6.3	0.4	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season				Dry Season	Wet Season
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**	**Criteria**	**Max.**	**Max.**
	MPC-2	8.5	0.9	100.0%	6.3	0.7	100.0%	-	-	-
	MPC-3	6.0	0.6	100.0%	6.3	0.5	100.0%	-	-	-
	MPC-4	6.0	0.3	100.0%	6.3	0.4	100.0%	-	-	-
	MPC-5	6.0	0.2	100.0%	6.3	0.3	100.0%	-	-	-
	MPC-6	6.0	0.2	100.0%	6.3	0.2	100.0%	-	-	-
	MPD-1	6.0	0.2	100.0%	6.3	0.1	100.0%	-	-	-
	MPD-2	6.0	0.1	100.0%	6.3	0.1	100.0%	-	-	-
	MPD-3	3.9	0.2	100.0%	3.1	0.2	100.0%	-	-	-
	MPD-4	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-5	3.9	3.7	100.0%	3.1	**3.7**	**99.2%**	-	-	-
	MPD-6	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-7	3.9	0.4	100.0%	3.1	0.1	100.0%	-	-	-

Table 7C.2 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs from various Marine Construction Scenarios C01B

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	0.9	100.0%	6.0	0.8	100.0%	-	-	-
	AR1	7.8	0.7	100.0%	4.3	0.4	100.0%	-	-	-
	CR3	6.6	0.7	100.0%	6.0	0.5	100.0%	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.1	100.0%	6.3	0.2	100.0%	-	-	-
	MPD-8	6.0	0.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.5	100.0%	3.1	0.9	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.1	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	0.8	100.0%	6.9	0.7	100.0%	200	16.4	20.2
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.1	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.3	100.0%	8.8	0.2	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	0.9	100.0%	6.0	0.8	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	0.2	100.0%	6.3	0.1	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	0.3	100.0%	6.3	0.6	100.0%	-	-	-
	MPC-8	6.0	0.1	100.0%	6.3	0.2	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	0.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.5	100.0%	3.1	0.9	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.1	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.2	-	-	0.1	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.1	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	0.2	-	-	0.2	-	-	-	-
Yi O	H4	-	0.3	-	-	0.3	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.2	-	-	0.5	-	-	-	-
	NB4	-	0.1	-	-	0.1	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	8.8	100.0%	7.2	6.3	100.0%	200	**295.3**	**260.9**
	CR2	11.6	3.7	100.0%	7.2	4.5	100.0%	200	138.5	172.4
Pak Chau	CR3	10.4	0.8	100.0%	12.1	1.0	100.0%	200	20.7	18.2
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.2
Siu A Chau	CR5	7.2	0.2	100.0%	10.6	0.0	100.0%	200	8.1	0.9
Tai A Chau	CR6	7.2	0.1	100.0%	10.6	0.1	100.0%	200	4.5	2.2
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Shek Kok Tsui	CR12	3.9	0.6	100.0%	5.6	0.4	100.0%	200	23.2	15.8
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	3.2	1.0
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.1
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.9	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.2
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	1.1	0.3
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.3
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.1	100.0%	200	0.5	2.3
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.1	100.0%	6.3	0.1	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.8	100.0%	100.7	0.6	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.1	100.0%	734.7	0.7	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.1	100.0%	723.8	0.1	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.1	100.0%	12.1	0.1	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.1	100.0%	8.1	0.1	100.0%	-	-	-
Airport	C6	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C7	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	MPA-2	6.6	0.4	100.0%	6.0	0.3	100.0%	-	-	-
	MPA-3	7.8	0.5	100.0%	4.3	0.2	100.0%	-	-	-
	MPA-4	7.8	0.1	100.0%	4.3	0.0	100.0%	-	-	-
	MPC-1	8.5	0.3	100.0%	6.3	0.6	100.0%	-	-	-
	MPC-2	8.5	3.0	100.0%	6.3	2.0	100.0%	-	-	-
	MPC-3	6.0	1.3	100.0%	6.3	1.0	100.0%	-	-	-
	MPC-4	6.0	0.3	100.0%	6.3	0.6	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	0.2	100.0%	6.3	0.5	100.0%	-	-	-
	MPC-6	6.0	0.2	100.0%	6.3	0.3	100.0%	-	-	-
	MPD-1	6.0	0.2	100.0%	6.3	0.1	100.0%	-	-	-
	MPD-2	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-3	3.9	0.2	100.0%	3.1	0.2	100.0%	-	-	-
	MPD-4	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-5	3.9	3.7	100.0%	3.1	**3.7**	**99.2%**	-	-	-
	MPD-6	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-7	3.9	0.4	100.0%	3.1	0.1	100.0%	-	-	-

Table 7C.3 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C01C

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	1.0	100.0%	6.0	0.8	100.0%	-	-	-
	AR1	7.8	0.7	100.0%	4.3	0.5	100.0%	-	-	-
	CR3	6.6	0.6	100.0%	6.0	0.5	100.0%	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-8	6.0	0.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.5	100.0%	3.1	0.9	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.1	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	0.8	100.0%	6.9	0.8	100.0%	200	20.4	20.6
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.1	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.3	100.0%	8.8	0.2	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	1.0	100.0%	6.0	0.8	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	0.2	100.0%	6.3	0.1	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-8	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	0.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.5	100.0%	3.1	0.9	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.1	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.2	-	-	0.1	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.1	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	0.1	-	-	0.0	-	-	-	-
Yi O	H4	-	0.1	-	-	0.0	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.0	-	-	0.0	-	-	-	-
	NB4	-	0.0	-	-	0.0	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	8.8	100.0%	7.2	6.3	100.0%	200	**295.4**	**254.5**
	CR2	11.6	3.7	100.0%	7.2	4.5	100.0%	200	138.8	152.7
Pak Chau	CR3	10.4	0.9	100.0%	12.1	1.1	100.0%	200	25.6	23.4
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.2
Siu A Chau	CR5	7.2	0.2	100.0%	10.6	0.0	100.0%	200	8.0	0.9
Tai A Chau	CR6	7.2	0.1	100.0%	10.6	0.0	100.0%	200	4.1	0.5
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Shek Kok Tsui	CR12	3.9	0.6	100.0%	5.6	0.4	100.0%	200	23.4	15.6
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	2.9	1.0
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.1
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.8	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.2
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	1.1	0.3
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.3
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.1	100.0%	200	0.5	2.4
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.8	100.0%	100.7	0.6	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.4	100.0%	734.7	0.4	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.4	100.0%	723.8	0.5	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.4	100.0%	12.1	0.3	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.3	100.0%	8.1	0.2	100.0%	-	-	-
Airport	C6	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C7	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.4	100.0%	6.0	0.2	100.0%	-	-	-
	MPA-2	6.6	0.4	100.0%	6.0	0.3	100.0%	-	-	-
	MPA-3	7.8	0.5	100.0%	4.3	0.2	100.0%	-	-	-
	MPA-4	7.8	0.1	100.0%	4.3	0.0	100.0%	-	-	-
	MPC-1	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-6	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-1	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-2	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-3	3.9	0.2	100.0%	3.1	0.2	100.0%	-	-	-
	MPD-4	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-5	3.9	3.7	100.0%	3.1	**3.7**	**99.2%**	-	-	-
	MPD-6	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-7	3.9	0.4	100.0%	3.1	0.1	100.0%	-	-	-

Table 7C.4 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C02

Sensitive Receivers	Model Output Location	SS Elevation ($mg\ L^{-1}$)						Sediment Deposition ($g\ m^{-2}\ day^{-1}$)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	0.1	100.0%	6.0	0.1	100.0%	-	-	-
	AR1	7.8	0.1	100.0%	4.3	0.0	100.0%	-	-	-
	CR3	6.6	0.1	100.0%	6.0	0.0	100.0%	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	0.1	100.0%	6.9	0.1	100.0%	200	2.7	2.3
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	7.7	100.0%	7.1	0.8	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	**14.4**	**99.6%**	8.8	5.8	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	0.1	100.0%	6.0	0.1	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	0.1	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-8	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.3	-	-	0.1	-	-	-	-
Ha Pak Nai	H1	-	9.5	-	-	3.9	-	-	-	-
Ngau Hom Shek	H8	-	0.2	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.1	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.1	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	0.0	-	-	0.0	-	-	-	-
Yi O	H4	-	0.0	-	-	0.0	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.0	-	-	0.0	-	-	-	-
	NB4	-	0.0	-	-	0.0	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	**106.5**	**96.5%**	7.2	**135.5**	**97.1%**	200	**4501.9**	**3628.0**
	CR2	11.6	**90.9**	**96.1%**	7.2	**48.8**	**97.2%**	200	**2921.2**	**1328.0**
Pak Chau	CR3	10.4	0.1	100.0%	12.1	0.0	100.0%	200	2.4	1.5
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.2
Siu A Chau	CR5	7.2	0.2	100.0%	10.6	0.0	100.0%	200	6.8	0.6
Tai A Chau	CR6	7.2	0.0	100.0%	10.6	0.0	100.0%	200	1.7	0.2
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.1	0.0
Shek Kok Tsui	CR12	3.9	0.5	100.0%	5.6	0.3	100.0%	200	19.6	10.5
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	2.6	0.7
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.0
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.7	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.1
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	0.9	0.1
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.1
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.4	1.6
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.1	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.1	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	36.1	100.0%	100.7	26.6	100.0%	-	-	-
Black Point Power Station	C2	728.7	26.5	100.0%	734.7	34.1	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	5.8	100.0%	723.8	3.2	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	4.3	100.0%	12.1	2.8	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	3.6	100.0%	8.1	2.1	100.0%	-	-	-
Airport	C6	9.8	0.0	100.0%	6.9	0.1	100.0%	-	-	-
	C7	9.8	0.1	100.0%	6.9	0.2	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.7	100.0%	6.0	0.7	100.0%	-	-	-
	MPA-2	6.6	0.3	100.0%	6.0	0.1	100.0%	-	-	-
	MPA-3	7.8	0.1	100.0%	4.3	0.1	100.0%	-	-	-
	MPA-4	7.8	0.2	100.0%	4.3	0.2	100.0%	-	-	-
	MPC-1	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-6	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-1	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-2	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-3	3.9	0.1	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-4	3.9	0.2	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-5	3.9	0.9	100.0%	3.1	0.6	100.0%	-	-	-
	MPD-6	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-7	3.9	0.3	100.0%	3.1	0.1	100.0%	-	-	-

Table 7C.5 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C03

Sensitive Receivers	Model Output Location	SS Elevation (mg L-1)						Sediment Deposition (g m-2 day-1)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	**7.0**	**99.7%**	6.0	3.6	100.0%	-	-	-
	AR1	7.8	4.5	100.0%	4.3	1.7	100.0%	-	-	-
	CR3	6.6	2.1	100.0%	6.0	2.2	100.0%	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	5.1	100.0%	6.9	2.3	100.0%	200	88.8	66.4
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.0	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.1	100.0%	8.8	0.0	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	**7.0**	**99.7%**	6.0	3.6	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	1.0	100.0%	6.3	0.1	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-8	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.0	-	-	0.0	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.1	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	0.1	-	-	0.0	-	-	-	-
Yi O	H4	-	0.1	-	-	0.0	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.0	-	-	0.0	-	-	-	-
	NB4	-	0.0	-	-	0.0	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.3	100.0%	7.2	0.0	100.0%	200	10.0	1.7
	CR2	11.6	0.3	100.0%	7.2	0.1	100.0%	200	10.8	2.1
Pak Chau	CR3	10.4	2.4	100.0%	12.1	3.9	100.0%	200	76.6	137.4
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.2
Siu A Chau	CR5	7.2	0.2	100.0%	10.6	0.0	100.0%	200	6.7	0.5
Tai A Chau	CR6	7.2	0.0	100.0%	10.6	0.0	100.0%	200	1.7	0.2
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.1	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.1	0.0
Shek Kok Tsui	CR12	3.9	0.5	100.0%	5.6	0.3	100.0%	200	20.6	10.3
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	2.6	0.6
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.0
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.8	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.1
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	0.9	0.1
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.2
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.4	1.6
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.1	100.0%	100.7	0.0	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.6	100.0%	734.7	0.3	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.8	100.0%	723.8	0.4	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.6	100.0%	12.1	0.3	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.5	100.0%	8.1	0.2	100.0%	-	-	-
Airport	C6	9.8	0.0	100.0%	6.9	0.1	100.0%	-	-	-
	C7	9.8	0.3	100.0%	6.9	0.2	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	4.7	100.0%	6.0	3.0	100.0%	-	-	-
	MPA-2	6.6	**169.6**	**94.7%**	6.0	**191.5**	**96.3%**	-	-	-
	MPA-3	7.8	3.0	100.0%	4.3	0.3	100.0%	-	-	-
	MPA-4	7.8	1.6	100.0%	4.3	0.5	100.0%	-	-	-
	MPC-1	8.5	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-2	8.5	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-6	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-1	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-2	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-3	3.9	0.1	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-4	3.9	0.2	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-5	3.9	0.9	100.0%	3.1	0.6	100.0%	-	-	-
	MPD-6	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-7	3.9	0.3	100.0%	3.1	0.1	100.0%	-	-	-

Table 7C.6 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C04

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	4.7	100.0%	6.0	5.3	100.0%	-	-	-
	AR1	7.8	**11.6**	**99.5%**	4.3	**8.9**	**99.4%**	-	-	-
	CR3	6.6	**10.2**	**98.5%**	6.0	**7.0**	**99.9%**	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.1	100.0%	6.3	0.3	100.0%	-	-	-
	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	**12.9**	**99.7%**	6.9	**13.8**	**99.4%**	200	**503.2**	**452.1**
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.0	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.0	100.0%	8.8	0.0	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.1	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	4.7	100.0%	6.0	5.3	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	7.9	100.0%	6.3	**6.7**	**99.8%**	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	3.6	100.0%	6.3	3.4	100.0%	-	-	-
	MPC-8	6.0	0.1	100.0%	6.3	0.3	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.0	-	-	0.0	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.1	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	1.9	-	-	0.6	-	-	-	-
Sham Wat Wan	H6	-	0.2	-	-	0.8	-	-	-	-
Tai O	H3	-	4.7	-	-	5.6	-	-	-	-
Yi O	H4	-	8.3	-	-	7.2	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.9	-	-	2.0	-	-	-	-
	NB4	-	0.1	-	-	0.2	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.2	0.3
	CR2	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.2	0.3
Pak Chau	CR3	10.4	**11.8**	**99.6%**	12.1	11.0	100.0%	200	**341.0**	**224.2**
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.2
Siu A Chau	CR5	7.2	0.2	100.0%	10.6	0.0	100.0%	200	6.8	0.6
Tai A Chau	CR6	7.2	0.1	100.0%	10.6	0.2	100.0%	200	3.0	8.5
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Shek Kok Tsui	CR12	3.9	0.5	100.0%	5.6	0.3	100.0%	200	20.7	10.1
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	2.6	0.6
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.0
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.7	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.1
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	0.8	0.1
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.2
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.4	1.6
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.1	100.0%	6.3	0.1	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.1	100.0%	6.3	0.1	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.1	100.0%	6.3	0.2	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.0	100.0%	100.7	0.0	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.0	100.0%	734.7	0.0	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.0	100.0%	723.8	0.0	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.0	100.0%	12.1	0.0	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.0	100.0%	8.1	0.0	100.0%	-	-	-
Airport	C6	9.8	0.1	100.0%	6.9	0.1	100.0%	-	-	-
	C7	9.8	0.3	100.0%	6.9	0.3	100.0%	-	-	-
	C8	11.5	0.1	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.3	100.0%	11.9	0.1	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	MPA-2	6.6	0.5	100.0%	6.0	0.2	100.0%	-	-	-
	MPA-3	7.8	**17.8**	**99.6%**	4.3	**85.6**	**98.3%**	-	-	-
	MPA-4	7.8	0.9	100.0%	4.3	0.8	100.0%	-	-	-
	MPC-1	8.5	6.1	100.0%	6.3	4.8	100.0%	-	-	-
	MPC-2	8.5	8.1	100.0%	6.3	6.0	100.0%	-	-	-
	MPC-3	6.0	3.8	100.0%	6.3	3.1	100.0%	-	-	-
	MPC-4	6.0	2.1	100.0%	6.3	1.9	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	0.9	100.0%	6.3	2.0	100.0%	-	-	-
	MPC-6	6.0	0.7	100.0%	6.3	0.6	100.0%	-	-	-
	MPD-1	6.0	0.6	100.0%	6.3	0.3	100.0%	-	-	-
	MPD-2	6.0	0.4	100.0%	6.3	0.2	100.0%	-	-	-
	MPD-3	3.9	0.1	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-4	3.9	0.2	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-5	3.9	0.9	100.0%	3.1	0.6	100.0%	-	-	-
	MPD-6	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-7	3.9	0.3	100.0%	3.1	0.1	100.0%	-	-	-

Table 7C.7 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C05

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	AR1	7.8	0.1	100.0%	4.3	0.0	100.0%	-	-	-
	CR3	6.6	0.1	100.0%	6.0	0.0	100.0%	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	1.0	100.0%	6.3	3.3	100.0%	-	-	-
	MPD-8	6.0	2.8	100.0%	6.3	1.5	100.0%	-	-	-
	MPD-9	3.9	3.5	100.0%	3.1	2.8	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.5	100.0%	6.3	0.4	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	0.1	100.0%	6.9	0.0	100.0%	200	4.5	1.2
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.0	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.0	100.0%	8.8	0.0	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	0.6	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	2.6	100.0%	6.3	2.5	100.0%	-	-	-
	MPC-8	6.0	1.0	100.0%	6.3	3.3	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	2.8	100.0%	6.3	1.5	100.0%	-	-	-
	MPD-9	3.9	3.5	100.0%	3.1	2.8	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.0	-	-	0.0	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.2	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	1.2	-	-	0.4	-	-	-	-
Yi O	H4	-	2.1	-	-	1.4	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	2.2	-	-	6.7	-	-	-	-
	NB4	-	0.5	-	-	2.1	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.1	0.1
	CR2	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.1	0.1
Pak Chau	CR3	10.4	0.1	100.0%	12.1	0.0	100.0%	200	3.6	0.9
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.4
Siu A Chau	CR5	7.2	0.6	100.0%	10.6	0.4	100.0%	200	23.8	16.1
Tai A Chau	CR6	7.2	3.3	100.0%	10.6	**12.2**	**99.8%**	200	127.9	**500.4**
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.1	0.0
Shek Kok Tsui	CR12	3.9	0.5	100.0%	5.6	0.3	100.0%	200	19.7	10.3
Pak Kok	CR13	4.8	0.1	100.0%	4.8	0.0	100.0%	200	2.6	0.7
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.0
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.7	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.1
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	0.9	0.1
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.2
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.4	1.6
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.5	100.0%	6.3	2.1	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L-1)						Sediment Deposition (g m-2 day-1)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.0	100.0%	100.7	0.0	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.0	100.0%	734.7	0.0	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.0	100.0%	723.8	0.0	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.0	100.0%	12.1	0.0	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.0	100.0%	8.1	0.0	100.0%	-	-	-
Airport	C6	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C7	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	MPA-2	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	MPA-3	7.8	0.3	100.0%	4.3	0.1	100.0%	-	-	-
	MPA-4	7.8	0.1	100.0%	4.3	0.0	100.0%	-	-	-
	MPC-1	8.5	2.5	100.0%	6.3	2.6	100.0%	-	-	-
	MPC-2	8.5	3.5	100.0%	6.3	2.8	100.0%	-	-	-
	MPC-3	6.0	**9.6**	**99.4%**	6.3	**20.2**	**99.2%**	-	-	-
	MPC-4	6.0	2.3	100.0%	6.3	**8.2**	**99.4%**	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	2.2	100.0%	6.3	**6.7**	**99.9%**	-	-	-
	MPC-6	6.0	2.0	100.0%	6.3	3.4	100.0%	-	-	-
	MPD-1	6.0	2.7	100.0%	6.3	1.4	100.0%	-	-	-
	MPD-2	6.0	**15.0**	**97.5%**	6.3	**70.0**	**98.3%**	-	-	-
	MPD-3	3.9	**33.9**	**96.1%**	3.1	**17.6**	**98.2%**	-	-	-
	MPD-4	3.9	**9.1**	**96.9%**	3.1	**13.1**	**97.7%**	-	-	-
	MPD-5	3.9	**65.9**	**98.6%**	3.1	**64.9**	**98.3%**	-	-	-
	MPD-6	3.9	1.0	100.0%	3.1	0.9	100.0%	-	-	-
	MPD-7	3.9	0.9	100.0%	3.1	0.3	100.0%	-	-	-

Table 7C.8 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C06

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	AR1	7.8	0.1	100.0%	4.3	0.0	100.0%	-	-	-
	CR3	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-8	6.0	1.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	**5.1**	**99.0%**	3.1	2.1	100.0%	-	-	-
	CR4	3.9	0.6	100.0%	3.1	0.2	100.0%	-	-	-
	CR5	6.0	1.1	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.5	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.1	100.0%	3.0	0.3	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	0.1	100.0%	6.9	0.0	100.0%	200	2.7	1.2
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.0	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.0	100.0%	8.8	0.0	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	0.1	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-8	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	1.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	**5.1**	**99.0%**	3.1	2.1	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.1	100.0%	3.0	0.3	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.0	-	-	0.0	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.1	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	0.0	-	-	0.0	-	-	-	-
Yi O	H4	-	0.0	-	-	0.0	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.0	-	-	0.0	-	-	-	-
	NB4	-	0.0	-	-	0.0	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.1	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.1	0.1
	CR2	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.1	0.1
Pak Chau	CR3	10.4	0.0	100.0%	12.1	0.0	100.0%	200	1.4	0.9
Shek Kwu Chau	CR4	5.4	0.8	100.0%	4.8	0.3	100.0%	200	29.9	13.5
Siu A Chau	CR5	7.2	1.2	100.0%	10.6	0.0	100.0%	200	49.7	0.6
Tai A Chau	CR6	7.2	0.3	100.0%	10.6	0.0	100.0%	200	13.8	0.2
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.1	0.3
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.3	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.4	0.1
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.1	0.0
Shek Kok Tsui	CR12	3.9	0.9	100.0%	5.6	1.1	100.0%	200	33.7	42.3
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	3.5	1.7
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.0
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.8	0.1
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.3	0.3
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	0.9	0.1
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.1
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.1	100.0%	200	1.4	3.6
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.5	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.0	100.0%	100.7	0.0	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.0	100.0%	734.7	0.0	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.0	100.0%	723.8	0.0	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.0	100.0%	12.1	0.0	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.0	100.0%	8.1	0.0	100.0%	-	-	-
Airport	C6	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C7	9.8	0.0	100.0%	6.9	0.0	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.1	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	MPA-2	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	MPA-3	7.8	0.1	100.0%	4.3	0.1	100.0%	-	-	-
	MPA-4	7.8	0.0	100.0%	4.3	0.0	100.0%	-	-	-
	MPC-1	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L-1)						Sediment Deposition (g m-2 day-1)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-6	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-1	6.0	0.3	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-2	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-3	3.9	0.6	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-4	3.9	1.1	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-5	3.9	**15.4**	**97.5%**	3.1	**9.1**	**98.9%**	-	-	-
	MPD-6	3.9	**14.7**	**94.2%**	3.1	**3.6**	**99.7%**	-	-	-
	MPD-7	3.9	2.6	100.0%	3.1	0.1	100.0%	-	-	-

Table 7C.9 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C07

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	MPA-5	6.6	4.2	100.0%	6.0	3.3	100.0%	-	-	-
	AR1	7.8	**8.7**	**99.9%**	4.3	4.2	100.0%	-	-	-
	CR3	6.6	**20.8**	**94.3%**	6.0	**18.6**	**97.1%**	-	-	-
Fisheries Spawning/Nursery Grounds in South Lantau	MPC-7	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
	CR4	3.9	0.0	100.0%	3.1	0.0	100.0%	-	-	-
	CR5	6.0	0.1	100.0%	6.3	0.0	100.0%	-	-	-
	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	9.4	100.0%	6.9	**7.6**	**99.7%**	200	**351.7**	**322.8**
Fish Culture Zone (Depth-averaged)										
Cheung Sha Wan FCZ	FCZ1	31.1	0.0	100.0%	36.4	0.0	100.0%	-	-	-
Lo Tik Wan FCZ	FCZ2	39.7	0.0	100.0%	42.3	0.0	100.0%	-	-	-
Sok Kwu Wan FCZ	FCZ3	43.0	0.0	100.0%	43.2	0.0	100.0%	-	-	-
Oyster Production Area (Depth-averaged)										
Sheung Pak Nai	O1	8.5	0.0	100.0%	7.1	0.0	100.0%	-	-	-
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	0.0	100.0%	8.8	0.0	100.0%	-	-	-
Tung Chung Bay	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	4.2	100.0%	6.0	3.3	100.0%	-	-	-
Proposed AAHK 3RS MP	MPB	8.5	4.0	100.0%	6.3	3.5	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Proposed Southwest Lantau MP	MPC-7	8.5	0.6	100.0%	6.3	0.5	100.0%	-	-	-
	MPC-8	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Proposed South Lantau MP	MPD-8	6.0	0.2	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-9	3.9	1.3	100.0%	3.1	0.9	100.0%	-	-	-
Proposed South Lamma MP	MPE	3.9	0.0	100.0%	3.0	0.1	100.0%	-	-	-
Intertidal Mudflats / Mangroves / Horseshoe Crab Nursery Grounds										
Sheung Pak Nai	H9	-	0.0	-	-	0.0	-	-	-	-
Ha Pak Nai	H1	-	0.0	-	-	0.0	-	-	-	-
Ngau Hom Shek	H8	-	0.0	-	-	0.0	-	-	-	-
Lung Kwu Sheung Tan	NB1	-	0.0	-	-	0.0	-	-	-	-
Tung Chung Bay	C8	-	0.0	-	-	0.0	-	-	-	-
Sha Lo Wan	H2	-	0.1	-	-	0.1	-	-	-	-
Sham Wat Wan	H6	-	0.0	-	-	0.0	-	-	-	-
Tai O	H3	-	1.4	-	-	0.7	-	-	-	-
Yi O	H4	-	2.0	-	-	1.5	-	-	-	-
Fan Lau Tung Wan	MPC-5	-	0.0	-	-	0.0	-	-	-	-
	NB4	-	0.0	-	-	0.0	-	-	-	-
Tong Fuk Miu Wan / Shui Hau	H5	-	0.0	-	-	0.0	-	-	-	-
Pui O	B4	-	0.0	-	-	0.0	-	-	-	-
Shek Kwu Chau North	H7	-	0.0	-	-	0.0	-	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.2	0.2
	CR2	11.6	0.0	100.0%	7.2	0.0	100.0%	200	0.2	0.2
Pak Chau	CR3	10.4	**42.8**	**95.6%**	12.1	**91.9**	**96.9%**	200	**1465.6**	**2939.2**
Shek Kwu Chau	CR4	5.4	0.0	100.0%	4.8	0.0	100.0%	200	0.0	0.2
Siu A Chau	CR5	7.2	0.2	100.0%	10.6	0.0	100.0%	200	6.7	0.5
Tai A Chau	CR6	7.2	0.0	100.0%	10.6	0.0	100.0%	200	1.6	0.2
Cheung Chau	CR7	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
	CR8	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.2
Hei Ling Chau	CR9	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0

Sensitive Receivers	Model Output Location	SS Elevation (mg L-1)						Sediment Deposition (g m-2 day-1)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	CR10	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Sunshine Island	CR11	3.9	0.0	100.0%	5.6	0.0	100.0%	200	0.0	0.0
Shek Kok Tsui	CR12	3.9	0.5	100.0%	5.6	0.3	100.0%	200	20.0	10.3
Pak Kok	CR13	4.8	0.2	100.0%	4.8	0.0	100.0%	200	2.6	0.6
Sha Wan	CR14	4.8	0.0	100.0%	4.8	0.0	100.0%	200	0.2	0.0
Ap Lei Chau	CR15	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.1	0.0
Wong Chuk Kok	CR16	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.2	0.1
Sha Wan	CR17	4.4	0.0	100.0%	3.8	0.0	100.0%	200	0.7	0.0
Sham Wan	CR18	4.8	0.0	100.0%	3.9	0.0	100.0%	200	0.1	0.1
Luk Chau	CR19	4.4	0.1	100.0%	3.8	0.0	100.0%	200	0.9	0.1
Hung Shing Yeh	CR20	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.0	0.1
Ha Mei Wan	CR21	4.8	0.0	100.0%	4.2	0.0	100.0%	200	0.4	1.6
Chi Ma Wan Peninsula	CR22	6.5	0.0	100.0%	5.4	0.0	100.0%	200	0.0	0.0
Gazetted Beaches (Depth-averaged)										
Tong Fuk	B1	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Upper Cheung Sha Beach	B2	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Lower Cheung Sha Beach	B3	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Pui O Beach	B4	4.8	0.0	100.0%	3.7	0.0	100.0%	-	-	-
Cheung Chau Tung Wan Beach	B5	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Kwun Yam Wan Beach	B6	3.5	0.0	100.0%	3.6	0.0	100.0%	-	-	-
Hung Shing Yeh Beach	B8	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Lo So Shing Beach	B9	3.9	0.0	100.0%	3.0	0.0	100.0%	-	-	-
Non-gazetted Beaches (Depth-averaged)										
Lung Kwu Sheung Tan	NB1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Lung Kwu Tan	NB12	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
Hau Hok Wan	NB2	8.5	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Sai Wan	NB3	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Fan Lau Tung Wan	NB4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Siu A Chau Wan	NB5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
Yi Long Wan	NB6	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Tai Long Wan	NB7	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Tai Kwai Wan	NB8	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Po Yue Wan	NB9	5.7	0.0	100.0%	4.1	0.0	100.0%	-	-	-
Shek Pai Wan	NB10	3.1	0.0	100.0%	2.3	0.0	100.0%	-	-	-
Mo Tat Wan	NB11	2.1	0.0	100.0%	2.0	0.0	100.0%	-	-	-
Seawater Intakes (Bottom)										
Sludge Treatment Facilities	C1	94.7	0.0	100.0%	100.7	0.0	100.0%	-	-	-
Black Point Power Station	C2	728.7	0.0	100.0%	734.7	0.0	100.0%	-	-	-
Castle Peak Power Station	C3	729.3	0.0	100.0%	723.8	0.0	100.0%	-	-	-
Shiu Wing Steel Mill	C4	10.4	0.0	100.0%	12.1	0.0	100.0%	-	-	-
Tuen Mun Area 38	C5	7.9	0.0	100.0%	8.1	0.0	100.0%	-	-	-
Airport	C6	9.8	0.1	100.0%	6.9	0.0	100.0%	-	-	-
	C7	9.8	0.3	100.0%	6.9	0.1	100.0%	-	-	-
	C8	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
	C9	11.5	0.0	100.0%	11.9	0.0	100.0%	-	-	-
Tai Kwai Wan	NB8	6.5	0.0	100.0%	5.4	0.0	100.0%	-	-	-
Sha Wan Drive	C10	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Queen Mary Hospital	C14	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Cyper Port	C15	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Wan Fu Estate	C11	4.8	0.0	100.0%	4.8	0.0	100.0%	-	-	-
Ap Lei Chau	C12	4.4	0.0	100.0%	3.8	0.0	100.0%	-	-	-
Lamma Power Station	C13	84.0	0.0	100.0%	86.0	0.0	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-1	6.6	0.0	100.0%	6.0	0.0	100.0%	-	-	-
	MPA-2	6.6	1.6	100.0%	6.0	0.8	100.0%	-	-	-
	MPA-3	7.8	**47.6**	**99.5%**	4.3	**13.5**	**99.4%**	-	-	-
	MPA-4	7.8	1.0	100.0%	4.3	0.3	100.0%	-	-	-
	MPC-1	8.5	1.5	100.0%	6.3	1.1	100.0%	-	-	-
	MPC-2	8.5	1.4	100.0%	6.3	0.9	100.0%	-	-	-
	MPC-3	6.0	0.3	100.0%	6.3	0.2	100.0%	-	-	-
	MPC-4	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
	MPC-5	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPC-6	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-1	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-2	6.0	0.0	100.0%	6.3	0.0	100.0%	-	-	-
	MPD-3	3.9	0.1	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-4	3.9	0.2	100.0%	3.1	0.1	100.0%	-	-	-
	MPD-5	3.9	0.9	100.0%	3.1	0.6	100.0%	-	-	-
	MPD-6	3.9	0.5	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-7	3.9	0.3	100.0%	3.1	0.1	100.0%	-	-	-

Mitigated Scenarios

Table 7C.10 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C01A - Mitigated

Mitigation measures:
Silt curtain at source (75% reduction in sediment dispersion): 01_G, 03_G, 05_G, 06_G, 09_G, 11_G, 13_G
Two layers of silt curtain at WSRs (80% reduction in SS elevation): CR1, CR2
Rate reduction: None

Sensitive Receivers	Model Output Location	SS Elevation ($mg\ L^{-1}$)						Sediment Deposition ($g\ m^{-2}\ day^{-1}$)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.4	100.0%	7.2	0.3	100.0%	200	14.8	13.0
	CR2	11.6	0.2	100.0%	7.2	0.2	100.0%	200	6.8	8.6
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPD-5	3.9	1.6	100.0%	3.1	0.9	100.0%	-	-	-

Table 7C.11 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C01B – Mitigated

Mitigation measures:
Silt curtain at source (75% reduction in sediment dispersion): 01_G, 03_G, 09_G, 13_G
Two layers of silt curtain at WSRs (80% reduction in SS elevation): CR1, CR2
Rate reduction: None

Sensitive Receivers	**Model Output Location**	**SS Elevation (mg L^{-1})**						**Sediment Deposition (g m^{-2} day^{-1})**		
		Dry Season			**Wet Season**			**Criteria**	**Dry Season**	**Wet Season**
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.4	100.0%	7.2	0.3	100.0%	200	14.8	13.0
	CR2	11.6	0.2	100.0%	7.2	0.2	100.0%	200	6.9	8.6
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPD-5	3.9	1.6	100.0%	3.1	0.9	100.0%	-	-	-

Table 7C.12 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C01C – Mitigated

Mitigation measures:
Silt curtain at source (75% reduction in sediment dispersion): 01_G, 03_G, 09_G, 13_G
Two layers of silt curtain at WSRs (80% reduction in SS elevation): CR1, CR2
Rate reduction: None

Sensitive Receivers	**Model Output Location**	**SS Elevation (mg L^{-1})**						**Sediment Deposition (g m^{-2} day^{-1})**		
		Dry Season			**Wet Season**			**Criteria**	**Dry Season**	**Wet Season**
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	0.4	100.0%	7.2	0.3	100.0%	200	14.8	12.7
	CR2	11.6	0.2	100.0%	7.2	0.2	100.0%	200	6.9	7.6
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPD-5	3.9	1.6	100.0%	3.1	0.9	100.0%	-	-	-

Table 7C.13 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C02 – Mitigated

Mitigation measures:
Silt curtain at source (85% reduction in sediment dispersion): 12_J
Two layers of silt curtain at WSRs (80% reduction in SS elevation): CR1, CR2
Rate reduction: None

Sensitive Receivers	Model Output Location	SS Elevation ($mg\ L^{-1}$)						Sediment Deposition ($g\ m^{-2}\ day^{-1}$)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Seagrass Beds (Bottom)										
Ha Pak Nai	H1	10.6	2.3	100.0%	8.8	0.8	100.0%	-	-	-
Corals (Bottom)										
Artificial Seawall at BPPS	CR1	11.6	3.2	100.0%	7.2	4.1	100.0%	200	118.6	108.8
	CR2	11.6	2.7	100.0%	7.2	1.5	100.0%	200	88.3	39.7

Table 7C.14 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C03 – Mitigated

Mitigation measures:
Silt curtain at source (85% reduction in sediment dispersion): 10_J
Two layers of silt curtain at WSRs (80% reduction in SS elevation): NW corner of Sha Chau and Lung Kwu Chau MP for MPA-2
Rate reduction: None

Sensitive Receivers	Model Output Location	SS Elevation ($mg\ L^{-1}$)						Sediment Deposition ($g\ m^{-2}\ day^{-1}$)		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Spawning/Nursery Grounds (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	1.1	100.0%	6.0	0.5	100.0%	-	-	-
Marine Park (Depth-averaged)										
Sha Chau and Lung Kwu Chau MP	MPA-5	6.6	1.1	100.0%	6.0	0.5	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-2	6.6	5.1	100.0%	6.0	5.7	100.0%	-	-	-

Table 7C.15 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C04 - Mitigated

Mitigation measures:
Silt curtain at source (85% reduction in sediment dispersion): 07_J
Two layers of silt curtain at WSRs (80% reduction in SS elevation): None
Rate reduction: 720 m/day for 24 hours from BPPS Pipeline KP31.5 to 26.2

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	AR1	7.8	0.8	100.0%	4.3	0.6	100.0%	-	-	-
	CR3	6.6	0.7	100.0%	6.0	0.6	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	1.0	100.0%	6.9	0.9	100.0%	200	34.5	32.0
Marine Park (Depth-averaged)										
Proposed AAHK 3RS MP	MPB	8.5	0.7	100.0%	6.3	0.6	100.0%	-	-	-
Corals (Bottom)										
Pak Chau	CR3	10.4	0.9	100.0%	12.1	0.8	100.0%	200	30.8	14.0
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-3	7.8	4.1	100.0%	4.3	2.8	100.0%	-	-	-

Table 7C.16 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C05 - Mitigated

Mitigation measures:
Silt curtain at source (85% reduction in sediment dispersion): 04_J_A, 04_J_B, 04_J_C, 04_J_D
Two layers of silt curtain at WSRs (80% reduction in SS elevation): Southern Boundary of the Proposed South Lantau MP for MPD-2, MPD-3, MPD-4, MPD-5, MPD-9 (KP0.1-8.9)
Rate reduction: None

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Corals (Bottom)										
Tai A Chau	CR6	7.8	0.5	100.0%	4.3	1.2	100.0%	200	14.3	42.9
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPC-3	6.0	1.5	100.0%	6.3	2.2	100.0%	-	-	-
	MPC-4	6.0	0.3	100.0%	6.3	1.2	100.0%	-	-	-
	MPC-5	6.0	0.3	100.0%	6.3	1.0	100.0%	-	-	-
	MPD-2	6.0	0.4	100.0%	6.3	2.1	100.0%	-	-	-
	MPD-3	3.9	1.0	100.0%	3.1	0.5	100.0%	-	-	-
	MPD-4	3.9	0.2	100.0%	3.1	0.4	100.0%	-	-	-
	MPD-5	3.9	2.1	100.0%	3.1	1.7	100.0%	-	-	-

Table 7C.17 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C06 - Mitigated

Mitigation measures:
Silt curtain at source (85% reduction in sediment dispersion): 02_J_A, 02_J_B, 02_J_C
Two layers of silt curtain at WSRs (80% reduction in SS elevation): Eastern Boundary of the Proposed South Lantau MP for MPD-5, MPD-6, MPD-9 (KP0.1-5.0)
Rate reduction: None

Sensitive Receivers	Model Output Location	SS Elevation (mg L^{-1})						Sediment Deposition (g m^{-2} day^{-1})		
		Dry Season			Wet Season			Criteria	Dry Season	Wet Season
		Allowable Increase	Max. Increase	Compliance Time %	Allowable Increase	Max. Increase	Compliance Time %		Max.	Max.
Marine Park (Depth-averaged)										
Proposed South Lantau MP	MPD-9	3.9	0.3	100.0%	3.1	0.2	100.0%	-	-	-
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPD-5	3.9	0.5	100.0%	3.1	0.6	100.0%	-	-	-
	MPD-6	3.9	0.3	100.0%	3.1	0.2	100.0%	-	-	-

Table 7C.18 Predicted Maximum Elevation in Suspended Solid and Sediment Deposition at WSRs and Observation Points from various Marine Construction Scenarios C07 - Mitigated

Mitigation measures:
Silt curtain at source (85% reduction in sediment dispersion): 08_J
Two layers of silt curtain at WSRs (80% reduction in SS elevation): Western Boundary of the Sha Chau and Lung Kwu Chau MP for MPA-3, AR1, CR3 (KP31.5-36.0)
Rate reduction: None

Sensitive Receivers	**Model Output Location**	**SS Elevation (mg L^{-1})**						**Sediment Deposition (g m^{-2} day^{-1})**		
		Dry Season			**Wet Season**			**Criteria**	**Dry Season**	**Wet Season**
		Allowable Increase	**Max. Increase**	**Compliance Time %**	**Allowable Increase**	**Max. Increase**	**Compliance Time %**		**Max.**	**Max.**
Spawning/Nursery Grounds (Depth-averaged)										
Fisheries Spawning Ground in North Lantau	AR1	7.8	0.3	100.0%	4.3	0.1	100.0%	-	-	-
	CR3	6.6	0.6	100.0%	6.0	0.6	100.0%	-	-	-
Artificial Reef Deployment Area (Bottom)										
Sha Chau and Lung Kwu Chau	AR1	9.8	0.3	100.0%	6.9	0.2	100.0%	200	11.3	9.7
Corals (Bottom)										
Pak Chau	CR3	10.4	1.3	100.0%	12.1	2.8	100.0%	200	44.0	88.3
Observation Points (Depth-averaged) (for reference)										
Boundary of Existing & Proposed Marine Parks	MPA-3	7.8	1.4	100.0%	4.3	0.4	100.0%	-	-	-