4-3-1

MASTERPLAN LIMITED

Planning and Development Advisors

領賢規劃顧問有限公司

Your Ref: Y/I-DB/2

28 November 2016

The Secretariat
Town Planning Board
15/F, North Point Government Offices
333 Java Road, North Point
Hong Kong

By Hand

Dear Sir,

Section 12A Application No.Y/I-DB/2
For rezoning the permissible use from staff quarters to flats at Area 6f, Discovery Bay
Further Information

I refer to the abovementioned application which is currently being processed.

Further to our second response to departmental comments dated 26 October, we are writing to provide further information in support of the technical feasibility of the application. Please find the enclosed revised Environmental Study (Executive Summary, Chapter 6, 7 and 8, with new changes highlighted in blue) and Technical Note on Water Quality (changes highlighted in yellow), for your consideration.

In summary, the further information relates to the following issues:

1. The receiving water quality of the effluent discharge of the proposed on-site Sewage Treatment Works, to ensure increase in Total Inorganic Nitrogen (TIN), is minimised.
2. The contingency measure for the proposed on-site Sewage Treatment Works, by providing an emergency overflow pipe from the proposed STW at Area 6f to existing sewage pumping station no. 1 (SPS1) located at the junction of Discovery Bay Road and Discovery Valley Road).
3. The modelling scenarios of effluent dispersion.

The additional 440m^3/day sewage generated by the proposed residential developed is now proposed to be catered by on-site sewage treatment facilities which would be implemented by the Applicant.

Yet in view of the various on-going new developments at North Lantau and Airport, Water Supplies Department and Environmental Protection Department may consider for expansion of the Siu Ho Wan water and sewerage treatment facilities in order to provide extra water supply and sewage treatment capacity. The Applicant believes that, should WSD and EPD plans for infrastructure expansion, all proposed future developments in the vicinity areas, including those in the Discovery Bay, should be considered on equal and fair basis. In addition, the proposal for Area 6f is moderate in scale, the demand on the overall Government infrastructure would be insignificant. Therefore, the Applicant requests WSD and EPD to take into account the proposed development should they consider for future expansion of the Sui Ho Wan facilities.

Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk

This information clarifies and supplements the application, and does not constitute a material change identified in Town Planning Board's Guideline No.32. It is consistent with the Guideline.

Yours faithfully,

Cynthia Chan
For and on behalf of
Masterplan Limited

Enc

cc. DPO/SKI (Attn: Helena Pang) Email
Client & Consultants

MASTERPLAN LIMITED
Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk

Executive Summary

The Hong Kong Resort Company Limited (HKRCL) has been considering the feasibility of implementing additional development areas within the existing boundary of Discovery Bay to provide additional housing supply. A planning statement, titled "Optimisation of Land Use in Discovery Bay" was submitted to Planning Department (PlanD) in July 2013. A round of comments from various government departments was received on December 2013 (ref PlanD.'s letter ()L1/L/DBNC/352-17 dated 17 December 2013). Another round of submission was made on August 2014 and the corresponding set of comments was received from various government departments on December 2014 (ref PlanD.'s letter ()L1/L/DBNS/352-17(CR) dated 23 December 2014). Subsequently, another round of submission was made in March 2015 and comments were received from various government departments. In order to address those comments, the development proposal has been refined accordingly.

This Environmental Study only refers to Area 6f. The potential development area is included in the latest approved Discovery Bay Outline Zoning Plan as "Other Specified Uses (Staff Quarters)", despite the fact that some of their development parameters are proposed to be amended.

An Environmental Study for Area 6f has been conducted on the latest development proposal to demonstrate land use compatibility. The issues considered in this Environmental Study include noise, air quality, water quality, land contamination and ecology. Those relating to sewerage and drainage, and water supply are separately presented in another report.

Air Quality

All the relevant air emission sources in the vicinity that would have air quality impacts on the proposed developments have been identified and assessed. Key air emission source include the fireworks at Disney Theme Park. A literature review on best available information including Environmental Protection Department (EPD)'s publications, approved Environmental Impact Assessment (EIA) Reports and has been conducted to establish the emission strengths of these air emission sources. These emission strengths are then included in EPD's approved air quality dispersion models to simulate air quality impacts on both existing and planned air sensitive receivers. Results indicate that the predicted air quality impacts would not exceed the relevant Air Quality Objectives. At the same time, the separation distance between the road and the proposed development has fulfilled the requirement stipulated in the Hong Kong Planning and Standard

Guideline. Given that the relatively low traffic volume within Discovery Bay, the proposed land uses would not be subject to insurmountable air quality impacts. In case a small separate sewage treatment work is required, it will be designed to contain any odour that may be generated.

Noise

All the relevant noise sources in the vicinity that would have noise impacts on the proposed developments have been identified and assessed. The noise sources include the traffic along nearby road network and the firework at Disney Theme Park. Where practicable, noise measurements have been conducted to establish the noise caused by these noise sources. These measurement data is then used to assess the noise impacts on planned noise sensitive receivers, taking into account of a number of parameters including but not limited to the separation distance, operational schedule, screening effects etc. Results indicate that the predicted noise impacts would not exceed the relevant noise limits and hence the proposed land uses at Area 6f would not be subject to adverse noise impacts and hence mitigation measures are not required. In case a small separate sewage treatment work is required, sufficient noise attenuation measures shall be implemented to alleviate the noise generated from the operation to ensure compliance with the statutory noise requirements.

Water Quality

During the construction phase, site runoff and sewage can be readily alleviated by implementing good site practice. Sewerage generated during operational phase will be treated in a small on-site sewage treatment work that complying with the relevant standards for effluent discharge for inshore waters accordingly. The treated effluent would then be discharged into a gravity sewage pipe, leading to sea near Discovery Bay Plaza. A water quality assessment has been conducted to demonstrate that most of the pollution concentrations would comply with relevant criteria. For Total Inorganic Nitrogen (TIN), the background concentration has exceeded the Water Quality Objective (WQO) already, the discharge concentration has therefore been reduced as much as practicable to ensure that the increase in TIN is minimised. Nevertheless, a discharge licence will be obtained under the Water Pollution Control Ordinance (WPCO) prior to discharge of treated effluent.

Other aspects

Site inspection and review of historical photos have revealed that the area within the potential development area have low potential of land contamination. Also, adverse ecological impacts are not anticipated.

6 Water Quality Assessment

6.1 Description of the Environment

6.1.1 Existing Water Environment

6.1.1.1 The project sites fall within the Southern WCZ and are located at Discovery Valley at east Lantau, downstream of Lo Fu Tau and Discovery Bay Reservoir. Tai Pak Wan, a non-gazetted beach, is within the boundary of Discovery Bay. Besides, a Coastal Protection Area is located at the northern edge of Tai Pak Tsui Peninsula to conserve the natural coastline.

6.1.1.2 Area 6f is located at left bank of Discovery Bay Reservoir Spillway. It is within the catchment leading to the tributaries of the Discovery Bay Reservoir Spillway and the runoff would be discharged to Tsoi Yuen Wan near ferry pier ultimately.

6.1.2 Existing Sewerage System

6.1.2.1 Discovery Bay has been implemented with a sewerage system to collect all the sewage and wastewater generated from daily activities. All the existing sewage and wastewater collected from the sewerage system is diverted to Siu Ho Wan Sewage Treatment Works (SHWSTW) via pumping stations and the outfall is located at north Lantau which is far away from Discovery Bay.

6.1.3 Water Quality Sensitive Receivers

6.1.3.1 A review has been conducted to identify the Water Quality Sensitive Receivers (WSRs) in the vicinity that may be impacted by the potential development area. The following table summarizes these WSRs and they are illustrated in **Figure 6-1**. Reference is made to the relevant legislations and standards relating to water quality which are summarised in **Appendix 6.1**.

Table 6.3 Water quality sensitive receivers

Water Sensitive Receivers [1]	Description
WSR01 – Discovery Bay Reservoir	Primary reservoir for flushing, located upstream of the potential development areas
WSR 02 – Discovery Bay	Spillway from Discovery Bay Reservoir and the tributaries,

Water Sensitive Receivers [1]	Description
Reservoir Spillway and Tributaries	chainage runs along Discovery Valley Road and downstream to Tsoi Yuen Wan
WSR03 – Nim Shue Wan Stream	Natural stream downstream from the existing golf course to Nim Shue Wan
WSR04 – Tai Pak Wan	Non-gazetted beach downstream to Discovery Bay Reservoir Spillway
WSR05 – Hai Tei Wan Marina	Marina at Hai Tei Wan next to Discovery Bay Road
WSR 06 – Nim Shue Wan	Nim Shue Wan
WSR07 – Tai Pak Tsui Peninsula Coastal Protection Area (CPA)	Protected natural shoreline at north of Tai Pak Tsui Peninsula

Note:
[1] The nearest water gathering ground is located at 4.8 km away

6.2 Identification and Evaluation of Environmental Impacts during Construction Phase

6.2.1 Pollution Sources

Site Runoff

6.2.1.1 During rainstorm events, construction site runoff would come from all over the works site. These surface runoff might be polluted by:

- Runoff and erosion from site surfaces, earth working areas and stockpiles;
- Wash water from dust suppression sprays and wheel washing facilities; and
- Chemicals spillage such as fuel, oil, solvents and lubricants from maintenance of construction machinery and equipment.

6.2.1.2 Construction runoff may cause physical, biological and chemical effects. The physical effects include potential blockage of drainage channels and increase of suspended solid levels in the Southern WCZ. Runoff containing significant amounts of concrete and cement-derived material may cause primary chemical effects such as increasing turbidity and discoloration, elevation in pH, and accretion of solids. A number of secondary effects may also result in toxic effects to water biota due to elevated pH values, and reduced decay rates of faecal micro-organisms and photosynthetic rate due to the decreased light penetration. All the best practices will be implemented to reduce and minimise the generation of construction run-off.

Sewage from Workforce

6.2.1.3 Sewage effluents will arise from the sanitary facilities provided for the on-site construction workforce. According to Table T-2 of Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, the unit flow is 0.15 m^3/day/employed population. The characteristics of sewage would include high levels of BOD_5, Ammonia and *E. coli* counts. Since sufficient portable chemical toilets and sewage holding tanks will be provided, no adverse water quality impact is anticipated.

6.2.2 Mitigation Measures

6.2.2.1 Given the relatively small amount of site formation work for Area 6f, adverse water quality impacts during construction phase is not anticipated. Nevertheless, standard good site practices such as perimeter cut off drains, silt removal facilities, temporary toilet etc. would still be required. A comprehensive list of those good site practices is given in **Appendix 6.2**.

6.3 Identification and Evaluation of Environmental Impacts during Operational Phase

6.3.1 Potential Impacts

6.3.1.1 EPD advised in May 2015 that the design capacity of the SHWSTW has been allocated for the treatment of the sewage arising from the development of the Expansion of Hong Kong International Airport into a Three Runway System, the new town development under Tung Chung New Town Expansion and the Penny's Bay Phase 2 development, etc. Therefore, SHWSTW has no spare capacity to cater for the sewage arising from any proposed Discovery Bay further development and the Sewerage Authority has no plan to increase the design capacity of the SHWSTW in the short and medium terms.

6.3.1.2 Therefore, it is proposed to build a small separate sewage treatment work within Area 6f. The design flow rate of the proposed sewage treatment work would be around 440 m^3 per day (i.e. based on a total population of 1,190 for Area 6f and each has a flow rate of 370L/day (ADWF) as per EPD's Technical Paper Report No. EPD/TP1/05- Guidelines for Estimating Sewage Infrastructure Planning (GESF)) and the treated effluent will be discharged to a gravity sewage pipe, which will be eventually discharged to the neighbouring marine

waters near Discovery Bay Plaza without the need of a marine outfall. The peaking factor would be 8 according to table T5 of GESF. Therefore, during peak hour, the hourly flow rate would be approximately 40.8 L/s. A two stages of nitrification and de-nitrification process in combination of Membrane Bioreactor (MBR) will be implemented for nitrogen removal in the sewage treatment. The details of effluent standard has been presented in Annex E Technical Note - Preliminary Water Quality Assessment.

6.3.1.3 The design of STW shall ensure that the relevant standards for effluent discharges are complied with, including the following:

- Standard for Effluent Discharged into Inshore Water of Southern Water Control Zone

6.3.1.4 According to the preliminary water quality impact assessment conducted for the proposed sewage treatment works in Area 6f (see **Annex E** of the response to comment submission dated October 2016), the effluent discharge standards from the sewage treatment works could meet the Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS) for Inland Waters.

6.3.1.5 In addition, the preliminary water quality impact assessment indicates that the water quality in the vicinity of the marine-based WSRs would be in compliance with Water Quality Objectives (WQOs) in suspended solid, *E. coli* and unionised ammonia. Although exceedance of Total Inorganic Nitrogen (TIN) under WQO is observed, the contribution of the high TIN level is due to the background from Pearl River estuary. Any emergency discharge can be readily mitigated by implementing suitable standby measures and contingency measures to be developed during detailed design stage.

6.3.1.6 Moreover, the operation of the STW shall also apply for a discharge licence from the relevant authority before the operation of the STW. The proposed location of the sewage treatment work is indicated in **Figure 6.1**.

6.3.1.7 The current tentative alignment for the gravity sewage pipe has considered the worst case scenario especially during dry season (i.e. without dilution by rain water). During the subsequent detailed design, it is recommended to conduct further analysis to establish any base

flow along the spillway and hence the feasibility of discharging the treated effluent into the nullah and box culvert directly.

6.3.2 Mitigation Measures

6.3.2.1 For the protection of water sensitive receivers of Tai Pak Wan beach and Tai Pak Tsui Peninsula CPA, the following contingency measures are proposed for the new sewage treatment works.

- Due to the Area 6f site is located at a high elevation, it is proposed to provide an emergency overflow pipe from the proposed STW at Area 6f to existing sewage pumping station no. 1 (SPS1) located at the junction of Discovery Bay Road and Discovery Valley Road. During emergency situation, sewage from the STW can overflow to SPS1. The SPS1 has 2 duty and 1 stand-by pumps. The capacity of the stand-by pump is 684 m^3/hr = 16,416 m^3/day which is much larger than the sewage flow from Area 6f (ADWF of 440 m^3/day, peak flow of 1320 m^3/day for pumping stations (excluding Stormwater allowance)). During emergency case, the stand-by pump is capable of conveying the sewage flow from Area 6f to SHWSTW;
- Dual feed power supply for the STW;
- Provision of sewage tanker vehicles with typically 12 m^3 by transporting the sewage from the Area 6f STW to the existing Siu Ho Wan STW for emergency situation (the flow is small at 440 m^3/day. For example, assuming a round trip travel between DB and SHWSTW to be 2 hours, using four sewage tanker vehicles each have of 12 m^3 capacity can convey total of 144 m^3 (i.e. 12 x 4 x 3) of sewage to SHWSTW. This is greater than 6-hours ADWF capacity of 110 m^3.

6.3.2.2 With the implemented contingency measures, emergency sewage overflow to Tai Pak Wan from the proposed STW is not anticipated.

6.4 Conclusion

6.4.1.1 The potential issues that may arise during both the construction and operational phases have been identified. Construction phase impacts are not anticipated to be significant, site runoff and sewage can be readily alleviated by implementing good site practice. During operational phase, sewage generated will be treated in a small on-site sewage treatment work, according to the results from the water quality assessment, most of the pollution concentrations would comply with relevant criteria. For TIN, the background concentration has exceeded the WQO already. The discharge concentration has therefore been

reduced as much as practicable to ensure that the increase in TIN is minimised. With the implemented contingency measures, emergency sewage overflow to nearby stream and Tai Pak Wan from the proposed SPSs and STW is not anticipated.

7 Other Aspects

7.1 Review of Waste Management Issues

7.1.1.1 As mentioned in **Section 2**, the potential development at Area 6f of Discovery Bay includes residential premises together with the necessary infrastructure and landscaping elements.

7.1.1.2 Although the construction methodologies are yet to be developed in subsequent detail design stage, the construction works would adopt an environmentally friendly approach. With the implementation of good site practices and waste reduction measures, the quantity of construction and demolition waste is estimated to be around 5,000 m³.

7.2 Review on Land Contamination Issues

7.2.1.1 A desktop review has been conducted by studying the previous aerial photos for the concerned areas for the potential development area. These photos have provided useful information to ascertain any historical land uses that may have potential for land contamination. The relevant legislation and standards relating to land contamination is given in **Appendix 7.1** and the related historic aerial photos is given in **Appendix 7.2**. The following table summarises these findings.

Table 7.1 Summary of historical aerial photographs for Discovery Bay

Year	Description
1973	• Mainly nature terrain and coastline with a number of villages scattering around. • No signs for industrial developments
1982	• Some of the residential area near Yi Pak Wan and the reservoir were completed. • Other land based site formation work were in progress
1993	• Most of the site formation work and reclamation works had been completed.
2012	• Not much difference to that in 1993 except the scale of the marina was larger than that in the 90's.

7.2.1.2 Site surveys were conducted between May and June of 2014 to ground truth the findings from desktop review to identify any land uses within the potential development area that may have the potential for contamination in soil and groundwater. Photos taken during the site inspection showing the land uses within each of the area are given in **Section 3**.

7.2.1.3 The area within Area 6f comprises of mainly grassland. There has been no evidence that there had been activities causing contamination issues in the past. Hence, it is considered that the contamination potential for Area 6f is unlikely.

7.2.1.4 An initial land contamination appraisal has been conducted to identify any locations within the potential development area that may have the potential for contamination in soil and groundwater. The appraisal mainly includes a review of the desktop information and supplemented with site surveys.

7.2.1.5 Based on the findings at this stage, no area with potential land contamination is identified.

7.3 Review on Ecological Issues

7.3.1.1 As discussed in **Section 1**, Area 6f has been included in the approved Discovery Bay OZP as "OU (Staff Quarters)", despite the fact that some of the planning parameters would need to be amended. Site clearance and formation work could be commenced to implement the development parameters in the approved OZP.

7.3.1.2 Site inspection reveals that Area 6f has previously been formed and disturbed and there is currently a wooded area formed within Area 6f. As revealed from historical aerial photographs, the wooded area was likely to be developed through plantation in around 20 years ago. According to the current design, out of 0.67ha of wooded area in Area 6f, roughly 66% (0.44 ha) of the wooded area would be retained. Only 34% (0.23 ha) of the total wooded area within Area 6f would be affected by the proposed development. The wooded area to be lost from the proposed development is summarised in **Table 7.2**.

Table 7.2 Summary of wooded area in Area 6f

Item	Area (ha)
Disturbed area within Area 6f	0.15
Wooded area within Area 6f	0.67
Total area of Area 6f	**0.82**
Disturbed area to be affected	0.15 (about 100% of total disturbed area)
Wooded area to be affected	0.23 (about 34% of total wooded area)
Area to be developed	**0.38**

7.3.1.3 In addition, a recent vegetation survey undertaken in the area shows

that the wooded area to be cleared consists of both exotic and native species such as *Macaranga tanarius* and *Pinus elliottii* respectively. All the species found within the development area are common species and neither protected nor of conservation concern. As such, the ecological impact associated within the site clearance are expected to be minimal. Moreover, good site practices, including dust suppression measures such as water spraying and the use of noise mitigation measures, would be implemented to mimise the indirect impacts during the construction stage. Therefore, it is considered that the impact on the surrounding ecology would be minimal.

7.3.1.4 As discussed in **Section 6.3.1.2**, a new STW will be established to receive and treat the sewage generated from the additional population from Area 6f. During operational phase, sewage generated will be treated in a small on-site sewage treatment work and would be discharged to a gravity sewage pipe leading to the sea near Discovery Bay Plaza. According to the results from the supplementary water quality assessment, most of the pollution concentrations would comply with relevant criteria. For TIN, the background concentration has exceeded the WQO already. The discharge concentration has therefore been reduced as much as practicable to ensure that the increase in TIN is minimised. On this basis, it is considered that the effluent discharge would not cause adverse impacts on the nearest ecological sensitive receivers, including the CPA at Tai Pak Tsui Peninsula.

7.3.1.5 In addition, the discharge is away from the Fish Culture Zones at Ma Wan and Cheung Sha Wan located at 6.5km and 6km away respectively and hence are not adversely affected.

8 Conclusion

8.1.1 An environmental assessment has been conducted to review Area 6f for Discovery Bay. Key aspects that have been assessed include air quality, noise and water quality. Potential issues on land contamination and ecology have also been reviewed. Those relating to sewerage and drainage, and water supply are separately presented in another report.

8.1.2 All the relevant noise and air quality emission sources in the vicinity that would have impacts on the proposed developments have been identified and assessed. The strength of these sources have been established by measurement or from best available information and subsequently included in the assessment. Results indicate that the noise and air quality impacts on planned developments would comply with the relevant noise criteria and hence mitigation measures are not required.

8.1.2.1 Potential site runoff and sewage from workforce during construction can be alleviated by the implementation of standard good site practices. Sewage generated during operational phase will be treated in a small on-site sewage treatment work and discharged into a sewage pipe leading to the sea near Discovery Bay Plaza. According to the results from the supplementary water quality assessment, most of the pollution concentrations would comply with relevant criteria. For TIN, the background concentration has exceeded the WQO already. The discharge concentration has therefore been reduced as much as practicable to ensure that the increase in TIN is minimised. Apart from that, a discharge licence will be obtained under the WPCO prior to discharge of the treated effluent. With the implemented contingency measures, emergency sewage overflow to nearby stream and Tai Pak Wan from the proposed SPSs and STW is not anticipated. Ecological impacts have been minimized as much as practicable.

8.1.2.2 Assessment reveals that the development at Area 6f is unlikely to cause issue on land contamination and ecological issue.

1 Introduction

1.1.1.1 This technical note is prepared for supporting the Section 12A Application No. A/1-DB/2 of rezoning the permissible use from Other Specified Use to Residential (Group C) at Area 6f. It summarises the results of preliminary water quality impact assessment for the proposed sewage treatment works (STW) in Area 6f to the water sensitive receivers during operational phase.

1.1.1.2 The proposed STW will be established to receive and treat the sewage generated from Area 6f which will accommodate a total of approximately 1,190 additional population. The Average Dry Weather Flow (ADWF) of the proposed STW is approximately 440 m^3/day. Nitrogen removal and disinfection will be implemented into the proposed STW. In order to cater for the worst case scenarios, especially during dry season (i.e. without dilution by rain water), the treated effluent from the proposed STW would be discharged to a gravity sewage pipe that runs along Discovery Valley Road, Discovery Bay Road, Plaza Lane, and eventually leading to sea near Discovery Bay Plaza. The alignment shall avoid buildings and any major features as necessary. Mitigation measures will be proposed as necessary to achieve compliance of Water Quality Objectives (WQOs).

2 Baseline Condition

2.1 Marine Water Quality

2.1.1.1 The WQOs include various parameters, which describe the physical, chemical and biological properties of the marine environment. **Table 2.1** summarises the key baseline conditions of SS (suspended solids), *E. coli*, UIA (Un-ionized Ammonia Nitrogen) and TIN (Total Inorganic Nitrogen) at EPD's marine monitoring location SM10 from year 2005 to 2014. The annual average of the baseline condition at SM10 from year 2005 to 2014 is presented in **Appendix A**. It should be noted that the baseline TIN level (0.35 mg/L) already exceeds the WQO of 0.1 mg/L in Southern Water Control Zone (WCZ), due to high TIN level in background from Pearl River estuary[1].

[1] EPD Marine Water Quality in Hong Kong in 2014.

Table 2.1 Baseline condition [1] of EPD's marine monitoring station SM10 from year 2005 to 2014

SS (mg/L)	*E. coli* (counts/100ml)	UIA (mg/L)	TIN (mg/L)
6.92	8	0.0042	0.35

Notes:

[1] Unless otherwise specified, data presented are depth averaged and are the annual arithmetic mean except for *E. coli* which is in geometric mean.

[2] Underlined indicates occurrence of non-compliance with that parameter of WQO.

3 Water Sensitive Receivers

3.1.1.1 Water sensitive receivers (WSRs) have been identified and are shown in **Figure 3.1**. The treated effluent from the STW in Area 6f would be discharged into to a gravity sewage pipe and eventually sea off Discovery Bay Plaza.

3.1.1.2 The distances between the discharge point at sea and WSRs are listed in **Table 3.1**. The nearest WSR is Tai Pak Tsui Peninsula CPA (WSR 07) at 270m.

Table 3.1 Description of water sensitive receivers within 2500 meters

WSR	Name	Description	Distance from the discharge location (m)
WSR01	Discovery Bay Reservoir	Primary reservoir for flushing, located upstream of the potential development areas	-[1][2]
WSR02	Discovery Bay Reservoir Spillway and Tributaries	Spillway from Discovery Bay Reservoir and the tributaries, drainage runs along Discovery Valley Road and downstream to Tsoi Yuen Wan	-[1][2]
WSR03	Nim Shue Wan Stream	Natural stream downstream from the existing golf course to Nim Shue Wan	-[1]
WSR04	Tai Pak Wan	Non-gazetted beach downstream to Discovery Bay Reservoir Spillway	280
WSR05	Hai Tei Wan Marina	Marina at Hai Tei Wan next to Discovery Bay Road	1,250
WSR06	Nim Shue Wan	Nim Shue Wan Beach	2,500
WSR07	Tai Pak Tsui Peninsula Coastal Protection Area (CPA)	Protected natural shoreline at north of Tai Pak Tsui Peninsula	270

Note:
[1] Inland WSR.
[2] Upstream of STW at Area 6f.

4 Assessment Methodology

4.1 Effluent Discharge Standards

4.1.1.1 **Table 4.1** shows the effluent discharge standards of the proposed STW.

Table 4.1 Effluent discharge standards of the proposed STW

Parameters	Discharge standard provided by sub-contractor (Flow rate estimated as 6[illegible] m³/day)
pH	6-10
Temperature	< 30°C
Colour	< 1 lovibond units
Suspended Solids (SS)	30 mg/L
5-Day Biochemical Oxygen Demand (BOD_5)	20 mg/L
Chemical Oxygen Demand (COD)	< 80 mg/L
Oil & Grease	< 10 mg/L
Total phosphorus	2 mg/L
Ammonia Nitrogen	8 mg/L
Nitrate + nitrite nitrogen	12 mg/L
Surfactants	< 15 mg/L
E. coli	10 count/100ml

Note:
[1] Mercury, Cadmium, Cyanide, Phenols, Sulphide, Sulphate, Chloride, Fluoride, Iron, Boron, Barium and other toxic metals are not the major pollutants for the domestic sewage and excluded in the comparison.

4.2 WQOs in Southern WCZ

4.2.1.1 **Table 4.2** shows the criteria for SS, *E. coli*, UIA and TIN under WQOs in Southern Water Control Zone. As discussed in **Section 2**, the baseline TIN level already exceeds the WQO criterion of 0.1 mg/L.

Table 4.2 WQOs Criteria in Southern WCZ

SS [2] (mg/L)	*E. coli* (counts/100ml)	UIA (mg/L)	TIN (mg/L)
8.99	180/610[1]	0.021	0.1

Note:
[1] The criteria for *E. coli* are 610 counts/100ml for Secondary Contact Recreational Subzones, and 180 counts/100ml for bathing beaches in wet season.
[2] SS criteria is established based on WQO that water discharge shall not cause the natural ambient level to be raised by 30% for marine water WCZ.

4.3 Modelling Scenario

4.3.1.1 The effluent dispersion scenarios are simulated by a near-field model, CORMIX. The key inputs to the CORMIX include outfall configuration, ambient current speed, vertical density profile and effluent flow rate.

4.3.1.2 The exit of the gravity sewage pipe into sea is near surface. Hence, a buoyant jet under uniform ambient flow will be formed. Module CORMIX 1 for simulation of single port discharge is adopted.

4.3.1.3 Based on the approved Delft 3D modelling results from HATS Stage 2A EIA (AEIAR-121/2008), which is presented in **Appendix B**, the maximum and time-averaged of depth-averaged ambient velocity is 0.02 m/s and 0.01 m/s respectively.

4.3.1.4 CORMIX is applicable for uni-directional ambient flow simulation. For conservative assessment, the worst case scenarios of tidal condition under co-flow have been modelled under CORMIX:

- The maximum ambient velocity of 0.02 m/s. Under this scenario, the effluent discharge flow is in the same direction as the ambient flow. The pollutant plume is then flowing towards the WSR by the ambient flow.
- Average ambient velocity of 0.01 m/s. Under this scenario, the ambient velocity is near stagnant. The dispersion of the plume is dominated by diffusion.

4.3.1.5 **Table 4.3** presents the modelling parameters of the worst case scenario for ambient in co-flow situation.

Table 4.3 Modelling scenario and corresponding parameters for the model

Parameter		Scenario	
Season		Dry	Wet
Effluent Discharge Parameters	Total Discharge Flow Rate at Discharge Point	1 m/s[1], 440m³/day	
	Concentration of Effluent at Peak Flow	NH_3-N: 8 mg/L (UIA[2]: 0.424 mg/L) SS: 30 mg/L *E. coli*: 10 counts/100ml TIN[3]: 12 + 8 mg/L	
	Effluent Density	1000 kg/m[3]	
	Discharge height above bottom	2.52 m[4]	
Ambient Conditions	Ambient Velocity	Ambient flow of 0.01, 0.02 m/s (See **Appendix B**) under co-flow condition	
	Ambient Density[5]	Surface 1,022 kg/m³; Bottom 1,022 kg/m³	Surface 1,017 kg/m³; Bottom 1,017.7 kg/m³
	Water Depth	2.6 m [6]	
	Wind speed	2 m/s [7]	

Note:

[1] The designed velocity of 1m/s at gravity sewage pipe discharging to sea is determined from the following conditions: ADWF of 440m³/day, pipe diameter of 300mm, gradient of 3%, central angle of 82.6 deg and flow area 0.005m² (7% filled by area).

[2] UIA is estimated by multiplying a percentage factor to NH3-N. This factor depends on temperature and pH. The average temp and pH from EPD water quality monitoring stations in Southern WCZ are 23.8°C and 8.0 respectively. According to the "Aqueous Ammonia Equilibrium- Tabulation of Percent Unionized Ammonia" from USEPA, the conversion factor is 5.3%.

[3] TIN concentration is the sum of the concentration of NH_3-N, NO_2-N and NO_3-N (see **Table 4.1**).

[4] The discharge is near the water surface due to lower density of the effluent.

[5] Ambient density is estimated from the EPD water quality monitoring station SM10 from year 2005-2014.

[6] Water depth at Discovery Bay are obtained from nautical chart in Hong Kong, published by the Hydrographic Office, Marine Department of HKSAR Government (**Appendix C**).

[7] CORMIX's recommended value for conservative design condition.

5 Evaluation of Impacts

5.1.1.1 **Table 5.1** shows the dilution factors for SS and UIA required to meet the WQOs in marine waters. Since the *E. coli* level of treated effluent has already met the WQO criteria, it is not included in the assessment. The calculation of dilution factor is based on **Equation 5.1**. The WQO criteria can be complied if the predicted dilution factor at the WSRs is higher than the required dilution factor presented in **Table 5.1**.

Table 5.1 Dilution factors for SS and UIA to meet the WQO criteria

	SS (mg/L)	UIA (mg/L)	Remark
Criteria/Target Limit of Conc. ($C_{criteria}$)	8.99	0.021	See **Table 4.2**
Baseline Conc. ($C_{baseline}$)	6.92	0.004	See **Table 2.1**
Effluent Discharge Conc. ($C_{effluent}$)	30	0.424	See **Table 4.3**
Dilution Factor to Meet the Criteria	11	25	Calculation based on **Equation 5.1**

Note:
As a sample calculation, the required dilution factor for the SS criterion would be (30.00 – 6.92)/(8.99 – 6.92) ≈ 11.

$$DF = \frac{C_{effluent} - C_{baseline}}{C_{criteria} - C_{baseline}} \qquad \textbf{Equation 5.1}$$

where

$C_{effluent}$ is the effluent concentration at the discharge point.
$C_{baseline}$ is the baseline concentration at the WSR.
$C_{criteria}$ is the criteria/ target limit of concentration.

5.1.1.2 **Table 5.2** shows the dilution factor and predicted vertical thickness of sewage plume for the simulated scenario at 270 m of the closest WSR (WSR 07 Tai Pak Tsui Peninsula CPA). The simulated scenarios are classified as near surface positively buoyant jet in uniform density layer (flow class IPH2 according to CORMIX Manual). The details of CORMIX outputs are presented in **Appendix D**. Based on the modelling result, the lowest predicted dilution factor can be achieved is 209. The predicted vertical thickness of sewage plume is about 0.3-0.4m near the surface.

Table 5.2 Predicted dilution factor and plume vertical thickness at the WSR07 (i.e. 270 m from discharge point)

Season	Ambient flow in co-flow condition (m/s)	Dilution Factor	Plume Vertical Thickness (m)
Dry	0.02	209	0.25
	0.01	375	0.38
Wet	0.02	242	0.30
	0.01	377	0.42

5.1.1.3 Since the predicted dilution factor at the nearest WSR is higher than the required dilution presented in **Table 5.1**, it is anticipated that SS and UIA level would comply with the WQO criteria at all the marine based WSRs. The summary of compliance for different water quality parameters is presented in **Table 5.3**.

5.1.1.4 The predicted SS is 7.03 mg/L at the WSR 07 Tai Pak Tsui Peninsula CPA in the worst scenario of dilution factor 209. Since the predicted SS complies with the water quality criteria (8.99mg/L) at the WSR 07, hence impact on the ecological sensitive receiver/ coral at WSR 07 is not anticipated, irrespective of whether there are corals at WSR 07 or not.

Table 5.3 Summary of compliance for different water quality parameters inside the sewage plume

Season	Ambient flow in co-flow condition (m/s)	SS (mg/L)	*E.coli* (mg/L)	UIA (mg/L)	TIN (mg/L)
Dry	0.02	Yes	Yes	Yes	No [1]
	0.01	Yes	Yes	Yes	No [1]
Wet	0.02	Yes	Yes	Yes	No [1]
	0.01	Yes	Yes	Yes	No [1]

Note:
[1] Baseline TIN level already exceeds the WQO criterion.

5.1.1.5 Using **Equation 5.1** and the effluent standards in **Section 4.1**, the predicted levels of total inorganic nitrogen (TIN) inside the sewage plume with predicted dilution factors are presented in **Table 5.4**.

Table 5.4 Predicted nitrogen levels at the WSR07 (i.e. 270 m from discharge point)

Season	Ambient flow in co-flow condition (m/s)	TIN, inside the sewage plume (mg/L)	Depth averaged TIN (mg/L)
Dry	0.02	0.444	0.359
	0.01	0.402	0.358
Wet	0.02	0.431	0.359
	0.01	0.402	0.358

Note:

As a sample calculation for the first scenario, the depth averaged TIN = 0.444 x (0.25/2.6) +0.35 x (1-0.25/2.6) = 0.359 mg/L.

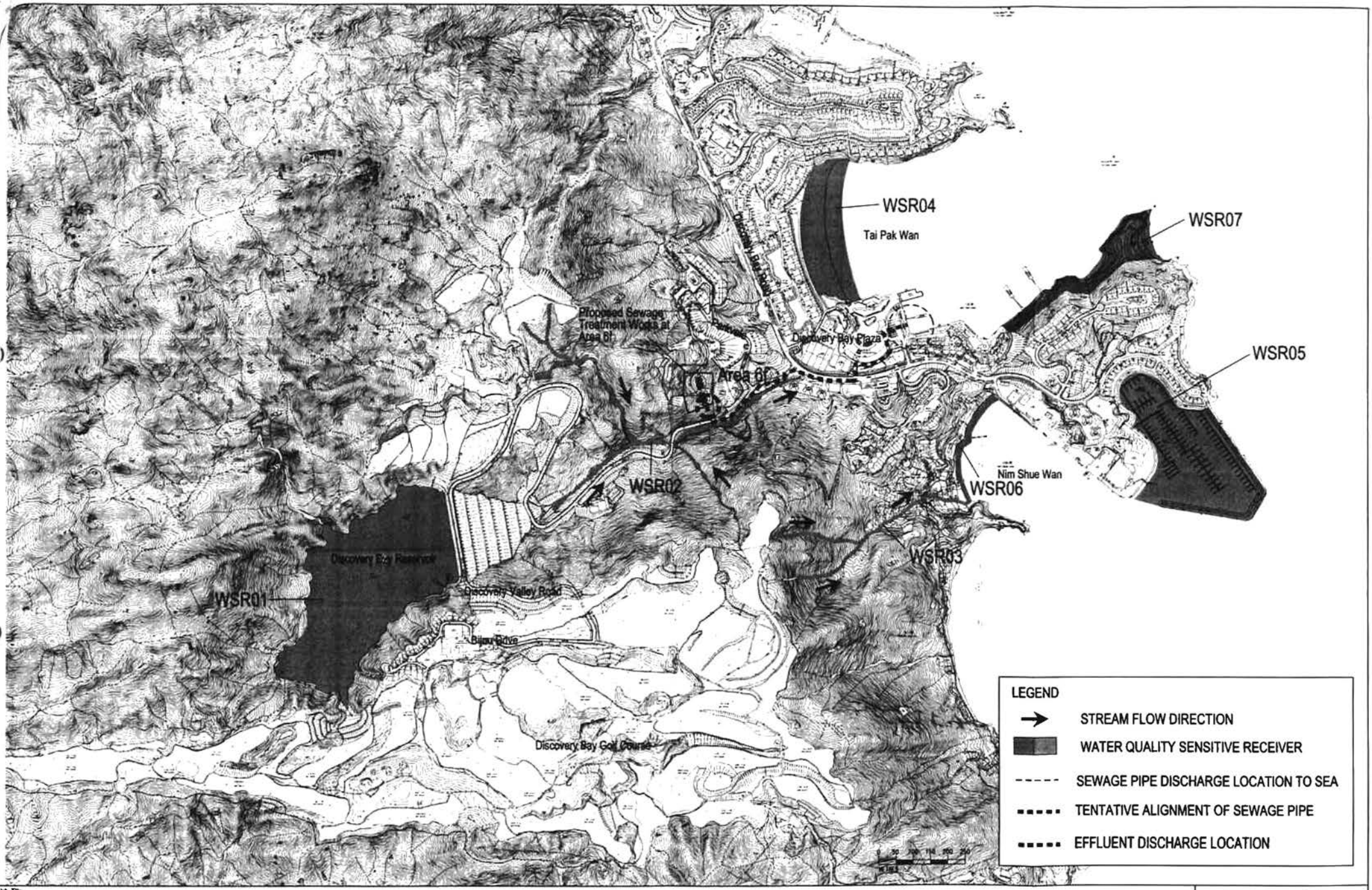
5.1.1.6 The predicted value of TIN inside the sewage plume near surface exceeds the depth averaged baseline value of 0.35 mg/L at the nearest WSR 07 (Tai Pak Tsui Peninsula CPA). However, since the predicted sewage plume thickness is thin (0.3-0.4m near the surface out of 2.6m water depth), the predicted depth averaged TIN marginally exceeds the baseline value for about 2-3% and is considered as not significant.

6 Conclusion

6.1.1.1 The preliminary water quality impact assessment of the proposed sewage treatment works in Area 6f to the water sensitive receivers during operational phase has be conducted. The modelling result indicates that the water quality in the vicinity of marine-based WSRs would be in compliance with WQOs in SS, *E. coli* and UIA. Exceedance of TIN under WQO is observed. However the contribution is due to high TIN level in background from Pearl River estuary. The predicted depth averaged TIN would slightly increase the baseline value by 2-3% and is considered as not significant.

6.1.1.2 The current tentative alignment for the gravity sewage pipe has considered the worst case scenario especially during dry seasons (i.e. without dilution by rain water). During the subsequent detailed design, it is recommended to conduct further analysis to establish any base flow along the spillway and hence the feasibility of discharging the treated effluent into the nullah and box culvert directly.

Figures



Job Title
DISCOVERY BAY - OPTIMIZATION OF LAND USE

FIGURE 3-1

Date	Scale	Drawing Title
MAY 16	1:10000	Water Quality Sensitive Receivers
Drawn	Job No.	
GL	235928	

ARUP

Appendix A

EPD Marine Water Quality Monitoring Data

Figure A1 Locations of the Environmental Protection Department's marine monitoring measurement sites, captured from the EPD's marine water reports 2014

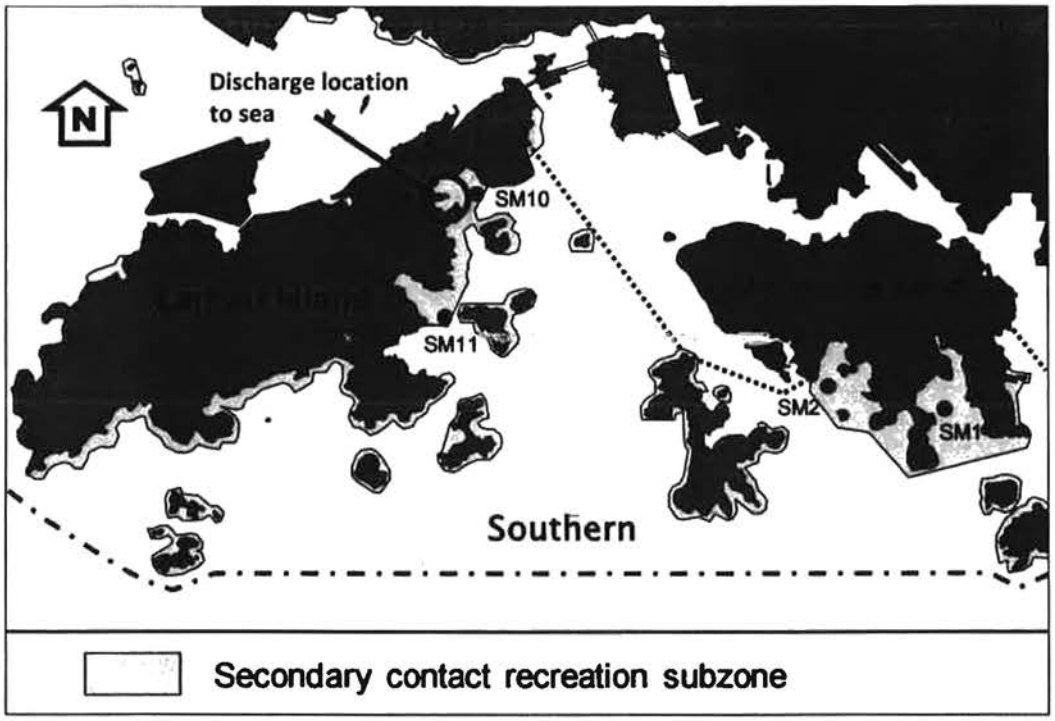


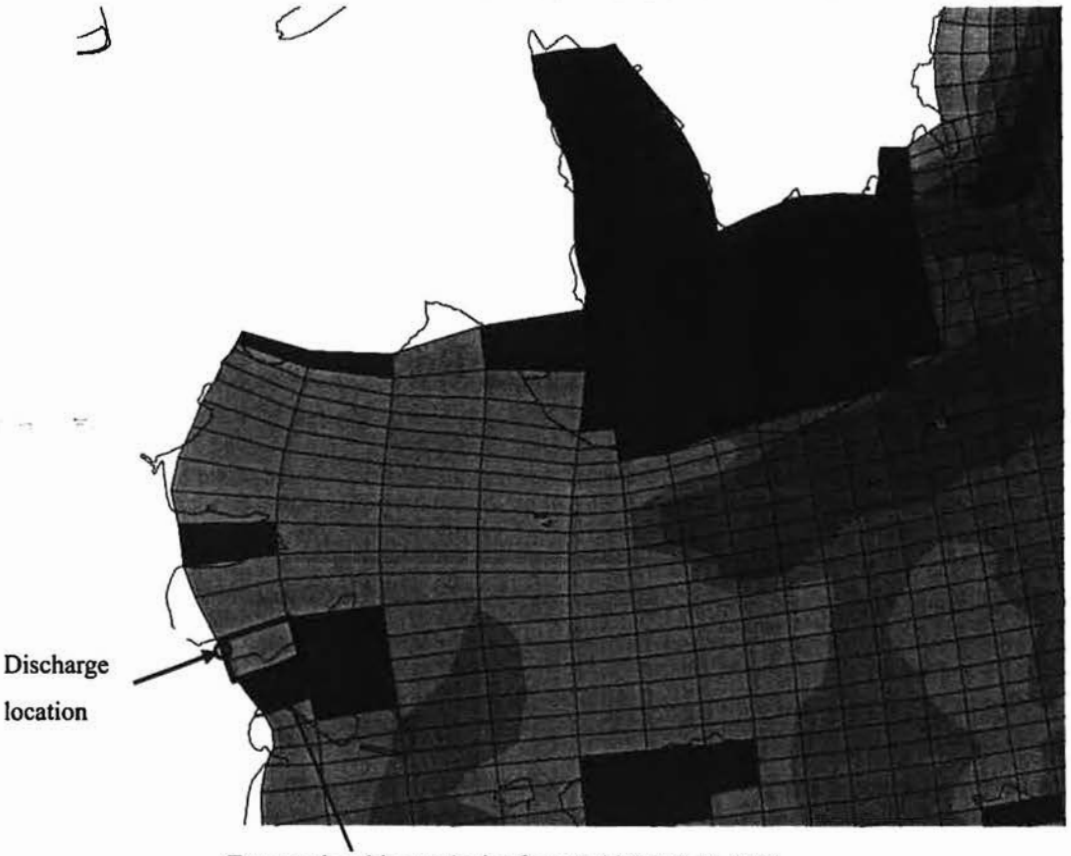
Table A1 Annual average of the water quality parameters at EPD's marine monitoring site SM10

Year	Total Inorganic Nitrogen (mg/L)	*E. coli*[1] (cfu/100mL)	Suspended Solids (mg/L)	Unionised Ammonia (mg/L)	Total Phosphorus (mg/L)
2005	0.35	9.44	7.10	0.005	0.038
2006	0.32	19.04	9.06	0.006	0.044
2007	0.32	11.28	8.15	0.006	0.046
2008	0.37	14.59	7.33	0.005	0.041
2009	0.28	10.51	8.28	0.003	0.037
2010	0.33	5.00	5.46	0.003	0.035
2011	0.36	2.37	7.12	0.003	0.039
2012	0.42	2.82	7.20	0.003	0.038
2013	0.35	2.78	3.92	0.003	0.039
2014	0.30	4.30	4.68	0.004	0.045

Note:
[1] According to WQO, the criterion for *E. coli* should be calculated as annual geometric mean of its concentration, instead of the annual arithmetic mean.

Appendix B

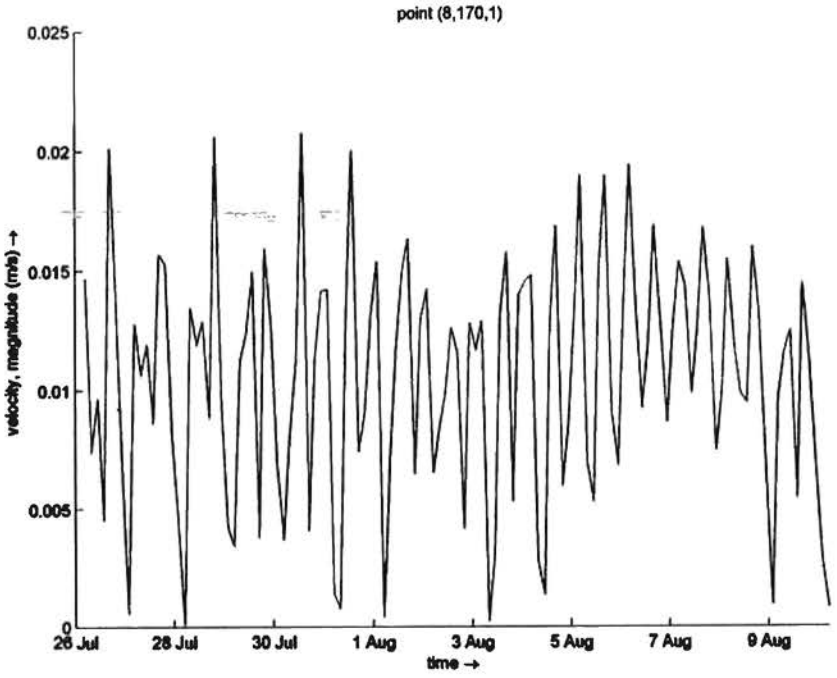
Ambient flow in Tai Bak Wan (Extracted from Delft 3D Modelling Result)



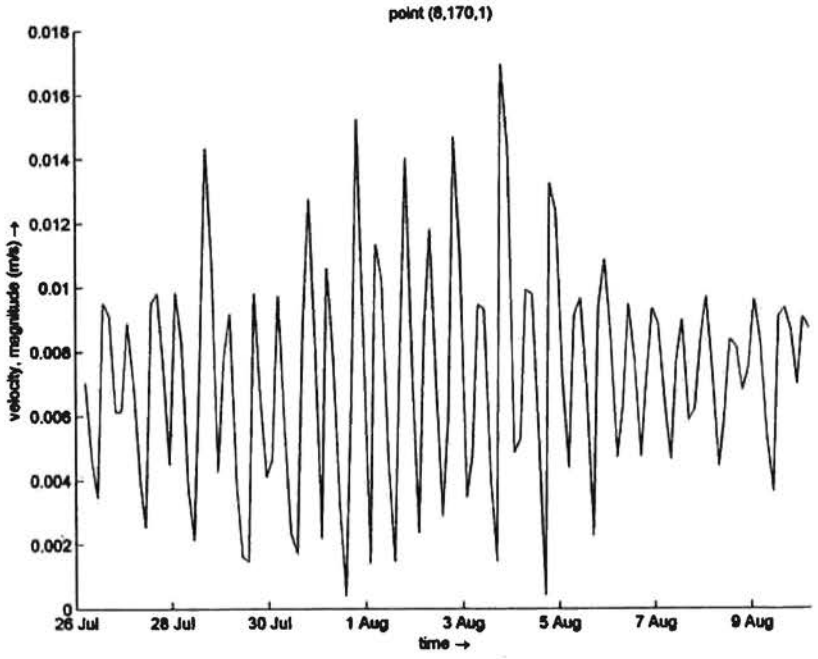
Extracted ambient velocity from Grid (M: 8, N: 170)

Time series of depth averaged ambient velocity from approved Delft 3D modelling result

Wet season

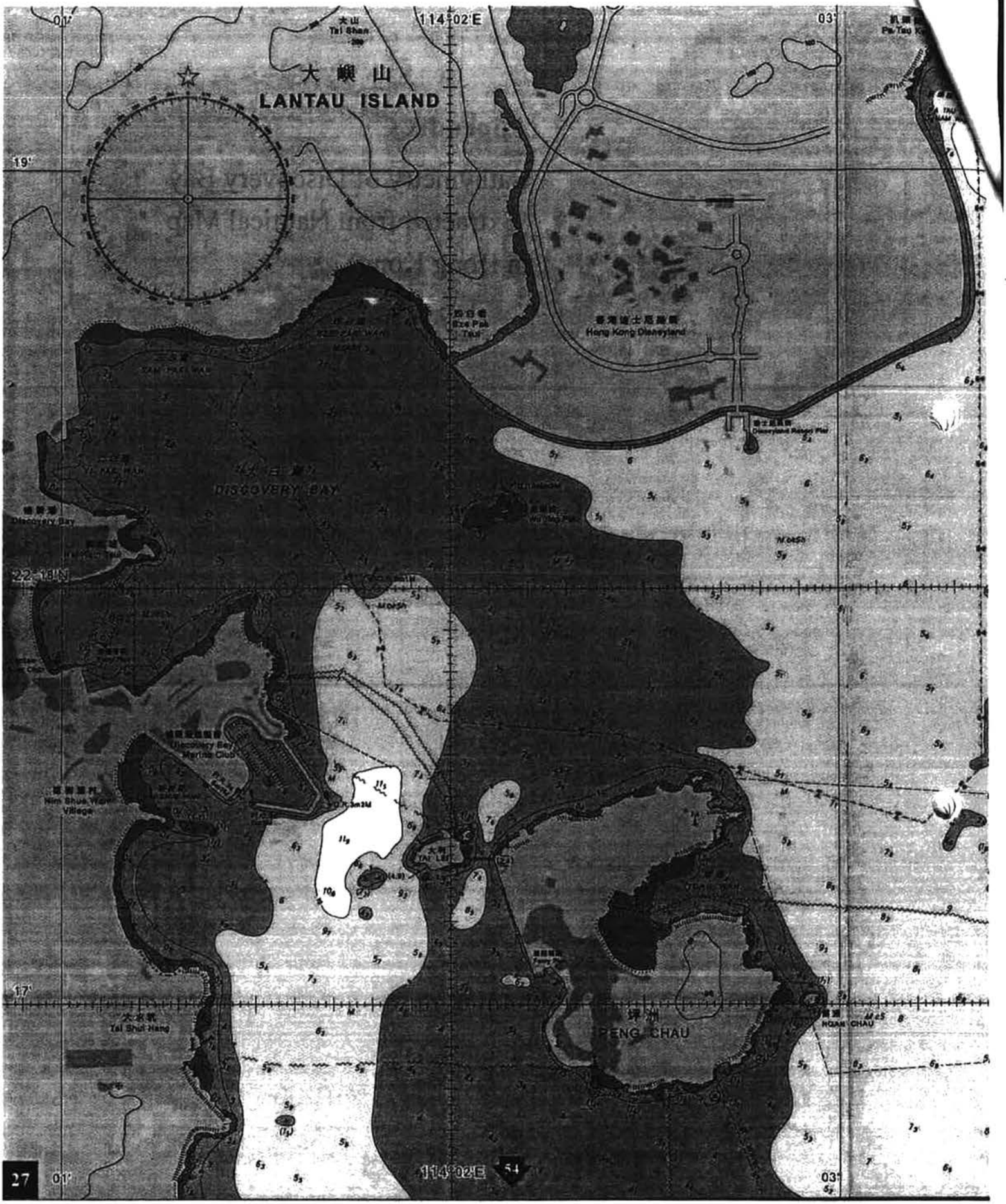


Dry season



Appendix C

Bathymetry of Discovery Bay (Extracted from Nautical Map in Hong Kong)


大嶼山
LANTAU ISLAND
Tai Shan
114°02'E
01'
03'
19'
17'
22°18'N
Hong Kong Disneyland
DISCOVERY BAY
Discovery Bay
Discovery Bay Marine Club
Tai Shui Hang
PENG CHAU
HOAN CHAU
114°02'E

圖例

地貌 TOPOGRAPHY

自然地貌 Natural Features


海岸線(已測量)
Coastline, surveyed


陡岸
Steep coast


沙質岸
Sandy shore


石質岸
Stony shore


等高線(附數值)及高程點
Contour lines with values and spot height


河流・溪澗
River, Stream


水庫・塘
Reservoir, Pond

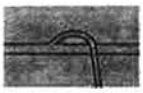

鹽田
Salt pans


紅樹林
Mangrove


沼澤
Marsh

人工地貌 Cultural Features


市區
Urban area


道路
Road


機場
Airport, Airfield


最高天文潮且橋底的垂直淨空
Vertical clearance above the Highest Astronomical Tide


架空索道・附垂直淨空
Overhead transporter, Aerial cableway with vertical clearance

陸地標記 Landmarks


廟宇
Temple


塔
Tower


煙囪・紀念碑
Chimney, Monument


風力發電機・旗桿
Wind turbine, Flagstaff


無線電桅・無線電塔
Radio mast, Radio tower


碟形天線
Dish aerial


貯存庫
Tanks

港口 Ports


海堤
Seawall


防波堤
Breakwater


突堤(附泊船設施)
Mole
(with berthing facilities)


順岸碼頭
Quay, Wharf


突堤式碼頭、
Pier, Jetty


浮碼頭、登岸梯級
Pontoon, Landing steps


泊位編號
Designation of berth


繫船柱
Dolphin


船台滑道
Slipway

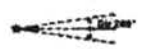

浮塢
Floating dock

輔航設備 NAVIGATION AIDS

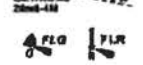
燈標、立標 Lights, Beacons


主燈標
Major light


導燈
Leading lights


定向燈
Direction light


扇形燈
Sector light



設燈標記
Lighted marks


一般立標
Beacon in general


電纜登陸點的立標
Cable landing beacon

浮標 Buoys


浮標形狀(錐形・罐形・球形・柱形)
Shapes of buoys (conical, can, spherical, pillar)

繫泊浮標
Mooring buoy

方位浮標(北・東・南・西)
Cardinal buoys (North, East, South, West)

孤立危險物浮標
Isolated danger buoy

安全水域浮標
Safe water buoys

特殊浮標
Special buoys

霧號、雷達 Fog Signal, Radar

燈立標上的霧角
(響號一次・周期15秒)
Lighted beacon, with horn giving a single blast every 15 seconds

雷達應答器
Radar transponder beacon

自動識別系統發射機
Automatic Identification System transmitter

一般信號站
Signal station in general

航道走向
Direction of buoyage

LEGEND

海道測量及服務 HYDROGRAPHY & SERVICES

深度 Depths

實際位置的水深
Soundings in true position

乾出高度
Drying heights

疏浚航道或區域(附維護深度)
Dredged channel or area with maintained depth

等深線
Depth contours

礁石區
Rocky area, which covers and uncovers

底質 Nature of the Seabed

S	沙	Sand
M	泥	Mud
Cy	黏土	Clay
Si	淤泥	Silt
St	石	Stones
G	沙礫	Gravel
P	小卵石	Pebbles
Cb	鵝卵石	Cobbles
R	礁石	Rock
Co	珊瑚	Coral
Sh	貝殼	Shells
S/M	雙層底質，例如上沙下泥	Two layers, e.g. Sand over Mud
fS M Sh	混合底質，先註主要成份，例如細沙混合泥、貝殼。	The main constituent is given first for mixtures, e.g. fine sand with mud and shells

礁石 Rocks

危險線
Danger line

乾出礁(高度在海圖基準以上)
Rock which covers and uncovers, height above Chart Datum

過沖礁(在海圖基準面)
Rock awash at the level of Chart Datum

危險暗礁(深度不明)
Dangerous underwater rock of uncertain depth

危險暗礁(已知深度)
Dangerous underwater rock of known depth

非危險暗礁(已知深度)
Non-dangerous rock, depth known

浪花
Breakers

沉船、障礙物 Wrecks, Obstructions

部份船體露出海圖基準面的沉船
Wreck showing any portion of hull at level of chart datum

僅桅杆露出海圖基準面的沉船
Wreck of which the mast(s) only are visible at Chart Datum

已知最小深度的沉船
Wreck, least depth known by sounding only

最小深度不明的沉船，對航行有潛在危險
Wreck, least depth unknown, considered to be potentially dangerous to some surface vessels.

錨泊地，對航行無危險，但應避免拋錨、拖網等。
Foul ground, not dangerous to surface navigation but to be avoided by vessels anchoring, trawling etc.

已知最小深度的障礙物
Obstruction, least depth known by sounding only

魚礁(附最小深度)
Fish haven with minimum depth

海產養殖場
Marine farm

近岸設施 Offshore Installations

海底電纜
Submarine cable

海底電纜區
Submarine cable area

海底輸電纜
Submarine power cable

海底輸電纜區
Submarine power cable area

停用海底電纜
Disused submarine cable

供應管道
Supply pipeline

排放管道
Outfall and intake

停用管道
Disused pipeline/outfall

服務 Services

領港員登船地
Pilot boarding place

遊艇會
Marina

指定供給燃料區
Designated bunkering area

航路 Tracks, Routes

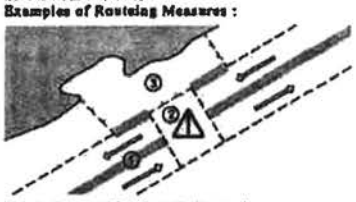
導航線(實線為應遵循的航路)
Leading line (firm line is the track to be followed)

沒有固定導航標誌的建議航路
Recommended tracks not based on a system of fixed marks

規定航向
Established direction of traffic flow

無線電報台站
Radio reporting points

航路分隔措施(例例)：
Examples of Routeing Measures :



① 分道航行制(以分隔帶/線隔開)
Traffic Separation Scheme, traffic separated by separation zone/line

② 警戒區
Precautionary area

③ 沿岸航行區
Inshore traffic zone

區域、界線 Areas, Limits

限制區
Restricted area

禁區界線(不准駛進)
Limit of area into which entry is prohibited

錨地
Anchorage area

禁止錨泊區
Anchoring prohibited area

禁止捕魚區
Fishing prohibited area

鳥類保育區
Bird sanctuary

海岸保護區
Marine Reserve

航速限制區
Speed Restricted Zone

港界
Harbour limit

香港特別行政區界
Boundary of the Hong Kong Special Administrative Region

Appendix D

CORMIX model output

```
CORMIX SESSION REPORT:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                        CORMIX MIXING ZONE EXPERT SYSTEM
                            CORMIX Version 5.0GT
                         HYDRO1:Version-5.0.1.0  December,2007
SITE NAME/LABEL:
  DESIGN CASE:
  FILE NAME:                      C:\Documents and
Settings\aac.sas.GLOBAL\Desktop\235928\cormix\Area6f\H2.6\Dry U50 H2.6.prd
  Using subsystem CORMIX1:      Single Port Discharges
  Start of session:              09/29/2016--17:12:16
*******************************************************************************
SUMMARY OF INPUT DATA:
-------------------------------------------------------------------------------
AMBIENT PARAMETERS:
  Cross-section                              = unbounded
  Average depth                    HA        = 2.6 m
  Depth at discharge               HD        = 2.6 m
  Ambient velocity                 UA        = 0.01 m/s
  Darcy-Weisbach friction factor   F         = 0.0228
    Calculated from Manning's n              = 0.02
  Wind velocity                    UW        = 2 m/s
  Stratification Type              STRCND    = U
  Surface density                  RHOAS     = 1022 kg/m^3
  Bottom density                   RHOAB     = 1022 kg/m^3
-------------------------------------------------------------------------------
DISCHARGE PARAMETERS:              Single Port Discharge
  Nearest bank                               = left
  Distance to bank                 DISTB     = 2000 m
  Port diameter                    D0        = 0.08 m
  Port cross-sectional area        A0        = 0.0050 m^2
  Discharge velocity               U0        = 1.01 m/s
  Discharge flowrate               Q0        = 0.0051 m^3/s
  Discharge port height            H0        = 2.52 m
  Vertical discharge angle         THETA     = 0 deg
  Horizontal discharge angle       SIGMA     = 0 deg
  Discharge density                RHO0      = 1000 kg/m^3
  Density difference               DRHO      = 22 kg/m^3
  Buoyant acceleration             GP0       = 0.2111 m/s^2
  Discharge concentration          C0        = 30 deg.C
  Surface heat exchange coeff.     KS        = 0 m/s
  Coefficient of decay             KD        = 0 /s
-------------------------------------------------------------------------------
DISCHARGE/ENVIRONMENT LENGTH SCALES:
  LQ  = 0.07 m          Lm  = 7.19 m          Lb  = 1076.62 m
  LM  = 0.59 m          Lm' = 99999 m         Lb' = 99999 m
-------------------------------------------------------------------------------
NON-DIMENSIONAL PARAMETERS:
  Port densimetric Froude number   FR0       = 7.81
  Velocity ratio                   R         = 101.46
-------------------------------------------------------------------------------
MIXING ZONE / TOXIC DILUTION ZONE / AREA OF INTEREST PARAMETERS:
  Toxic discharge                            = no
  Water quality standard specified           = yes
  Water quality standard           CSTD      = 8.99 deg.C
  Regulatory mixing zone                     = yes
  Regulatory mixing zone specification       = distance
  Regulatory mixing zone value               = 270 m (m^2 if area)
  Region of interest                         = 500 m
*******************************************************************************
HYDRODYNAMIC CLASSIFICATION:
  *-------------------------*
  | FLOW CLASS   = IPH2A5I |
  *-------------------------*
  This flow configuration applies to a layer corresponding to the full water
  depth at the discharge site.
  Applicable layer depth = water depth = 2.6 m
*******************************************************************************
```

MIXING ZONE EVALUATION (hydrodynamic and regulatory summary):

X-Y-Z Coordinate system:
Origin is located at the bottom below the port center:
2000 m from the left bank/shore.
Number of display steps NSTEP = 50 per module.

NEAR-FIELD REGION (NFR) CONDITIONS :
Note: The NFR is the zone of strong initial mixing. It has no regulatory implication. However, this information may be useful for the discharge designer because the mixing in the NFR is usually sensitive to the discharge design conditions.

Pollutant concentration at NFR edge	c =	0.1269 deg.C
Dilution at edge of NFR	s =	236.4
NFR Location:	x =	139.29 m
(centerline coordinates)	y =	0 m
	z =	2.6 m
NFR plume dimensions: half-width (bh)	=	208.79 m
thickness (bv)	=	0.29 m
Cumulative travel time:		11210.2207 sec.

Buoyancy assessment:
The effluent density is less than the surrounding ambient water density at the discharge level.
Therefore, the effluent is POSITIVELY BUOYANT and will tend to rise towards the surface.

Benthic attachment:
For the present combination of discharge and ambient conditions, the discharge plume becomes attached to the channel bottom within the NFR immediately following the efflux. High benthic concentrations may occur.

UPSTREAM INTRUSION SUMMARY:
Plume exhibits upstream intrusion due to low ambient velocity or strong discharge buoyancy.

Intrusion length	=	200.10 m
Intrusion stagnation point	=	-165.20 m
Intrusion thickness	=	0.11 m
Intrusion half width at impingement	=	208.79 m
Intrusion half thickness at impingement	=	0.29 m

In this case, the UPSTREAM INTRUSION IS VERY LARGE, exceeding ten (10) times the local water depth.
This may be caused by the small ambient velocity, perhaps in combination with the strong buoyancy of the effluent, or alternatively, a strong ambient stratification.
If the ambient conditions are quite unsteady (e.g. tidal), then the CORMIX steady-state predictions of the upstream intrusion are probably unrealistic. The plume predictions in the immediate near-field, prior to the intrusion layer formation, are acceptable, however.

PLUME BANK CONTACT SUMMARY:
Plume in unbounded section does not contact bank in this simulation.

********** TOXIC DILUTION ZONE SUMMARY **********

No TDZ was specified for this simulation.

********** REGULATORY MIXING ZONE SUMMARY **********

The plume conditions at the boundary of the specified RMZ are as follows:

Pollutant concentration	c =	0.080111 deg.C
Corresponding dilution	s =	374.5
Plume location:	x =	270 m
(centerline coordinates)	y =	0 m
	z =	2.6 m
Plume dimensions: half-width (bh)	=	249.78 m
thickness (bv)	=	0.38 m
Cumulative travel time:		24280.8379 sec.

At this position, the plume is NOT IN CONTACT with any bank.
Furthermore, the specified water quality standard has indeed been met

within the RMZ. In particular:
The ambient water quality standard was encountered at the following
plume position:

Water quality standard		= 8.99 deg.C
Corresponding dilution	s	= 3.3
Plume location:	x	= 1.65 m
(centerline coordinates)	y	= 0 m
	z	= 2.6 m
Plume dimension: half-width (bh)		= 0.22 m

********** FINAL DESIGN ADVICE AND COMMENTS **********
REMINDER: The user must take note that HYDRODYNAMIC MODELING by any known technique is NOT AN EXACT SCIENCE.
Extensive comparison with field and laboratory data has shown that the CORMIX predictions on dilutions and concentrations (with associated plume geometries) are reliable for the majority of cases and are accurate to within about +-50% (standard deviation).
As a further safeguard, CORMIX will not give predictions whenever it judges the design configuration as highly complex and uncertain for prediction.

Dry_U90_H2.6.ses

CORMIX SESSION REPORT:

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

CORMIX MIXING ZONE EXPERT SYSTEM
CORMIX Version 5.0GT
HYDRO1:Version-5.0.1.0 December,2007

SITE NAME/LABEL:
DESIGN CASE:
FILE NAME: C:\Documents and Settings\aac.sas.GLOBAL\Desktop\235928\cormix\Area6f\H2.6\Dry U90 H2.6.prd
Using subsystem CORMIX1: Single Port Discharges
Start of session: 09/29/2016--17:11:27

****

SUMMARY OF INPUT DATA:

AMBIENT PARAMETERS:

Cross-section		= unbounded
Average depth	HA	= 2.6 m
Depth at discharge	HD	= 2.6 m
Ambient velocity	UA	= 0.02 m/s
Darcy-Weisbach friction factor	F	= 0.0228
Calculated from Manning's n		= 0.02
Wind velocity	UW	= 2 m/s
Stratification Type	STRCND	= U
Surface density	RHOAS	= 1022 kg/m^3
Bottom density	RHOAB	= 1022 kg/m^3

DISCHARGE PARAMETERS: Single Port Discharge

Nearest bank		= left
Distance to bank	DISTB	= 2000 m
Port diameter	D0	= 0.08 m
Port cross-sectional area	A0	= 0.0050 m^2
Discharge velocity	U0	= 1.01 m/s
Discharge flowrate	Q0	= 0.0051 m^3/s
Discharge port height	H0	= 2.52 m
Vertical discharge angle	THETA	= 0 deg
Horizontal discharge angle	SIGMA	= 0 deg
Discharge density	RHO0	= 1000 kg/m^3
Density difference	DRHO	= 22 kg/m^3
Buoyant acceleration	GP0	= 0.2111 m/s^2
Discharge concentration	C0	= 30 deg.C
Surface heat exchange coeff.	KS	= 0 m/s
Coefficient of decay	KD	= 0 /s

DISCHARGE/ENVIRONMENT LENGTH SCALES:

LQ = 0.07 m	Lm = 3.60 m	Lb = 134.58 m
LM = 0.59 m	Lm' = 99999 m	Lb' = 99999 m

NON-DIMENSIONAL PARAMETERS:

Port densimetric Froude number	FR0	= 7.81
Velocity ratio	R	= 50.73

MIXING ZONE / TOXIC DILUTION ZONE / AREA OF INTEREST PARAMETERS:

Toxic discharge		= no
Water quality standard specified		= yes
Water quality standard	CSTD	= 8.99 deg.C
Regulatory mixing zone		= yes
Regulatory mixing zone specification		= distance
Regulatory mixing zone value		= 270 m (m^2 if area)
Region of interest		= 500 m

****

HYDRODYNAMIC CLASSIFICATION:

| FLOW CLASS = IPH2A5I |

This flow configuration applies to a layer corresponding to the full water depth at the discharge site.
Applicable layer depth = water depth = 2.6 m

****

MIXING ZONE EVALUATION (hydrodynamic and regulatory summary):

X-Y-Z Coordinate system:
  Origin is located at the bottom below the port center:
    2000 m from the left bank/shore.
  Number of display steps NSTEP = 50 per module.

NEAR-FIELD REGION (NFR) CONDITIONS :
Note: The NFR is the zone of strong initial mixing. It has no regulatory implication. However, this information may be useful for the discharge designer because the mixing in the NFR is usually sensitive to the discharge design conditions.

Pollutant concentration at NFR edge	c	= 0.2429 deg.C
Dilution at edge of NFR	s	= 123.5
NFR Location:	x	= 63.32 m
(centerline coordinates)	y	= 0 m
	z	= 2.6 m
NFR plume dimensions: half-width (bh)		= 46.82 m
thickness (bv)		= 0.34 m

Cumulative travel time: 1858.3932 sec.

Buoyancy assessment:
  The effluent density is less than the surrounding ambient water density at the discharge level.
  Therefore, the effluent is POSITIVELY BUOYANT and will tend to rise towards the surface.

Benthic attachment:
  For the present combination of discharge and ambient conditions, the discharge plume becomes attached to the channel bottom within the NFR immediately following the efflux. High benthic concentrations may occur.

UPSTREAM INTRUSION SUMMARY:
Plume exhibits upstream intrusion due to low ambient velocity or strong discharge buoyancy.

Intrusion length	= 34.39 m
Intrusion stagnation point	= 5.52 m
Intrusion thickness	= 0.23 m
Intrusion half width at impingement	= 46.82 m
Intrusion half thickness at impingement	= 0.34 m

  In this case, the UPSTREAM INTRUSION IS VERY LARGE, exceeding ten (10) times the local water depth.
  This may be caused by the small ambient velocity, perhaps in combination with the strong buoyancy of the effluent, or alternatively, a strong ambient stratification.
  If the ambient conditions are quite unsteady (e.g. tidal), then the CORMIX steady-state predictions of the upstream intrusion are probably unrealistic. The plume predictions in the immediate near-field, prior to the intrusion layer formation, are acceptable, however.

PLUME BANK CONTACT SUMMARY:
  Plume in unbounded section does not contact bank in this simulation.

********** TOXIC DILUTION ZONE SUMMARY **********

No TDZ was specified for this simulation.

********** REGULATORY MIXING ZONE SUMMARY **********

The plume conditions at the boundary of the specified RMZ are as follows:

Pollutant concentration	c	= 0.143731 deg.C
Corresponding dilution	s	= 208.7
Plume location:	x	= 270 m
(centerline coordinates)	y	= 0 m
	z	= 2.6 m
Plume dimensions: half-width (bh)		= 105.02 m
thickness (bv)		= 0.25 m

Cumulative travel time: 12192.4678 sec.
At this position, the plume is NOT IN CONTACT with any bank.
Furthermore, the specified water quality standard has indeed been met

within the RMZ. In particular:
The ambient water quality standard was encountered at the following
plume position:

Water quality standard		= 8.99 deg.C
Corresponding dilution	s	= 3.3
Plume location:	x	= 1.64 m
(centerline coordinates)	y	= 0 m
	z	= 2.6 m
Plume dimension: half-width (bh)		= 0.21 m

********** FINAL DESIGN ADVICE AND COMMENTS **********
REMINDER: The user must take note that HYDRODYNAMIC MODELING by any known technique is NOT AN EXACT SCIENCE.
Extensive comparison with field and laboratory data has shown that the CORMIX predictions on dilutions and concentrations (with associated plume geometries) are reliable for the majority of cases and are accurate to within about +-50% (standard deviation).
As a further safeguard, CORMIX will not give predictions whenever it judges the design configuration as highly complex and uncertain for prediction.

Wet_U50_H2.6.ses

CORMIX SESSION REPORT:

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

CORMIX MIXING ZONE EXPERT SYSTEM
CORMIX Version 5.0GT
HYDRO1:Version-5.0.1.0 December,2007

SITE NAME/LABEL:
DESIGN CASE:
FILE NAME: C:\Documents and Settings\aac.sas.GLOBAL\Desktop\235928\cormix\Area6f\H2.6\Wet U50 H2.6.prd
Using subsystem CORMIX1: Single Port Discharges
Start of session: 09/29/2016--17:12:51

****

SUMMARY OF INPUT DATA:

AMBIENT PARAMETERS:

Cross-section		= unbounded
Average depth	HA	= 2.6 m
Depth at discharge	HD	= 2.6 m
Ambient velocity	UA	= 0.01 m/s
Darcy-Weisbach friction factor	F	= 0.0228
Calculated from Manning's n		= 0.02
Wind velocity	UW	= 2 m/s
Stratification Type	STRCND	= A
Surface density	RHOAS	= 1017 kg/m^3
Bottom density	RHOAB	= 1017.7 kg/m^3

DISCHARGE PARAMETERS: Single Port Discharge

Nearest bank		= left
Distance to bank	DISTB	= 2000 m
Port diameter	D0	= 0.08 m
Port cross-sectional area	A0	= 0.0050 m^2
Discharge velocity	U0	= 1.01 m/s
Discharge flowrate	Q0	= 0.0051 m^3/s
Discharge port height	H0	= 2.52 m
Vertical discharge angle	THETA	= 0 deg
Horizontal discharge angle	SIGMA	= 0 deg
Discharge density	RHO0	= 1000 kg/m^3
Density difference	DRHO	= 17.3500 kg/m^3
Buoyant acceleration	GP0	= 0.1672 m/s^2
Discharge concentration	C0	= 30 deg.C
Surface heat exchange coeff.	KS	= 0 m/s
Coefficient of decay	KD	= 0 /s

DISCHARGE/ENVIRONMENT LENGTH SCALES:

LQ = 0.07 m	Lm = 7.19 m	Lb = 852.94 m
LM = 0.66 m	Lm' = 99999 m	Lb' = 99999 m

NON-DIMENSIONAL PARAMETERS:

Port densimetric Froude number	FR0	= 8.77
Velocity ratio	R	= 101.46

MIXING ZONE / TOXIC DILUTION ZONE / AREA OF INTEREST PARAMETERS:

Toxic discharge		= no
Water quality standard specified		= yes
Water quality standard	CSTD	= 8.99 deg.C
Regulatory mixing zone		= yes
Regulatory mixing zone specification		= distance
Regulatory mixing zone value		= 270 m (m^2 if area)
Region of interest		= 500 m

****

HYDRODYNAMIC CLASSIFICATION:

| FLOW CLASS = IPH2A5I |

This flow configuration applies to a layer corresponding to the full water depth at the discharge site. The ambient density stratification at the discharge site is relatively weak and unimportant so the discharge flow penetrates to the surface and/or breaks down the existing stratification

through vigorous mixing.
Applicable layer depth = water depth = 2.6 m

****

MIXING ZONE EVALUATION (hydrodynamic and regulatory summary):

X-Y-Z Coordinate system:
Origin is located at the bottom below the port center:
2000 m from the left bank/shore.
Number of display steps NSTEP = 50 per module.

NEAR-FIELD REGION (NFR) CONDITIONS :
Note: The NFR is the zone of strong initial mixing. It has no regulatory implication. However, this information may be useful for the discharge designer because the mixing in the NFR is usually sensitive to the discharge design conditions.

Pollutant concentration at NFR edge	c	= 0.1339 deg.C
Dilution at edge of NFR	s	= 224.1
NFR Location:	x	= 129.55 m
(centerline coordinates)	y	= 0 m
	z	= 2.6 m
NFR plume dimensions: half-width (bh)		= 183.05 m
thickness (bv)		= 0.31 m
Cumulative travel time:	10033.9805	sec.

Buoyancy assessment:
The effluent density is less than the surrounding ambient water density at the discharge level.
Therefore, the effluent is POSITIVELY BUOYANT and will tend to rise towards the surface.

Stratification assessment:
The specified ambient density stratification is weak relative to the discharge conditions and is dynamically unimportant. The discharge will behave as if the ambient were unstratified.

Benthic attachment:
For the present combination of discharge and ambient conditions, the discharge plume becomes attached to the channel bottom within the NFR immediately following the efflux. High benthic concentrations may occur.

UPSTREAM INTRUSION SUMMARY:
Plume exhibits upstream intrusion due to low ambient velocity or strong discharge buoyancy.

Intrusion length	=	166.86 m
Intrusion stagnation point	=	-128.83 m
Intrusion thickness	=	0.13 m
Intrusion half width at impingement	=	183.05 m
Intrusion half thickness at impingement	=	0.31 m

In this case, the UPSTREAM INTRUSION IS VERY LARGE, exceeding ten (10) times the local water depth.
This may be caused by the small ambient velocity, perhaps in combination with the strong buoyancy of the effluent, or alternatively, a strong ambient stratification.
If the ambient conditions are quite unsteady (e.g. tidal), then the CORMIX steady-state predictions of the upstream intrusion are probably unrealistic. The plume predictions in the immediate near-field, prior to the intrusion layer formation, are acceptable, however.

PLUME BANK CONTACT SUMMARY:
Plume in unbounded section does not contact bank in this simulation.

********** TOXIC DILUTION ZONE SUMMARY **********

No TDZ was specified for this simulation.

********** REGULATORY MIXING ZONE SUMMARY **********

The plume conditions at the boundary of the specified RMZ are as follows:

Pollutant concentration	c	= 0.07966 deg.C
Corresponding dilution	s	= 376.6

Plume location: x = 270 m
(centerline coordinates) y = 0 m
z = 2.6 m
Plume dimensions: half-width (bh) = 228.26 m
thickness (bv) = 0.42 m
Cumulative travel time: 24078.6426 sec.
At this position, the plume is NOT IN CONTACT with any bank.
Furthermore, the specified water quality standard has indeed been met within the RMZ. In particular:
The ambient water quality standard was encountered at the following plume position:
Water quality standard = 8.99 deg.C
Corresponding dilution s = 3.3
Plume location: x = 1.65 m
(centerline coordinates) y = 0 m
z = 2.6 m
Plume dimension: half-width (bh) = 0.22 m

********** FINAL DESIGN ADVICE AND COMMENTS **********

REMINDER: The user must take note that HYDRODYNAMIC MODELING by any known technique is NOT AN EXACT SCIENCE.
Extensive comparison with field and laboratory data has shown that the CORMIX predictions on dilutions and concentrations (with associated plume geometries) are reliable for the majority of cases and are accurate to within about +-50% (standard deviation).
As a further safeguard, CORMIX will not give predictions whenever it judges the design configuration as highly complex and uncertain for prediction.

```
CORMIX SESSION REPORT:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                        CORMIX MIXING ZONE EXPERT SYSTEM
                            CORMIX Version 5.0GT
                         HYDRO1:Version-5.0.1.0  December,2007
SITE NAME/LABEL:
  DESIGN CASE:
  FILE NAME:                    C:\Documents and
Settings\aac.sas.GLOBAL\Desktop\235928\cormix\Area6f\H2.6\Wet U90 H2.6.prd
  Using subsystem CORMIX1:     Single Port Discharges
  Start of session:             09/29/2016--17:13:23
**********************************************************************************
SUMMARY OF INPUT DATA:
---------------------------------------------------------------------------------
AMBIENT PARAMETERS:
  Cross-section                             = unbounded
  Average depth                  HA         = 2.6 m
  Depth at discharge             HD         = 2.6 m
  Ambient velocity               UA         = 0.02 m/s
  Darcy-Weisbach friction factor F          = 0.0228
    Calculated from Manning's n             = 0.02
  Wind velocity                  UW         = 2 m/s
  Stratification Type            STRCND     = A
  Surface density                RHOAS      = 1017 kg/m^3
  Bottom density                 RHOAB      = 1017.7 kg/m^3
---------------------------------------------------------------------------------
DISCHARGE PARAMETERS:            Single Port Discharge
  Nearest bank                              = left
  Distance to bank               DISTB      = 2000 m
  Port diameter                  D0         = 0.08 m
  Port cross-sectional area      A0         = 0.0050 m^2
  Discharge velocity             U0         = 1.01 m/s
  Discharge flowrate             Q0         = 0.0051 m^3/s
  Discharge port height          H0         = 2.52 m
  Vertical discharge angle       THETA      = 0 deg
  Horizontal discharge angle     SIGMA      = 0 deg
  Discharge density              RHO0       = 1000 kg/m^3
  Density difference             DRHO       = 17.3500 kg/m^3
  Buoyant acceleration           GP0        = 0.1672 m/s^2
  Discharge concentration        C0         = 30 deg.C
  Surface heat exchange coeff.   KS         = 0 m/s
  Coefficient of decay           KD         = 0 /s
---------------------------------------------------------------------------------
DISCHARGE/ENVIRONMENT LENGTH SCALES:
  LQ  = 0.07 m          Lm  = 3.60 m          Lb  = 106.62 m
  LM  = 0.66 m          Lm' = 99999 m         Lb' = 99999 m
---------------------------------------------------------------------------------
NON-DIMENSIONAL PARAMETERS:
  Port densimetric Froude number FR0       = 8.77
  Velocity ratio                 R         = 50.73
---------------------------------------------------------------------------------
MIXING ZONE / TOXIC DILUTION ZONE / AREA OF INTEREST PARAMETERS:
  Toxic discharge                           = no
  Water quality standard specified          = yes
  Water quality standard         CSTD       = 8.99 deg.C
  Regulatory mixing zone                    = yes
  Regulatory mixing zone specification      = distance
  Regulatory mixing zone value              = 270 m (m^2 if area)
  Region of interest                        = 500 m
**********************************************************************************
HYDRODYNAMIC CLASSIFICATION:
  *-----------------------*
  | FLOW CLASS   = IPH2A5I |
  *-----------------------*
  This flow configuration applies to a layer corresponding to the full water
  depth at the discharge site.  The ambient density stratification at the
  discharge site is relatively weak and unimportant so the discharge flow
  penetrates to the surface and/or breaks down the existing stratification
```

through vigorous mixing.
Applicable layer depth = water depth = 2.6 m

****

MIXING ZONE EVALUATION (hydrodynamic and regulatory summary):

X-Y-Z Coordinate system:
Origin is located at the bottom below the port center:
2000 m from the left bank/shore.
Number of display steps NSTEP = 50 per module.

NEAR-FIELD REGION (NFR) CONDITIONS :
Note: The NFR is the zone of strong initial mixing. It has no regulatory implication. However, this information may be useful for the discharge designer because the mixing in the NFR is usually sensitive to the discharge design conditions.

Pollutant concentration at NFR edge	c =	0.2073 deg.C
Dilution at edge of NFR	s =	144.7
NFR Location:	x =	70.74 m
(centerline coordinates)	y =	0 m
	z =	2.6 m
NFR plume dimensions: half-width (bh)	=	48.72 m
thickness (bv)	=	0.38 m
Cumulative travel time:		2075.4932 sec.

Buoyancy assessment:
The effluent density is less than the surrounding ambient water density at the discharge level.
Therefore, the effluent is POSITIVELY BUOYANT and will tend to rise towards the surface.

Stratification assessment:
The specified ambient density stratification is weak relative to the discharge conditions and is dynamically unimportant. The discharge will behave as if the ambient were unstratified.

Benthic attachment:
For the present combination of discharge and ambient conditions, the discharge plume becomes attached to the channel bottom within the NFR immediately following the efflux. High benthic concentrations may occur.

UPSTREAM INTRUSION SUMMARY:
Plume exhibits upstream intrusion due to low ambient velocity or strong discharge buoyancy.

Intrusion length	=	40.51 m
Intrusion stagnation point	=	5.86 m
Intrusion thickness	=	0.35 m
Intrusion half width at impingement	=	48.72 m
Intrusion half thickness at impingement	=	0.38 m

In this case, the UPSTREAM INTRUSION IS VERY LARGE, exceeding ten (10) times the local water depth.
This may be caused by the small ambient velocity, perhaps in combination with the strong buoyancy of the effluent, or alternatively, a strong ambient stratification.
If the ambient conditions are quite unsteady (e.g. tidal), then the CORMIX steady-state predictions of the upstream intrusion are probably unrealistic. The plume predictions in the immediate near-field, prior to the intrusion layer formation, are acceptable, however.

PLUME BANK CONTACT SUMMARY:
Plume in unbounded section does not contact bank in this simulation.

********** TOXIC DILUTION ZONE SUMMARY **********

No TDZ was specified for this simulation.

********** REGULATORY MIXING ZONE SUMMARY **********

The plume conditions at the boundary of the specified RMZ are as follows:

Pollutant concentration	c =	0.124012 deg.C
Corresponding dilution	s =	241.9

Plume location: x = 270 m
(centerline coordinates) y = 0 m
z = 2.6 m
Plume dimensions: half-width (bh) = 102.29 m
thickness (bv) = 0.30 m
Cumulative travel time: 12038.7305 sec.
At this position, the plume is NOT IN CONTACT with any bank.
Furthermore, the specified water quality standard has indeed been met within the RMZ. In particular:
The ambient water quality standard was encountered at the following plume position:
Water quality standard = 8.99 deg.C
Corresponding dilution s = 3.3
Plume location: x = 1.64 m
(centerline coordinates) y = 0 m
z = 2.6 m
Plume dimension: half-width (bh) = 0.21 m

********** FINAL DESIGN ADVICE AND COMMENTS **********

REMINDER: The user must take note that HYDRODYNAMIC MODELING by any known technique is NOT AN EXACT SCIENCE.
Extensive comparison with field and laboratory data has shown that the CORMIX predictions on dilutions and concentrations (with associated plume geometries) are reliable for the majority of cases and are accurate to within about +-50% (standard deviation).
As a further safeguard, CORMIX will not give predictions whenever it judges the design configuration as highly complex and uncertain for prediction.

RNTPC Paper No. Y/I-DB/2
For Consideration by
the Rural and New Town
Planning Committee
on 13.5.2016

APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE

APPLICATION NO. Y/I-DB/2
(for 1st deferment)

Applicant	:	Hong Kong Resort Company Limited represented by Masterplan Limited
Site	:	Area 6f, Lot 385 RP & Ext. (Part) in D.D. 352, Discovery Bay
Site Area	:	7,623 m^2 (about)
Lease	:	Lot No. 385 R.P. in D.D. 352 and the extensions thereto
Plan	:	Approved Discovery Bay Outline Zoning Plan (OZP) No. S/I-DB/4
Zoning	:	"Other Specified Uses" annotated "Staff Quarters (5)" ("OU(Staff Quarters(5))")
Proposed Amendment	:	From "OU(Staff Quarters(5))" to "Residential (Group C) 12" ("(R(C)12)")

1. Background

On 25.2.2016, the applicant sought planning permission to rezone the application site (the Site) (**Plan Z-1**) from "OU(Staff Quarters(5))" to "R(C)12". The proposed rezoning is intended to facilitate a medium-density residential development consisting of two residential blocks with maximum gross floor area of 21,600 m^2 and building height of 18 storeys (128mPD) at the Site. The application is scheduled for consideration by the Rural and New Town Planning Committee (the Committee) at this meeting.

2. Request for Deferment

On 15.4.2016, the applicant's representative wrote to the Secretary of the Town Planning Board (the Board) and requested the Board to defer making a decision on the application for two months so as to allow time for preparation of further information to address the comments of relevant government departments (**Appendix I**).

3. Planning Department's Views

3.1 The Planning Department has no objection to the request for deferment as the justifications for deferment meet the criteria for deferment as set out in the Town Planning Board Guidelines on Deferment of Decision on Representations, Comments, Further Representations and Applications made under the Town Planning Ordinance (TPB PG-No. 33) in that the applicant needs more time to prepare further information in response to departmental comments, the deferment period is not indefinite and the deferment would not affect the interests of other relevant parties.

3.2 Should the Committee agree to defer a decision on the application, the application will be submitted to the Committee for consideration within three months upon receipt of further information from the applicant. If the further information submitted by the applicant is not substantial and can be processed within a shorter time, the application could be submitted to an earlier meeting for the Committee's consideration. The applicant should be advised that the Committee has allowed two months for preparation of submission of further information, and no further deferment would be granted unless under very special circumstances.

4. Decision Sought

The Committee is invited to consider whether or not to accede to the applicant's request for deferment. If the request is not acceded to, the application will be submitted to the Committee for consideration at the next meeting.

5. Attachments

Appendix I	Letter dated 15.4.2016 from the applicant's representative
Plan Z-1	Location plan

PLANNING DEPARTMENT
MAY 2016

Appendix I

MASTERPLAN LIMITED
Planning and Development Advisors
領賢規劃顧問有限公司

Your Ref: Y/I-DB/2

The Secretariat
Town Planning Board
15/F, North Point Government Offices
333 Java Road, North Point
Hong Kong

15 April 2016

By Fax

Dear Sir,

Section 12A Application No.Y/I-DB/2
For rezoning the permissible use from staff quarters to flats at Area 6f, Discovery Bay
Request to Defer

I refer to the abovementioned application which is currently being processed and scheduled to be considered by Town Planning Board on 13 May 2016. I am writing to request to defer the consideration of the application.

We have received departmental comments on the application made available by the District Planning Office on 7, 12, 13 and 14 April 2016. We are reviewing the departmental comments and are currently formulating a response to address the concerns.

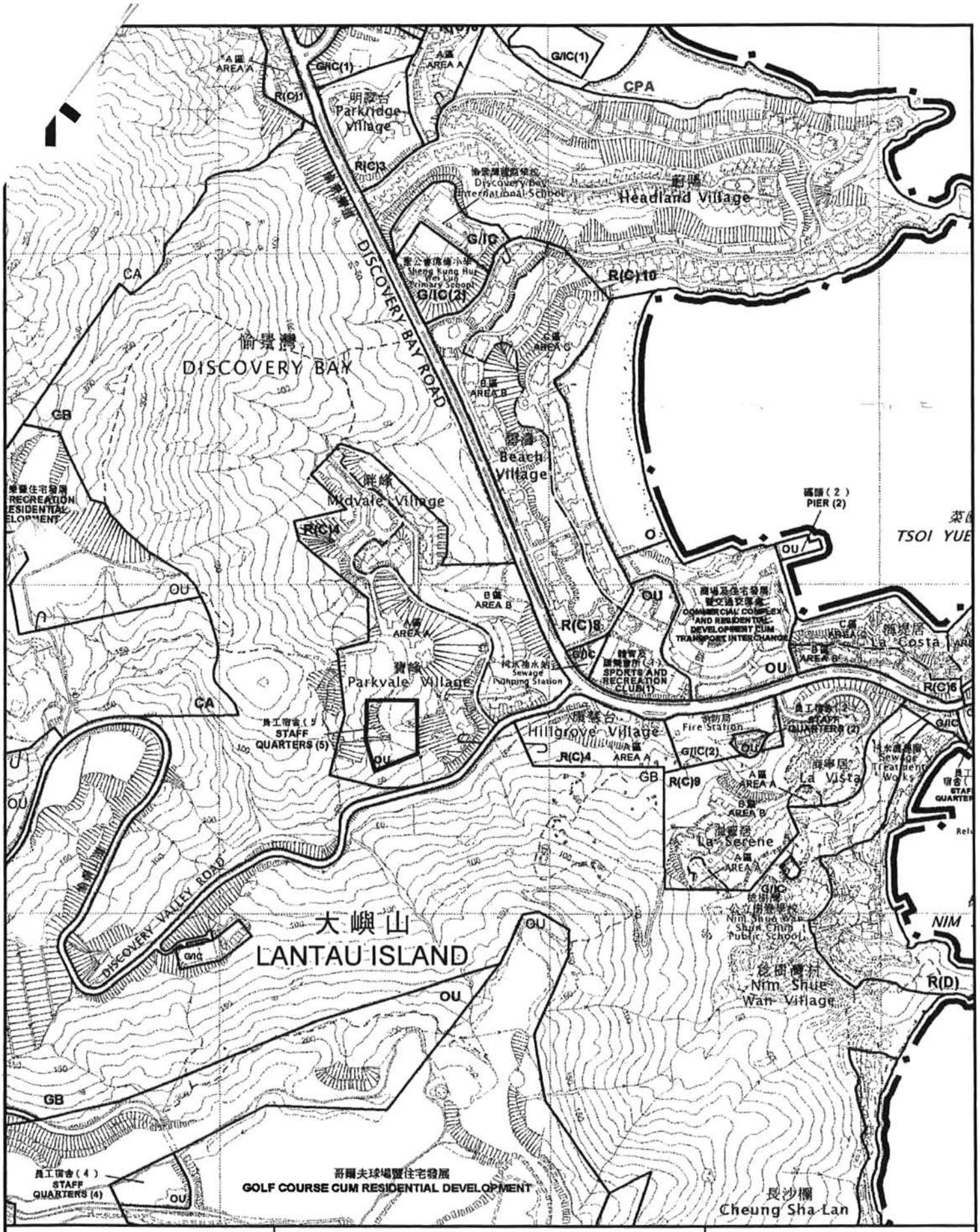
In accordance with Town Planning Board Guideline No.33, I am requesting the consideration of the application be deferred for two months to allow for the review and response to the departmental comments. The deferment is unlikely to affect the right or interest of the concerned parties.

Yours faithfully,

I. T. Brownlee,
For and on behalf of
Masterplan Limited

cc. DPO/SKI (Attn: Helena Pang) Email
Client & Consultants

Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk



申請地點界線只作識別用
APPLICATON SITE BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

本摘要圖於2016年4月19日擬備，所根據的資料為於2005年2月1日核准的分區計劃大綱圖編號S/I-DB/4

EXTRACT PLAN PREPARED ON 19.4.2016 BASED ON OUTLINE ZONING PLAN No. S/I-DB/4 APPROVED ON 1.2.2005

位置圖 LOCATION PLAN

把「其他指定用途」註明「員工宿舍（5）」地帶
改劃為「住宅(丙類) 12」地帶
愉景灣第6f區丈量約份第352約地段第385號餘段及增批部分(部分)

TO REZONE THE APPLICATION SITE FROM " OTHER SPECIFIED USES " ANNOTATED " STAFF QUARTERS (5) " TO " RESIDENTIAL (GROUP C) 12 "
AREA 6f, LOT 385 RP & EXT. (PART) IN D.D. 352, DISCOVERY BAY
SCALE 1 : 7 500 比例尺

米 METRES 100 0 100 200 300 米 METRES

規劃署
PLANNING DEPARTMENT

參考編號 REFERENCE No.
Y/I-DB/2

圖 PLAN
Z - 1

RNTPC Paper No. Y/I-DB/2
For Consideration by
the Rural and New Town
Planning Committee
on 26.8.2016

APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE

APPLICATION NO. Y/I-DB/2
(for 2nd deferment)

Applicant	:	Hong Kong Resort Company Limited represented by Masterplan Limited
Site	:	Area 6f, Lot 385 RP & Ext. (Part) in D.D. 352, Discovery Bay
Site Area	:	7,623 m^2 (about)
Lease	:	Lot No. 385 R.P. in D.D. 352 and the extensions thereto
Plan	:	Approved Discovery Bay Outline Zoning Plan (OZP) No. S/I-DB/4
Zoning	:	"Other Specified Uses" annotated "Staff Quarters (5)" ("OU(Staff Quarters(5))")
Proposed Amendment	:	From "OU(Staff Quarters(5))" to "Residential (Group C) 12" ("R(C)12")

1. Background

1.1 The applicant proposes to rezone the application site (the Site) (**Plan Z-1**) from "OU(Staff Quarters(5))" to "R(C)12" with development restrictions of maximum domestic gross floor area of 21,600m^2 and maximum building height of 18 storeys (128mPD). The proposed rezoning is intended to facilitate a medium-density residential development consisting of two residential blocks at the Site. The application is scheduled for consideration by the Rural and New Town Planning Committee (the Committee) at this meeting.

1.2 On 13.5.2016, the Committee agreed to defer a decision on the application for two months, as requested by the applicant, to allow time for the applicant to prepare further information to address the comments of the relevant departments. The application is scheduled for consideration by the Committee on 26.8.2016.

2. Request for Deferment

On 5.8.2016, the applicant's representative wrote to the Secretary of the Town Planning Board (the Board) and requested the Board to defer making a decision on the application

for two months so as to allow time for reviewing and responding to the latest departmental comments (**Appendix I**).

3. Planning Department's Views

3.1 The application has been deferred once for two months at the request of the applicant to allow more time to address the comments of the relevant departments. Since the first deferment on 13.5.2016, the applicant has submitted a revised Landscape Master Plan, Traffic Study, Environmental Study and additional photomontages on 13.6.2016 to support the application. Nevertheless, the applicant needs more time to address the further comments raised by the concerned departments.

3.2 The Planning Department has no objection to the request for deferment as the justifications for deferment meet the criteria for deferment as set out in the Town Planning Board Guidelines on Deferment of Decision on Representations, Comments, Further Representations and Applications made under the Town Planning Ordinance (TPB PG-No. 33) in that the applicant needs more time to prepare further information in response to departmental comments, the deferment period is not indefinite and the deferment would not affect the interests of other relevant parties.

3.3 Should the Committee agree to defer a decision on the application, the application will be submitted to the Committee for consideration within three months upon receipt of further information from the applicant. If the further information submitted by the applicant is not substantial and can be processed within a shorter time, the application could be submitted to an earlier meeting for the Committee's consideration. Since it is the second deferment of the application, the applicant should be advised that the Committee has allowed a total of four months for preparation of submission of further information, and no further deferment would be granted unless under very special circumstances.

4. Decision Sought

The Committee is invited to consider whether or not to accede to the applicant's request for deferment. If the request is not acceded to, the application will be submitted to the Committee for consideration at the next meeting.

5. Attachments

Appendix I	Letter dated 5.8.2016 from the applicant's representative
Plan Z-1	Location plan

PLANNING DEPARTMENT
AUGUST 2016

Appendix I

MASTERPLAN LIMITED

Planning and Development Advisors

領賢規劃顧問有限公司

Your Ref: Y/I-DB/2

The Secretariat
Town Planning Board
15/F, North Point Government Offices
333 Java Road, North Point
Hong Kong

5 August 2016

By Fax

Dear Sir,

Section 12A Application No.Y/I-DB/2
For rezoning the permissible use from staff quarters to flats at Area 6f, Discovery Bay
Request to Defer

I refer to the abovementioned application which is currently being processed and scheduled to be considered by Town Planning Board on 26 August 2016. I am writing to request to defer the consideration of the application.

We have received departmental comments on the application made available by the District Planning Office on 25 and 28 July 2016. We are reviewing the departmental comments and are preparing a response.

In accordance with Town Planning Board Guideline No.33, I am requesting the consideration of the application be deferred for two months to allow for the review and response to the departmental comments. The deferment is unlikely to affect the right or interest of the concerned parties.

Yours faithfully,

Cynthia Chan
For and on behalf of
Masterplan Limited

cc. DPO/SKI (Attn: Helena Pang) Email
Client & Consultants

Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk

申請地點界線只作識別用
APPLICATON SITE BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

本摘要圖於2016年8月9日擬備，所根據的資料為於2005年2月1日核准的分區計劃大綱圖編號S/I-DB/4

EXTRACT PLAN PREPARED ON 9.8.2016 BASED ON OUTLINE ZONING PLAN No. S/I-DB/4 APPROVED ON 1.2.2005

位置圖 LOCATION PLAN

把「其他指定用途」註明「員工宿舍(5)」地帶
改劃為「住宅(丙類) 12」地帶
愉景灣第6f區丈量約份第352約地段第385號餘段及增批部分(部分)

TO REZONE THE APPLICATION SITE FROM " OTHER SPECIFIED USES " ANNOTATED " STAFF QUARTERS (5) " TO " RESIDENTIAL (GROUP C) 12 "
AREA 6f, LOT 385 RP & EXT. (PART) IN D.D. 352, DISCOVERY BAY
SCALE 1 : 7 500 比例尺

米 METRES 100 0 100 200 300 米 METRES

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
Y/I-DB/2

圖 PLAN
Z - 1