

APPENDIX 4.2 FISHERIES IMPACT ASSESSMENT FOR LUNG KWU SHENG TAN BARGING POINT, TSING CHAU TSAI BARGING POINT AND WEST KOWLOON TERMINUS WATER COOLING SYSTEM1

Introduction.....	1
Environmental Legislation, Standards and Guidelines .....	1
Assessment Methodology .....	1
Description of the Environment and Baseline Conditions .....	2
Identification, Prediction and Evaluation of Environmental Impacts .....	4
Mitigation of Environmental Impacts .....	6
Evaluation of Residual Environmental Impacts.....	6
Evaluation of Cumulative Environmental Impacts.....	6
Environmental Monitoring and Audit .....	7
Conclusion.....	7
Reference.....	8

**List of Tables**

Table 1	Recent Figures on Hong Kong Capture Fisheries Industry .....	2
Table 2	Production of the Top 10 Taxa of Fisheries Resources within the Study Area .....	3
Table 3	Recent Figures on Hong Kong Culture Fisheries Industry .....	4

**List of Figures**

NOL/ERL/300/C/XRL/ENS/M51/063 Fisheries Resources Within the Study Area

## **APPENDIX 4.2 FISHERIES IMPACT ASSESSMENT FOR LUNG KWU SHENG TAN BARGING POINT, TSING CHAU TSAI BARGING POINT AND WEST KOWLOON TERMINUS WATER COOLING SYSTEM**

### **Introduction**

- 1.1 This appendix presents the fisheries impact assessment for the proposed Lung Kwu Sheung Tan Barging Point (LKB) and Tsing Chau Tsai Barging Point (TCB) and the seawater cooling system for the West Kowloon Terminus (WKT). This assessment is based on desktop review of the latest relevant literature. The literature was reviewed to describe the baseline condition, identify and evaluate potential direct, indirect, residual, and cumulative impacts on fisheries resources during the proposed construction and operation of the LKB, TCB and WKT seawater cooling system.

### **Environmental Legislation, Standards and Guidelines**

- 1.2 This fisheries impact assessment is conducted according to criteria and guidelines set out in the EIAO-TM Annex 9 and Annex 17 in order to provide complete and objective identification, prediction and evaluation of potential fisheries impacts arising from the Project.
- 1.3 Other local legislation that applies to fisheries and is relevant to this fisheries impact assessment includes the following:
- Fisheries Protection Ordinance (Cap. 171) – aims to promote the conservation of fish and other forms of aquatic life within the Hong Kong waters by regulating fishing practices to prevent detrimental activities to the fisheries industry. The Ordinance came into effect on 30 June 1997.
  - Marine Fish Culture Ordinance (Cap. 353) – regulates and protects marine fish culture by designating areas of fish culture zone, granting license, prohibiting unauthorized vessels and any deposition of chemicals or other substance which are likely to cause injury to fish in a fish culture zone. The list of designated fish culture zones was last revised in January 2000.
  - The Water Pollution Control Ordinance (Cap. 358) – aims to control water pollution in the waters of Hong Kong. Water control zones are designated with individual water quality objectives to promote the conservation and best use of those waters in the public interest. The most updated water quality objectives for the Victoria Harbour Water Control Zone were revised in June 1997.

### **Assessment Methodology**

- 1.4 Excavation of the tunnels and associated structures will generate spoil from works areas. Six new barging points and one existing barging point have been proposed to transport the spoil generated from the Project to various disposal sites for reuse or disposing of (refer to **Section 2** and **Figure No. NOL/ERL/300/C/XRL/ENS/M51/063** for details). No marine works would be required in the proposed barging points apart from Lung Kwu Sheung Tan barging point (LKB). Marine fisheries impact assessment has been undertaken to assess any potential impacts on nearby resources arising from the proposed minor marine dredging for the LKB. The assessment also covers Tsing Chau Tsai barging point (TCB) due to its close proximity to the Ma Wan Fish Culture Zone. Other proposed barging points with no marine works involved are distant from any important fisheries resources, adverse fisheries impact is not anticipated. These sites are therefore scoped out from the fisheries impact assessment.
- 1.5 Seawater cooling systems of the proposed West Kowloon Terminus (WKT) would be served by a pumping station which draws water from Victoria Harbour through intake unit and pump to the buildings through pipelines. Used water carrying waste heat from the heat exchanger of the seawater cooling system would be discharged through the outfall unit direct to Victoria Harbour.

The construction of intake and outfall units would be conducted by replacing the existing concrete seawall (i.e. blockwork) with new precast seawall units. Thus, this seawater cooling system is also included under this impact assessment.

- 1.6 This impact assessment included relevant fisheries baseline data presented in Agriculture, Fisheries and Conservation Department (AFCD) Port Survey 2006 and incorporated the most recent information available in other reports and publications. The information available was extensive and no data gaps were identified, therefore field surveys were not necessary.
- 1.7 The impact assessment on capture and culture fisheries resources followed the criteria and guidelines stated in Annexes 9 and 17 of the EIAO TM. Results of the water quality modelling were used to assess the extent and severity of indirect impacts during the capital and maintenance dredging works. The water quality model was also used to formulate mitigation measures, if required.

### Description of the Environment and Baseline Conditions

- 1.8 The study area was the same as that of Water Quality Impact Assessment which included, the Deep Bay, North Western, Western Buffer, and Victoria Harbour Water Control Zones (WCZs).
- 1.9 Based on a comprehensive fisheries study, part of northern Lantau waters was identified as an important spawning ground of commercial fisheries resources (ERM, 1998). The main commercial fish species reported in this spawning area included *Leiognathus brevisrostris* (ponyfish), *Lateolabrax japonicus* (sea bass / perch) and *Clupanodon punctatus* (gizzard shad). This spawning area is located approximately 2.7 km, 5 km and 18 km from the proposed LKB, TCB and WKT seawater cooling system outfall, respectively, and is remote to be affected.
- 1.10 The locations of all the fisheries sensitive receivers are given in **Figure No. NOL/ERL/300/C/XRL/ENS/M51/063**.

### Capture Fisheries

- 1.11 In Hong Kong, the capture fishing industry produced in 2008 an estimated fisheries production of 158,000 tonnes valued at \$1,780 million (AFCD, 2009b). The industry consists of some 3,800 fishing vessels and some 7,900 fishermen working aboard. Fishing activities are mainly conducted in the waters of the adjacent continental shelf in the South China Sea. The majority of the fishing vessels are manned by family members with the assistance of hired crew. Main fishing methods include trawling, long-lining, gill-netting and purse-seining with the majority of the total catch obtained through trawling. Trawling lands the majority of the catch in Hong Kong waters. Some recent data on local capture fisheries industry are summarised in **Table 1**.

**Table 1 Recent Figures on Hong Kong Capture Fisheries Industry**

Parameter	2008	2007	2006	2005	2004	2003	2002
Fishing fleet size (No. of vessels)	3,800	4,000	3,940	4,150	4,300	4,600	4,470
Local Fishermen engaged in capture fisheries	7,900	8,500	8500	9,170	9,700	10,100	10,860
Production (tonnes)	158,000	154,000	155,000	162,000	167,500	157,400	169,790
Values of produce (HK\$ million)	1,780	1,530	1,600	1,600	1,600	1,500	1,600

Source: AFCD Annual Reports, 2001-2008 and AFCD (2009b)

- 1.12 The latest AFCD Port Survey 2006 provides the most updated and detailed information on capture fisheries in Hong Kong waters, including both fishing operation, and fisheries production (adult fish and fry). In general, the highest fishing yields in Hong Kong were obtained in the eastern waters (e.g. Tolo Harbour, Crooked Haven, Port Shelter, and Po Toi) and the southern waters (e.g. Lamma

Island, Cheung Chau, and Soko Islands). The areas around the Brothers, Sha Chau and Lung Kwu Chau Marine Park, and Ma Wan in the Western Buffer WCZ in vicinity of the proposed LKB and TCB also supported high fisheries resources.

- 1.13 The fishing operation within the study area was mainly consists of small vessels, less than 15 m in length. Sampans were dominant fishing vessels but other vessels such as gill netters, hang trawlers, shrimp trawlers, long liners, hand liners, and purse seiners also operated within the study area.
- 1.14 In terms of weight, fisheries production for adult fish in the Deep Bay WCZ was low with yield of 0 – 50 kg/ha, while low to moderate fisheries production with yield of 0 – 400, 0 – 200, and 0 – 400 kg/ha were recorded at the North Western, Western Buffer and Victoria Harbour WCZs respectively. The area around Sha Chau and Lung Kwu Chau Marine Park which is in close proximity (approximately 2 km) to the proposed LKB yielded a moderate fisheries production of 200 – 400 kg/ha. The embayment area of West Kowloon and western Victoria Harbour, in vicinity of the WKT seawater cooling system, supported only low capture fisheries production of 0 – 100 kg/ha. The waters around the TCB also supported low capture fisheries production of 100 – 200 kg/ha.
- 1.15 The capture fisheries yield of the top 10 taxa of fisheries resources in the area in vicinity of the proposed LKB, TCB and WKT seawater cooling system are tabulated below in **Table 2**.

**Table 2 Production of the Top 10 Taxa of Fisheries Resources within the Study Area**

<b>Fish Family</b>	<b>Fish Production – Adult Weight (kg/ha)</b>
Carangidae	0 – 40
Shrimp (All Families)	0 – 40
Siganidae	< 5 to > 60
Squid (All Families)	0 – 20
Sciaenidae	5 – 40
Crab (All Families)	5 – 40
Mugilidae	0 – 20
Clupeidae	0 – 20
Sparidae	< 5 – 20
Engraulidae	0 – 20

Source: AFCD (2006)

- 1.16 Important nursery grounds can be identified from the main areas of fry collection for mariculture. However, fry collection in recent years has reduced in scale and the latest interview studies (AFCD, 2006) reported that fry collection is very limited throughout Hong Kong waters. Fry collection is still conducted at low levels in the eastern inshore waters, such as Crooked Harbour, Double Haven, Long Harbour, Tolo Harbour and Port Shelter. But these areas are all outside the study area; at least 40 km from the proposed outfall of WKT seawater cooling system. Small scale fry collection is reported in central Lamma and southern Po Toi outside the study area. Central Lamma is at least 10 km from the proposed WKT seawater cooling system, LSKT and TCB respectively.
- 1.17 The annual capture fishery production values of fishing areas within the study area ranged from HK\$ 0 – 500/ha to HK\$10000 – 20000/ha with the highest production values recorded in the eastern Victoria Harbour WCZ and south-western portion of the North Western WCZ.

### ***Culture Fisheries***

- 1.18 Culture fisheries, on the other hand, included 26 fish culture zones (FCZs) located in various sheltered coastal areas in Hong Kong marine waters and occupied about 209 ha of marine area. Mariculture employs about 1,060 licensed operators (AFCD, 2009a). Most of the licensed farms are small, family-based and consist of one or two rafts with average total area of around 280m<sup>2</sup>.

- 1.19 Although no figures are available on the individual production of these FCZs, it was estimated that culture fisheries production of Hong Kong in 2008 was about 1,370 tonnes valued at \$ 82 million which catered about 10% of local demand for live marine fish (AFCD, 2009a). Some recent figures on marine culture fisheries are presented in **Table 3**.

**Table 3 Recent Figures on Hong Kong Culture Fisheries Industry**

Parameter	2008	2007	2006	2005	2004	2003	2002
Licensed operator	1,060	1,070	1,080	1,100	1,125	1,155	1,237
Production (tonnes)	1,370	1,532	1,488	1,539	1,540	1,490	1,210
Value (HK\$ million)	82	99	89	76	79	76	57

Source: AFCD Annual Reports, 2001-2008 and AFCD (2009a)

- 1.20 The species cultured in FCZs changed gradually over the recent years depending on the availability of imported fry. Common species cultured include green grouper, brown-spotted grouper, giant grouper, Russell's snapper, mangrove snapper, red snapper, star snapper, and pompano.
- 1.21 Oyster culture has been practiced on the Deep Bay mudflats for at least 200 years. Production from oyster culture in 2008 was about 211 tonnes (meat only) valued at \$ 11 million.
- 1.22 The Ma Wan FCZ, and oyster culture zone in Deep Bay are located within the study area. The Ma Wa FCZ is about 18 km, 2 km and 10 km from the proposed LKB, TCB and WKT seawater cooling system outfall, respectively. The oyster culture zone stretches along coastal mudflats from Tsim Bei Tsui to Ha Pak Nai and is approximately 10 km northwest from the proposed LKB. No adverse fisheries impacts from construction and operation of proposed LKB, TCB and WKT seawater cooling system are anticipated.

#### **Artificial Reef Deployment**

- 1.23 AFCD is undertaking a programme to enhance existing marine habitats and fisheries resources through the siting, construction, and deployment of artificial reefs (ARs). ARs provide hard bottom substrate, high profile habitat in areas without natural cover and potentially act as fish enhancement devices. The Sha Chau AR was deployed in March 2000 with the primary aim of enhancing the marine habitat quality and fisheries resources (AFCD, 2003). Forty-two concrete-coated containers with a total volume of 940 m<sup>3</sup> have been deployed. They are located approximately 7 km, 16 km and over 20 km away from the proposed LKB, TCB and WKT seawater cooling system respectively. Therefore, the ARs are considered too remote to be affected.

#### **Identification, Prediction and Evaluation of Environmental Impacts**

- 1.24 Impacts to fisheries resources within the study area or the vicinity of works area may occur during construction and operation of the Project. The impacts can be generally divided into direct disturbance to the fisheries habitat and indirect impacts due to altered water quality parameters.

#### **Loss of Fishing Grounds**

- 1.25 Potential direct impacts on fisheries resources arising from the construction of LKB would include temporary loss of small fishing area in the vicinity of the barging point for a period of approximately 3 months. The proposed dredging activities for the berthing area are considered to be small scale and would result in temporary loss of 0.65 ha of fishing grounds. There would be no loss of fishing ground in TCB and WKT.
- 1.26 Based on the Port Survey 2006, the directly impacted fisheries area supported very low to moderate fisheries production (AFCD, 2006). The production was measured in terms of adult fish weight and values as compared with other fishing locations in Hong Kong. The affected fisheries area only

constitutes an insignificant portion of the total fishing area in Hong Kong. The loss of fishery production would be insignificant in comparison to the total fishery production in Hong Kong. In view of the small size of the affected area, the impact due to the proposed dredging activities for the navigation channel at Lung Kwu Sheung Tan is considered minor and acceptable.

### ***Change in Water Quality***

- 1.27 Potential indirect impacts to the fisheries resources would include changes in water quality due to dredging activities of seabed sediment for the navigation channel of the LKB and potential site run-off from land-based construction works.

#### Elevation of Suspended Solid (SS)

- 1.28 Dredging activities would temporarily elevate the suspended sediment level and create sediment plumes. Potential site run-off from the land-based construction works may also increase suspended solids. Possible indirect impact on fisheries resources may result from elevated suspended solids in the water column. High SS level may clog gill structure of fish, cause physical damage and reduce survivorship, reproductive potential, and growth rates. These effects may be lethal or sub-lethal. Fish eggs and larval fish (fry) are more susceptible to deleterious impacts from sedimentation through smothering and clogging of their respiratory systems. Adult fishes are generally less sensitive to effects from suspended sediments.
- 1.29 Suspended sediment plumes occur naturally in the marine environment from wave action and vertical flux of water currents. Fish have evolved behavioural adaptations to turbid water, including clearing their gills by flushing water or simply avoiding turbid waters.
- 1.30 Based on sediment plume modelling for the unmitigated scenarios under the water quality impact assessment (see **Section 11**), potential water quality impacts due to increased SS load would occur along coastal area of Lung Kwu Sheung Tan. It is predicted that impacts to fisheries resources immediately outside of the dredging area would occur. This is because SS loads would significantly increase above ambient levels at areas away from dredging area. (Water Quality Section, **Table 11.16b**). A number of mitigation measures to control water quality are recommended to confine sediment plume within the proposed dredging area and to minimize the SS elevation during dredging operations (see **Section 11**). With the implementation of the proposed mitigation measures, the water quality modelling results indicate that the SS elevation from this Project could be effectively reduced. In view of the temporary nature of such impact, only a minor impact on capture fisheries is anticipated.
- 1.31 Impact is not expected to occur at far-field sensitive receivers such as oyster culture along the coastal area from Tsim Bei Tsui to Ha Pak Nai, Ma Wan FCZ and the commercial fish spawning ground in northern Lantau waters as they are outside the influence zone of the predicted sediment plumes (Water Quality Section, **Table 11.16b**). Thus, no adverse impacts on these sensitive receiver fisheries would be expected from the proposed dredging works.

#### Elevation of Seawater Temperature

- 1.32 During operational phase, seawater will be pumped in via the proposed water intake and utilized to carry waste heat from the cooling system of WKT, and the seawater after being circulated through the system will be discharged back to the sea via the proposed water outfall. The discharged water would cause rise in seawater temperature leading to thermal stress to the marine life in area of the outfall. The rise in seawater temperature has potential to alter development rates of fish embryos, larvae, and gonads. Slower growth rates may increase mortality (Houde, 1987). The altered development of gonads could ultimately reduce the spawning success of fish and altered muscle development (Govini, 2004) could potentially reduce survivorship of juvenile fish.
- 1.33 The water modelling predicts a temperature rise of no more than 1 °C in the surface water layer in areas close to the outfall of the proposed seawater cooling water system. This increase takes into account other concurrent spent cooling water discharges in the West Kowloon area. Temperature

elevation of more than 2 °C (up to a maximum level of 3.4 °C) was predicted within a 20m x 20m mixing zone in vicinity of the outfall for 4.1% of time during wet season.

- 1.34 The overall effect of thermal plume at the surface water layer would be localised and confined to small area near the cooling water outfall. Given the low fisheries production near the outfall of WKT seawater cooling system, the fisheries impact due to temperature elevation is considered minor and insignificant.

#### Chlorine Residue

- 1.35 Settling and growth of fouling marine organisms on the water outfall system may reduce thermal efficiency and lead to total shutdowns of the water cooling system. To prevent this, dissolved sodium hypochlorite, would be added to cooling water within the cooling system. The discharged water would contain residual chlorine that may affect the fisheries and marine resources in vicinity of the proposed outfall. The effects of chlorine-contaminated discharges on fisheries resources may include abnormal development of fish eggs and larvae leading to reduced survivorship.
- 1.36 The water modelling prediction indicates that the discharge would not contribute any non-compliance with the assessment criterion for total residual chlorine of 0.01 mg/l, and no unacceptable chlorine impact is anticipated from this Project. The modelling results predicted some mixing zones for a number of background cooling water discharges (**Appendix 11.7a** and **Appendix 11.7b**), based on very conservative assumption such that 24-hour daily continuous peak discharge flow rate from water outfall was applied in the modelling. In actual case, the peak discharge flow rate would occur only for a short period of time within a day. Considering concentrations of residual chlorine typically would diminish rapidly with time and distance from the discharge point due to natural decay and dilution effect (Mattice and Zittel, 1976), actual residual chlorine discharged from the water outfall should be significantly smaller than that predicted in the model. As such, impact of residual chlorine to fisheries resources in vicinity of the water outfall is considered localized and minor.

#### **Mitigation of Environmental Impacts**

- 1.37 Following EIAO-TM Annex 17, mitigation measures are discussed in this section to avoid, minimize, and compensate for identified fisheries impacts.
- 1.38 The mitigation measures recommended in the water quality impact assessment to control water quality also serve to protect fisheries resources. These measures are designed to protect the fisheries resources from indirect impacts and ensure no adverse impact from the proposed facilities. Those measures should be strictly implemented at the works areas of both LKB and WKT seafront during the construction phase. No marine works are required for TCB.

#### **Evaluation of Residual Environmental Impacts**

- 1.39 The only residual impact would be the temporary loss of 0.65 ha fishing area. In view of the small size of the affected area, negligible loss of fisheries production and low impact on fishing activities, the direct loss of fishing area within the dredging area within the dredging area is considered as minor and acceptable.

#### **Evaluation of Cumulative Environmental Impacts**

- 1.40 The proposed dredging works at Lung Kwu Sheung Tan would be small in scale and conducted at a slow rate. Water quality modelling demonstrates that the potential water quality impacts are expected to be localized and confined in close proximity of the Project site. No significant cumulative fisheries impact would be contributed from this Project.
- 1.41 Other concurrent spent cooling water discharges identified within the West Kowloon area has been considered in the water quality modelling for cumulative water quality assessment. No unacceptable cumulative fisheries impact is anticipated.

### **Environmental Monitoring and Audit**

- 1.42 No unacceptable fisheries impacts are expected from the Project. No monitoring programme specific for fisheries are required.

### **Conclusion**

- 1.43 Literature reviews of existing information indicated the fisheries production within the study area ranged from low to moderate in comparison with other areas in Hong Kong. There are no fish culture zones or important spawning or nursery grounds identified in the immediate vicinity of the Project area.
- 1.44 Direct and indirect impacts on fisheries resources from the construction and operation of LKB, TCB and WKT seawater cooling system were identified and evaluated. The direct impact involving a temporary loss of fishing area (0.65 ha) within the dredging area is considered minor and acceptable.
- 1.45 Indirect impacts to water quality from the construction and operation of LKB and WKT seawater cooling system would be long term but localized based on water quality modelling. Mitigation measures recommended in the water quality impact assessment of controlling water quality would serve to protect fisheries resources from indirect impacts.
- 1.46 No significant adverse impact on fisheries would be expected from the construction and operation of LKB, TCB and WKT seawater cooling system; no fisheries-specific mitigation measures are required.



## Reference

Agriculture, Fisheries and Conservation Department, 2001 – 2008. Annual Report. [http://www.afcd.gov.hk/english/publications/publications\\_dep/publications\\_dep.html](http://www.afcd.gov.hk/english/publications/publications_dep/publications_dep.html)

Agriculture, Fisheries and Conservation Department, 2009a. Fisheries: Aquaculture [http://www.afcd.gov.hk/english/fisheries/fish\\_aqu/fish\\_aqu\\_mpo/fish\\_aqu\\_mpo.html](http://www.afcd.gov.hk/english/fisheries/fish_aqu/fish_aqu_mpo/fish_aqu_mpo.html)

Agriculture, Fisheries and Conservation Department, 2009b. Fisheries: Capture Fisheries [http://www.afcd.gov.hk/english/fisheries/fish\\_cap/fish\\_cap\\_latest/fish\\_cap\\_latest.html](http://www.afcd.gov.hk/english/fisheries/fish_cap/fish_cap_latest/fish_cap_latest.html)

Agriculture, Fisheries and Conservation Department, 2003. Hong Kong Artificial Reef Deployment Study. <http://www.artificial-reef.net/>

Agriculture, Fisheries and Conservation Department, 2006. Port Survey 2006.

ERM, 1998. *Fisheries Resources and Fishing Operations in Hong Kong Waters*. Study commissioned by Agriculture, Fisheries and Conservation Department, Hong Kong SAR Government.

Govoni, J.J., 2004. *The Development of Form and Function in Fishes, and the Question of Larval Adaptation*. American Fisheries Society, Bethesda, MD.

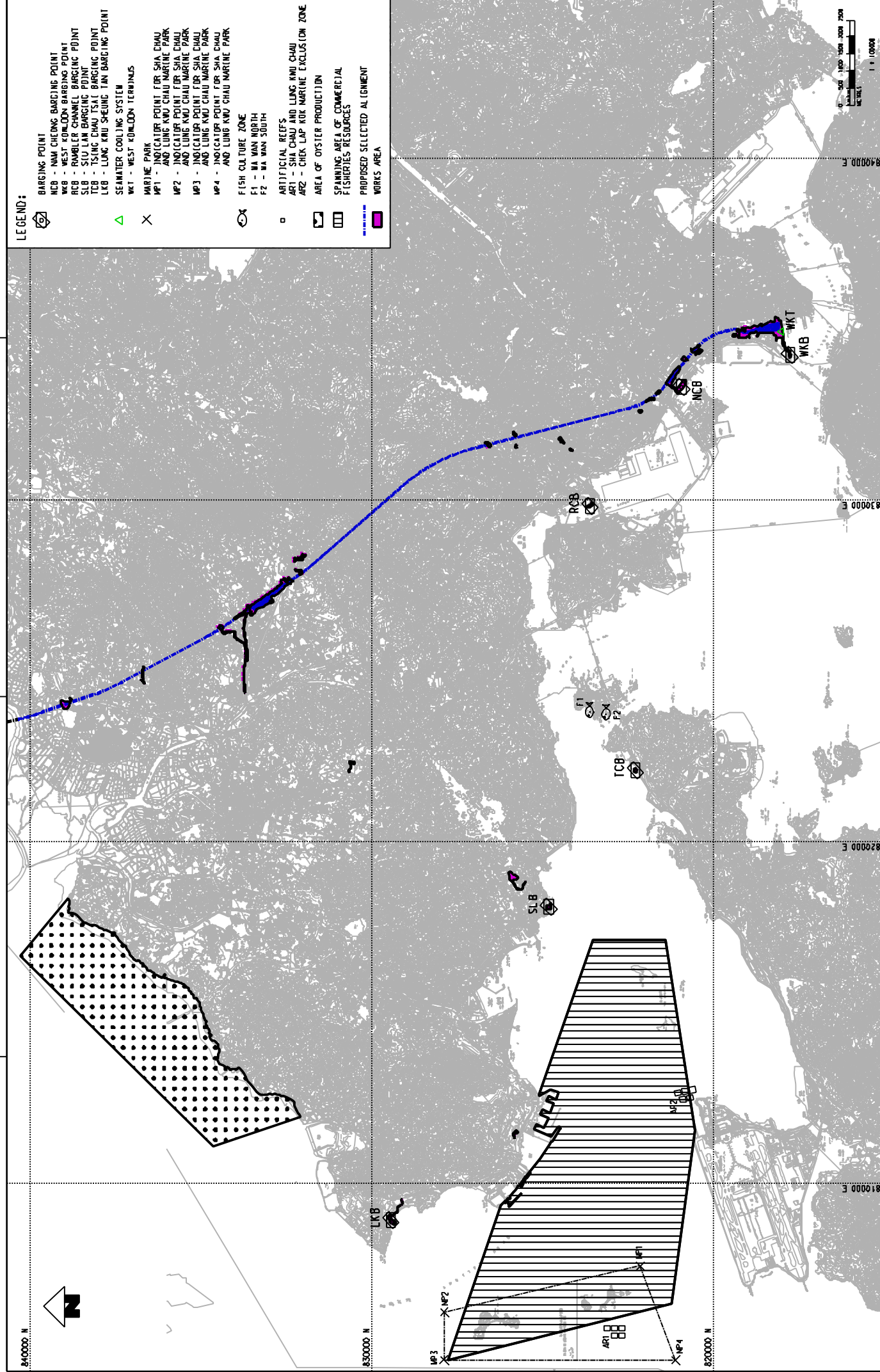
Houde, E.D., 1987. Fish Early Life Dynamics and Recruitment Variability. P. 17-29. In Hoyt, RD (ed). *Proceedings of the 10th Annual Larval Fish Conference* held in Miami, FL May 18-23, 1986. American Fisheries Society Symposium 2. American Fisheries Society, Bethesda. MD.

Mattice, J.S. & Zittel, H.E., 1976. Site specific evaluation of power plant chlorination. *Journal of Water Pollution Control*. 48 (10): 2284 - 2308

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## Figures

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- LEGEND:**
- BARGING POINT
  - NWB - NAM CHEUNG BARGING POINT
  - WKB - WEST KOWLOON BARGING POINT
  - RCB - RAMBLER CHANNEL BARGING POINT
  - SLB - SIU LAM BARGING POINT
  - TCB - TSING CHAU TSAT BARGING POINT
  - LKB - LUNG KRU SHEUNG TAN BARGING POINT
  - SEAWATER COOLING SYSTEM
  - WKT - WEST KOWLOON TERMINUS
  - MARINE PARK
  - MP1 - INDICATOR POINT FOR SHA CHAU AND LUNG KWU CHAU MARINE PARK
  - MP2 - INDICATOR POINT FOR SHA CHAU AND LUNG KWU CHAU MARINE PARK
  - MP3 - INDICATOR POINT FOR SHA CHAU AND LUNG KWU CHAU MARINE PARK
  - MP4 - INDICATOR POINT FOR SHA CHAU AND LUNG KWU CHAU MARINE PARK
  - FISH CULTURE ZONE
  - F1 - MA WAN NORTH
  - F2 - MA WAN SOUTH
  - ARTIFICIAL REEFS
  - ART1 - SHA CHAU AND LUNG KWU CHAU
  - ART2 - CHEK LAP KOK MARINE EXCLUSION ZONE
  - AREA OF OYSTER PRODUCTION
  - SPANNING AREA OF COMMERCIAL FISHERIES RESOURCES
  - PROPOSED SELECTED ALIGNMENT
  - WORKS AREA

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 NOL / ERL-300  
 ENVIRONMENTAL IMPACT ASSESSMENT  
 FISHERIES RESOURCES WITHIN THE STUDY AREA

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 1 : 10000

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