

13.1 INTRODUCTION

This section further elaborates the requirements of EM&A for the construction and operation of the Project, based on the assessment results of various environmental issues.

The objectives of carrying out EM&A for the Project include the following:

- to provide a database against which any short or long term environmental impacts of the project can be determined;
- to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards;
- to monitor the performance of the project and the effectiveness of mitigation measures;
- to verify the environmental impacts predicted in the EIA Study;
- to determine project compliance with regulatory requirements, standards and government policies;
- to take remedial action if unexpected problems or unacceptable impacts arise; and
- to provide data to enable an environmental audit.

The following sections summarise the recommended EM&A requirements proposed. Details of EM&A are provided in the stand-alone EM&A Manual. The Implementation Schedule for the all the Non-Designated Projects (non-DP) is summarised in *Table 13.1a*.

Table 13.2a contains the Implementation Schedule for Reclamation Works DP covering the requirement of it's associated non-DPs. Depending on the construction sequence and contractual arrangements, the EM&A requirement of the non-DPs, such as dredging of the marine, pier and berthing facilities construction, nullah dredging and decking and diversion extension of drains, will be included as part of the Reclamation Works DP. *Tables 13.2b - 13.2d* contain the Implementation Schedule for Sham Tseng Bypass DP, Sewage Pumping Station DP and Castle Peak Road Underpass DP, respectively.

13.2 HYDRODYNAMICS, WATER AND SEDIMENT QUALITY IMPACT

13.2.1 Construction Phase

A water quality monitoring and audit programme will be conducted during dredging and filling operations to verify whether impact predictions are representative and to ensure the dredging and filling operations do not result in unacceptable impacts. Where monitoring shows dredging operations cause unacceptable water quality impact, appropriate mitigation measures, such as changes in the operations, will be introduced. The proposed locations of the

water quality monitoring stations are listed in *Table 13.2a* and shown in *Figure 7.4a* of the EM&A Manual. Control stations will also be set up at the Ma Wan Channel and Rambler Channel (*Table 13.2b*) where marine water quality is not impacted by the proposed reclamations.

Table 13.2a *Locations of Marine Water Quality Monitoring Stations*

Station	Easting	Northing
W1	822817	824652
W2	823 309	824 700
W3	825 147	824 852
W4	825 402	825 040
W5	825 945	825 332
W6	826 256	825 462
W7	829240	825 367
W8	823 908	823 680
W9	824 437	823 447

Table 13.2b *Locations of Marine Water Quality Control Stations*

Station	Easting	Northing
C1	820 957	823 373
C2	825 953	822 045
C3	828 182	825 199

The details of the EM&A programme are presented in the EM&A Manual, which is released as a separate document. Water quality monitoring will be carried out at selected potentially affected sensitive receivers, to assess whether impacts follow the predictions made in this EIA. The Manual includes site-specific monitoring and auditing protocols for baseline and all stages of the dredging operations. Such protocols include but are not limited to the locations of monitoring stations, parameters and frequencies for monitoring, monitoring equipment, data management procedures, and reporting of monitoring results.

Environmental audit specifications have been developed for all phases of the works, including procedures to ensure compliance with mitigation measures, environmental quality performance limits, and procedures for reviewing results and auditing compliance with specified performance limits.

13.2.2 *Operational Phase*

Routine monitoring of the effluent quality from the Sewage Treatment Facilities for Sham Tseng Development shall be undertaken to satisfy EPD's licensing conditions. Monitoring would cover the following parameters: 5-day biochemical oxygen demand, suspended solids, ammoniacal nitrogen, total nitrogen, total residual chlorine, oil and grease and *E. coli*.

The treatment sewage from the STFSTD will be subject to a comprehensive performance verification programme, funded and implemented by DSD to confirm the acceptability of the impact of the effluent discharge on the receiving marine environment. Performance verification monitoring of the STFSTD will follow similar requirements of and take into account the findings of the independent performance verification programme for the planned TSKTSTW. Details of the verification programme for the STFSTD will be subject to EPD's

endorsement.

There are no operational EM&A requirements for this Project. The comprehensive performance verification will be undertaken as an independent Study.

Full details of the EM&A requirements will be contained within the *EM&A Manual*.

13.3 ***NOISE IMPACT***

13.3.1 ***Construction Noise***

Noise produced during the construction phase will impact upon nearby noise sensitive receivers (NSRs) as assessed in *Section 4*. Noise mitigation measures were recommended to reduce the noise impact to within the noise criteria as presented in *Sections 4.7* and *4.8*.

Noise monitoring requirements have been recommended in the EM&A Manual in order to ensure compliance with the construction noise criteria. Details of the monitoring requirements such as monitoring locations, frequency of baseline and impact monitoring are presented in the EM&A Manual.

13.3.2 ***Operational Noise***

Noise monitoring during the operational phase of Sham Tseng Development shall be carried out as NSRs in the vicinity of the recommended direct technical remedies. The traffic noise level shall be measured twice within the first year of the road opening. Measurements shall be made in terms of the A-weighted L_{10} over 3 half hour periods during the peak traffic hour. The purpose of this monitoring is to verify the traffic noise predictions and the effectiveness of traffic noise mitigation measures. It is recommended that the CED should be responsible for the operational phase monitoring. Details of the monitoring requirements such as monitoring locations, frequency of baseline and impact monitoring are presented in the EM&A Manual.

13.4 ***AIR QUALITY IMPACT***

13.4.1 ***Construction Dust***

The construction work will inevitably lead to dust emissions, mainly from reclamation, wind erosion over surcharge materials, vehicle movements on haul roads and infrastructure construction. Air Quality impact during construction phase was assessed and dust level at all ASRs would comply with the dust criteria with the implementation of dust suppression measure.

Mitigation Measures

Air quality impact during construction phase has been assessed and dust level at all ASRs will comply with the dust criteria with the implementation of dust suppression measures in accordance with the *Air Pollution Control (Construction Dust) Regulation*. Dust monitoring has been recommended to

ensure the efficacy of the control measures and to ensure that the dust criteria will not be exceeded at any ASRs during STD construction.

Monitoring Locations

Dust monitoring programme and requirements have been recommended in the EM&A Manual to ensure the efficacy of the control measures and the dust criteria would not be exceeded. Monitoring station should be set up at the proposed residential development at San Miguel Brewery (A10) and Union Carbide (A11).

Baseline Monitoring

Baseline monitoring should be carried out at all of the designated monitoring locations for at least 14 consecutive days prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. One-hour sampling shall also be done at least 3 times per day while the highest dust impact is expected.

Impact Monitoring

Impact monitoring should be carried out during the course of the Works. For regular impact monitoring, the sampling frequency of at least once in every six-days, shall be strictly observed at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs.

13.5

SOLID WASTE MANAGEMENT

It is recommended that audit of each waste stream should be carried out periodically by the Contractor to determine if wastes are being managed in accordance with approved procedures and the site waste management plan and to see if waste reduction targets are being achieved or could be improved. The audits should look at all aspects of waste management including waste generation, storage, recycling, transport and disposal. An appropriate audit programme would be to undertake a first audit at the commencement of the construction works and then to audit monthly thereafter.

The Contractor should enforce strict application of the public fill license and monitor the material placed in the reclamation and barges to control disposal of unauthorised material. The Contractor shall also provide floating booms and collect any floating materials on a daily basis at the public filling area.

In order to monitor the disposal of construction and demolition material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by the Environmental Team during the EM&A programme. An Independent Checker (Environment) should be responsible for auditing the result of the system.

13.6

VISUAL AND LANDSCAPE IMPACT

The development will be constructed on reclamation and as shown in the *Section 7* will generally minimise landscape impacts although there will be an intensification of the existing high-rise residential landscape character of the area. However, the assessment has identified that landscape impacts will be suffered at the interface of the project reclamation and coastline area along Anglers' Beach due to the loss of remaining area the beach as a resource. The existing tree vegetation will suffer 100% loss due to the Castle Peak Road Widening Scheme and will therefore not be affected by this project.

As the development will be constructed on reclamation, it is unlikely that there will be extensive impact to topsoils. However, any topsoil, which is disturbed should be tested for its quality and, if of value, stockpiled no greater than 2 m high. Additionally, it should be temporarily vegetated with hydroseed, or regularly turned over to avoid degradation of the organic material. It should be re-used either within this development if appropriate, or on other projects.

13.7

MARINE ECOLOGICAL AND FISHERIES IMPACT

The EIA concluded that no unacceptable impacts to marine ecology and fisheries are expected to occur and implementation and EM&A specifically designed to assess the effects associated with the STD on marine ecological resources would not be required.

Nevertheless, the impacts of the reclamation activities on marine ecological resources may be monitored indirectly through impacts to water quality. The mitigation measures for water quality should be included into contract clauses for the STD. Constraints on dredging operations recommended to control impacts to water quality to within acceptable levels are expected to also control effects on marine ecology and fishery resources. The implementation of those measures should be checked as part of the environmental monitoring and audit procedures during the construction period, the procedures which are presented in the EM&A Manual.

13.8

IMPACT OF BIOGAS

To confirm the findings of the assessment, it is recommended that monitoring of any biogas which may be generated from the undredged sediment should be undertaken following completion of the reclamation works. This will enable actual rates of gas emission to be determined and will ensure that account is taken of the effect of changing atmospheric pressure on the behaviour of the gas reservoir which may accumulate within the reclamation fill above the gas producing organic sediments. Requirements of monitoring are presented with details in the EM&A Manual.

Table 13.1a Implementation Schedule (Non-Designated Projects)

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Air Quality								
Construction Phase								
Within all construction sites	5.7.1	-	<p>The Air Pollution (Construction Dust) Regulation, for example:</p> <ul style="list-style-type: none"> excavated dusty material should be covered by impervious sheeting and sprayed with water to keep the entire surface wet; the haul roads should be located away from sensitive receivers and sprayed with water to keep the entire road surface wet; every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site; the load carried by vehicle should be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle; and the heights from which fill materials are dropped should be controlled to a practical level to minimise the fugitive dust arising from unloading. 	Contractor	Construction Stage	CED	Contractor	Air Pollution Control (Construction Dust) Regulation
<i>Construction Air Quality Monitoring</i>								
Monitoring Locations	13.4.1	6.2.5	Baseline monitoring should be carried out at all of the designated monitoring location(s) prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. One-hour sampling shall also be done at least 3 times per day while the highest dust impact is expected.	Environmental Team of the Contractor	At least 14 consecutive days prior to the commissioning of the construction works	CED	-	-
Monitoring Locations	13.4.1	6.2.5	<p>Sampling for regular impact monitoring, shall be carried out at least once in every six-days at all the monitoring stations for 24-hour TSP monitoring.</p> <p>For 1-hour TSP impact monitoring, sampling frequency of at least 3 times in every 6-days shall be undertaken when the highest dust impact occurs.</p>	Environmental Team of the Contractor	Construction Phase	CED	-	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	-	6.2.5	In case of non-compliance of the air quality criteria occurs, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until exceedance stops.	Environmental Team of the Contractor	Specified times	CED	-	-
Operational Phase								
Sewage Treatment Facilities for STD	5.6.2 & 5.7.2	-	Installation of odour removal and treatment facilities	DSD	Prior to operation of the treatment facilities	CED	DSD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Government Complex in Area 6	5.6.2 & 5.7.2	-	Installation of deodorisation facilities at the fresh air intake	ArchSD	Detail design stage	CED	-	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Public Transport Terminus (PTT)	5.7.2	-	The design and operation of the PTT should meet the requirements specified in the ProPECC PN 1/98	LandsD / CED	Prior to the operation of the PTT	CED	TD / HyD / EMSD	ProPECC PN 1/98 and Public Transport Interchange Air Quality Guidelines.
Noise								
Construction Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within all construction sites	4.7.1	-	<p><i>Good Site Practice</i></p> <ul style="list-style-type: none"> • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; • machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible; and • material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO
Within all construction sites	4.7.1	-	Use of quiet PME, movable noise barriers, limit the number of plant operating concurrently and restricting the operating PME time usage to 50% and 25%	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Salt Water Pumping Station, Area 1	4.6.3	-	Maximum permissible sound power level is 95 dB(A) during the day time and 80 dB(A) during the night time. As a good planning and design practice, it is recommended that there should be no opening of the salt water pumping station structure in Area 1 facing the residential site in Area 2. If necessary, other widely accepted good design practices such as adopting silencers for ventilating fans, acoustic doors, acoustic louvres and absorptive wall lining should be adopted. Moreover, vent ducts rather than plain openings could also be used to facilitate ventilation and this could be further considered during the detailed design stage.	CED	During the operation of the salt water pumping station	CED	WSD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Public Transport Terminus, Area 4	4.6.3	-	Maximum permissible sound power level is 91 dB(A) during the day time and 76 dB(A) during the night time. Reverberation noise not exceeding 2 second at 500 Hz.	Contractor	During the operation of the public transport terminus	CED	Private Developer	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Refuse Collection Point, Area 6	4.6.3	-	Maximum permissible sound power level is 89 dB(A) during the day time and 74 dB(A) during the night time	CED	During the operation of the refuse collection point	CED	FEHD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Sewage Treatment Facilities for STD, Area 6	4.6.3	-	Maximum permissible sound power level is 95 dB(A) during the day time and 85 dB(A) during the night time	CED	During the operation of the Proposed Sewage Treatment Facilities for STD	CED	DSD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Electricity sub-station Area 7	4.6.3	-	Maximum permissible sound power level is 111 dB(A) during the day time and 96 dB(A) during the night time	CLP	During the operation of the electricity sub-station	CLP	CLP	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
<i>Construction Noise Monitoring</i>								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	-	5.2.3 & 5.2.4	The baseline noise monitoring shall be carried out at the noise monitoring locations for a period of one week at a minimum logging interval of 15 minutes prior to the commencement of the construction	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.5	During normal construction working hours (0700 - 1900 Monday to Saturday), construction noise monitoring of $L_{Aeq, 30 \text{ minutes}}$ shall be carried out once every six days. If restricted hours works are undertaken, monitoring of $L_{Aeq, 15 \text{ minutes}}$ noise levels shall be carried out at the same frequency as specified for normal working hours.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.7	In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
<i>Operational Noise Monitoring</i>								
Monitoring Locations	-	5.2.3	Two sets of traffic noise monitoring data shall be obtained during the first year of the operation of the Bypass: <ul style="list-style-type: none"> · one set of measurements at the morning traffic peak hour on normal weekdays; · one set of measurements at the evening traffic peak hour on normal weekdays Exact timing for monitoring has to be confirmed with the Transport Department and agreed with EPD. During the traffic noise monitoring, traffic count, average speed and percentage of heavy vehicles shall also be conducted so as to ensure the traffic noise of the peak periods are covered.	Environmental Team of Contractor	Operational Phase (after completion of the Sham Tseng Bypass)	CED	-	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Water Quality								
Construction Phase								
Within construction sites (Con't)	3.7.1	-	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> • use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow; • Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance depositions rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94; • a sediment tank constructed from pre-formed individual cells of approximately 6 - 8 m³ capacity can be used for settling ground water prior to disposal. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Professional Persons on Construction Site Drainage, Professional Persons Environmental Consultative Committee, 1994 (ProPECC PN 1/94), Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991
			<ul style="list-style-type: none"> • oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain; and • precautions and actions to be taken when a rainstorm is imminent or forecast, and during or after rainstorms. Particular attention should be paid to the control of any silty surface runoff during storms events. 					Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	3.7.1	-	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column to cause water quality impacts; 	Contractor	Construction Phase	CED	Contractor	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
			<ul style="list-style-type: none"> all fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oil from reaching coastal waters of Ma Wan Channel. 					
Within construction sites	3.7.1	-	<p><i>Sewage from Construction Work Force</i></p> <ul style="list-style-type: none"> Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices. 	Contractor	Construction Phase	CED	Contractor	-
Within construction sites	3.7.1	-	Site audit to ensure all mitigation measures are in place and being properly maintained.	Contractor	Construction phase	CED	Contractor	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Operational Phase								
Within the Proposed Sewage Treatment Facilities for STD and its Expansion	3.7.2	-	<p>Should a failure of the sewage treatment facilities occur the necessary repairs should be expedited in order to limit the period of emergency discharge.</p> <p>To minimise the risk of failure of the Sewage Treatment Facilities for STD, standby equipment and treatment units plus dual power supply should be provided.</p> <p>A contingency plan should be prepared by the operator and to be agreed by the project proponent prior to project commencement.</p>	DSD	Operational Phase (during emergency discharge condition)	DSD	DSD	-
	3.9.2	8.2	The treated effluent from the Sewage Treatment Facilities for STD will be subject to a comprehensive performance verification programme.	DSD/EPD	Operational Phase	EPD	DSD	
Within the STD	3.7.2	-	<p>The following measures are applicable to reduce stormwater run-off pollution within the STD:</p> <ul style="list-style-type: none"> provision of silt traps to reduce the concentration of silt/sediments in stormwater run-off. These silt traps should be cleaned and maintained regularly to ensure that they function properly; compliance of the WPCO for Western Buffer through the issuance of relevant discharge licence for the proposed development within the STD; the stringent control on the discharge of sewage into Western Buffer with all expedient connection eliminated and untreated effluent conveyed to the Sewage Treatment Facilities for STD for treatment and disposal. <p>To facilitate EPD's enforcement works of identifying expedient connections and eliminating dry weather flows in stormdrains, inspection manholes should be provided at the connection point of side branches into the decked nullah.</p>	CED	Prior to the construction of the residential development	CED	DSD	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Waste Management								
Construction Phase								
Within construction sites	6.7.2	-	<p><i>Dredged Material</i></p> <ul style="list-style-type: none"> • The volume of material dredged should be minimised as far as practicable; • minimising exposure to any contaminated material by the wearing of protective gear such as gloves, providing adequate hygiene and washing facilities, and preventing eating during dredging; • any contaminated sediment dredged should not be allowed to stockpile on the site and should be immediately removed from site once dredged; • all vessels for marine transportation of dredged sediment should be fitted with tight fitting seals to their bottom openings to prevent leakage of materials; and • loading of barges and hoppers should be controlled to prevent splashing of dredged material to the surrounding water, and barges or hoppers should under no circumstances to be filled to a level which will cause other overflowing of materials or polluted water during loading or transportation. 	Contractor	Construction Phase	CED	Contractor	Works Branch Technical Circular (WBTC) No. 3/2000, Management of Dredged/Excavated Sediment
Within construction sites	6.7.4	-	<p><i>Excavated Materials</i></p> <ul style="list-style-type: none"> • If any surplus uncontaminated inert materials do arise then they may be delivered to public filling areas or other reclamation sites. • Excavated materials should be segregated from other wastes to avoid possible contamination, thereby allowing disposal at public filling areas. 	Contractor	Construction Phase	CED	Contractor	Waste Disposal Ordinance (Cap 354)

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.5	-	<p><i>C&D Waste</i></p> <ul style="list-style-type: none"> Careful design, planning and good site management can minimise over ordering and generation and waste materials such as concrete, mortars and cement grouts. the Contractor shall recycle C&DM on-site; the handling and disposal of bentonite slurries should be undertaken in accordance with <i>ProPECC PN 1/94</i> on construction site drainage; C&DM should be segregated on site into different waste and material types. Where site conditions allowed, different types of wastes should be segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. An on-site temporary storage area should also be provided. 	Contractor	Construction Phase	CED	Contractor	Works Branch Technical Circular (WBTC) No. 5/98, On-site Sorting of Construction Waste on Demolition Sites
Within construction sites	6.7.6	-	<p><i>Chemical Waste</i></p> <p>Containers used for the storage of chemical wastes shall:</p> <ul style="list-style-type: none"> be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 litres unless the specifications have been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in <i>Schedule 2</i> of the <i>Regulations</i>. 	Contractor	Construction Phase	CED	Contractor	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<p>The storage area for chemical wastes shall:</p> <ul style="list-style-type: none"> • be clearly labelled and used solely for the storage of chemical waste; • be enclosed on at least 3 sides; • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • have adequate ventilation; • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and • be arranged so that incompatible materials are adequately separated. 					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
			<p>Disposal of chemical waste shall:</p> <ul style="list-style-type: none"> • be via a licensed waste collector; and • be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or • be to a reuser of the waste, under approval from the EPD. <p>The Centre for Environmental Technology operates a Waste Exchange Scheme which can assist in finding receivers or buyers.</p>					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.7	-	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> • general refuse shall be stored in enclosed bins or compaction units separate from C&D and chemical wastes. Waste collector shall be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts; • General refuse is generated largely by food service activities on site, so reusable rather than disposable dishware should be used if feasible. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Authorized Person and Registered Structural Engineers, Building Department and Public Health and Municipal Services Ordinance
<i>Waste Auditing</i>								
Within Construction sites	6.9	-	It is recommended that audit of each waste stream should be carried out on regular basis (e.g. monthly) by an Independent Environmental Checker to determine if wastes are being managed in accordance with approved procedures and the site waste management plan. The audits should look at all aspects of waste management including waste generation, storage, recycling, transport and disposal. An appropriate audit programme would be to undertake a first audit at the commencement of the construction works and then to audit monthly thereafter.	Contractor	Construction Phase	CED	Contractor	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
Within Construction sites	6.9	7.2 & 7.3	In order to monitor the disposal of construction and demolition material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by the Environmental Team during the EM&A programme. An Independent Checker (Environment) should be responsible for auditing the result of the system.	Contractor	Construction Phase	CED	Contractor	WBTC No. 25/99, Incorporation of Information on Construction and Demolition Material Management in Public Works Subcommittee Papers

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
At Public Filling Area	6.7.3	7.2 & 7.3	The Contractor should enforce strict application of the dumping license conditions and monitor the material placed in the reclamation and barges to control disposal of unauthorised material. The Contractor shall also provide floating booms and collect any floating materials on a daily basis at the public filling area.	Contractor	Construction Phase	CED	Contractor	-
Operational Phase								
Within the Sewage Treatment Facilities for STD	6.7.8	-	<i>Sewage Sludge</i> <ul style="list-style-type: none"> Use of fully enclosed container for transportation of sludge. The period for storage on-site should be as low as practicable 	DSD	Operational Phase	DSD	DSD	-
Visual and Landscape								
Construction Phase								
Within all construction sites	7.16	-	Consideration of design of all engineering structures in accordance with EIA recommendations	Design consultant	Detail Design	CED	N/A	-
Within all construction sites	7.16	-	Consideration of design of all slopes to minimise extent of cutting and design in accordance with EIA recommendations	Design consultant	Detail Design	CED	N/A	WBTC 25/93 Control of Visual Impact of Slopes
Within all construction sites	7.16	-	Minimisation of all slope cutting where possible	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.16	-	Felling of trees in accordance with WBTC 24/94 Tree Preservation <ul style="list-style-type: none"> Felling and transplanting of trees affected in accordance with Tree Felling Application and with-contract documents 	Contractor	Construction	CED	Contractor	WBTC 24/94 Tree Preservation
Within all construction sites	7.16	-	Erection of hoarding or advance planting as visual screen to works	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.16	-	Design of landscape works in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	Contractor	-
Within construction sites	7.16	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> The coastal area to the immediate west of the reclamation will be left intact, with landscaping works to enhance the natural waterfront environment for the area. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Operation Phase								
Area 1 DO	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	LCSD / ArchSD	Detail Design	CED	LCSD / ArchSD	HKPSG
Area 2 LO	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	HD / Private Developer	Detail Design	HD	Developer	HKPSG
Area 3 Schools	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	ED	Detail Design	ED	ED	HKPSG
Area 4 Private Development LO on CDA	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	Private Developer	Detail Design	Private Developer	Private Developer	HKPSG
Area 4 Podium open space for public use	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	Private Developer	Detail Design	Private Developer	Private Developer	HKPSG
Area 5 Private Development LO on CDA	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	Private Developer	Detail Design	Private Developer	Private Developer	HKPSG
Area 6 DO	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	LCSD / ArchSD	Detail Design	CED	LCSD / ArchSD	HKPSG
Promenade above bypass DO (not structure)	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	LCSD / ArchSD	Detail Design	CED	LCSD / ArchSD	HKPSG
Roadside hardworks	7.16	-	Design of landscape works in accordance with EIA recommendations and HyD standards	CED / LCSD	Detail Design	CED	HyD	HyD Standards
Roadside planting	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	CED / LCSD	Detail Design	CED	LCSD	HKPSG
Amenity Areas	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	CED / LCSD	Detail Design	CED	LCSD / ArchSD	HKPSG
Within construction sites	7.16	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> Footpaths will be designed to provide easy access from the residential developments to this coastal area. The provision of an indoor public swimming pool within the government complex / leisure centre at Area 6. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Land Use Impacts								
Construction								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	11.6	-	<p><i>Reprovisioning of Anglers' Beach</i></p> <ul style="list-style-type: none"> The coastal area to the immediate west of the reclamation will be left intact, with landscaping works to enhance the natural waterfront environment for the area. Footpaths will be designed to provide easy access from the residential developments to this coastal area. The provision of an indoor public swimming pool within the government complex / leisure centre at Area 6. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Within construction sites	11.6.2	-	<p><i>Reprovisioning of Kaito Pier</i></p> <ul style="list-style-type: none"> A marine basin with two berthing spaces and sufficient headroom under the western portion of the Bypass will accommodate the reprovisioned kaito pier 	Contractor	Construction	CED	CED (Portworks)	-
Within construction sites	11.6.3	-	<p><i>Careful Urban Design</i></p> <ul style="list-style-type: none"> A well-connected pedestrian network, e.g. elevators, escalators, stairs, ramps, footpaths and footbridges, should be considered to avoid a vertical segregation of the open spaces and to provide better linkage among activities nodes. 	Contractor / Private Developer	Detail Design	CED / Private Developer	ArchSD / Private Developer	-
Within construction sites	11.6.5	-	<p><i>Well Co-ordinated Construction Programme</i></p> <ul style="list-style-type: none"> construction programme of the STD and other projects (including Castle Peak Road widening) should be well co-ordinated to avoid insurmountable problems or conflicts. 	Contractor / CED / HyD	Detail Design / Construction	-	-	-

Biogas (no biogas monitoring is required)

Table 13.2a Implementation Schedule for Reclamation Works

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Air Quality								
Construction Phase								
Within all construction sites	5.7.1	-	<p>The Air Pollution (Construction Dust) Regulation, for example:</p> <ul style="list-style-type: none"> excavated dusty material should be covered by impervious sheeting and sprayed with water to keep the entire surface wet; the haul roads should be located away from sensitive receivers and sprayed with water to keep the entire road surface wet; every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site; the load carried by vehicle should be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle; and the heights from which fill materials are dropped should be controlled to a practical level to minimise the fugitive dust arising from unloading. 	Contractor	Construction Stage	CED	Contractor	Air Pollution Control (Construction Dust) Regulation
<i>Construction Air Quality Monitoring</i>								
Monitoring Locations	13.4.1	6.2.6 Annex A	Baseline monitoring should be carried out at all of the designated monitoring location(s) prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. One-hour sampling shall also be done at least 3 times per day while the highest dust impact is expected.	Environmental Team of the Contractor	At least 14 consecutive days prior to the commissioning of the construction works	CED	-	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	13.4.1	6.2.7 Annex A	Sampling for regular impact monitoring, shall be carried out at least once in every six-days at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP impact monitoring, sampling frequency of at least 3 times in every 6-days shall be undertaken when the highest dust impact occurs.	Environmental Team of the Contractor	Construction Phase	CED	-	-
Monitoring Locations	-	6.2.9 Annex A	In case of non-compliance of the air quality criteria occurs, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until exceedance stops.	Environmental Team of the Contractor	Specified times	CED	-	-
Noise								
Construction Phase								
Within all construction sites	4.7.1	-	<i>Good Site Practice</i> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs; silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works; mobile plant should be sited as far away from NSRs as possible; and material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO
Within all construction sites	4.7.1	-	Use of quiet PME, movable noise barriers, limit the number of plant operating concurrently and restricting the operating PME time usage to 50% and 25%	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO
<i>Construction Noise Monitoring</i>								
Monitoring Locations	-	5.2.4 Annex A	The baseline noise monitoring shall be carried out at the noise monitoring locations for a period of one week at a minimum logging interval of 15 minutes prior to the commencement of the construction	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	-	5.2.5 Annex A	During normal construction working hours (0700 - 1900 Monday to Saturday), construction noise monitoring of $L_{Aeq, 30 \text{ minutes}}$ shall be carried out once every six days. If restricted hours works are undertaken, monitoring of $L_{Aeq, 15 \text{ minutes}}$ noise levels shall be carried out at the same frequency as specified for normal working hours.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.7 Annex A	In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Water Quality								
Construction Phase								
Within construction sites	3.7.1	-	<p><i>Sandfilling and Public Filling</i></p> <ul style="list-style-type: none"> For Phase 1 reclamation, sandfilling and public filling together should be limited to a total rate of not more than 5,000 cu per day. Sandfilling and public filling should only be undertaken with the release point of filling at least 200 m behind the leading edge of the seawall constructed above the sea level. If exceedance of WQOs at WSRs are observed during the construction, silt curtains should be deployed at the reclamation area to further contain sediment plume dispersion. For Phases 2, 3 and 4 reclamation, sandfilling and public filling should be undertaken within the waterbody formed by the permanently constructed seawall and the temporary seawall structures that is erected above the sea level, perpendicular to the permanent seawall, and connected to the existing coastline. 	Contractor	Construction Phase	CED	Contractor	Water Quality Objectives under the Water Pollution Control Ordinance
			<ul style="list-style-type: none"> For Phase 3 reclamation, diversion of Sham Tseng West Nullah to the final shoreline should take place prior to the placement of the seawall blocks for Phase 3 reclamation. Refuse boom and refuse collection services should be 					

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<p>provided to contain and collect floating refuse during public filling.</p> <ul style="list-style-type: none"> The construction sequences for various phases of reclamation should follow Figure 3.7a to 3.7c of the EIA Report A silt curtain could be deployed along the reclamation area to minimize potential SS impact in the vicinity 					
Within construction sites (Con't)	3.7.1	-	<p><i>Dredging</i></p> <ul style="list-style-type: none"> The total rate of dredging should not exceed 4000 m³ per day. <p>The requirements of the construction sequence can be referred to in Figure 3.7a to 3.7c of the EIA Report.</p> <p>Other mitigation measures include:</p> <ul style="list-style-type: none"> no more than one grab dredger should be used for the dredging works; mechanical grabs, if used, should be designed and maintained to avoid spillage and sealed tightly while being lifted. For dredging of contaminated mud, closed watertight grabs must be used; all vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; 	Contractor	Construction Phase	CED	Contractor	Water Quality Objectives under the Water Pollution Control Ordinance

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<ul style="list-style-type: none"> all hopper barges and dredgers should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds; loading of barges and hoppers should be controlled to prevent splashing of dredged material into the surrounding water. Barges or hoppers should not be filled to a level which will cause the overflow of materials or polluted water during loading or transportation. 					
Within construction sites (Con't)	3.7.1	-	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow; Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance depositions rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94; a sediment tank constructed from pre-formed individual cells of approximately 6 - 8 m³ capacity can be used for settling ground water prior to disposal. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Professional Persons on Construction Site Drainage, Professional Persons Environmental Consultative Committee, 1994 (ProPECC PN 1/94), Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<ul style="list-style-type: none"> oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain; and precautions and actions to be taken when a rainstorm is imminent or forecast, and during or after rainstorms. Particular attention should be paid to the control of any silty surface runoff during storms events. 					Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991 Guideline in Appendix A2 of ProPECC PN 1/94
Within construction sites	3.7.1	-	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column to cause water quality impacts; all fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oil from reaching coastal waters of Ma Wan Channel. 	Contractor	Construction Phase	CED	Contractor	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Within construction sites	3.7.1	-	<p><i>Sewage from Construction Work Force</i></p> <ul style="list-style-type: none"> Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices. 	Contractor	Construction Phase	CED	Contractor	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
<i>Water Quality Monitoring</i>								
Monitoring Locations	13.2.1	6.2.5, 6.2.6 Annex A	Baseline monitoring should be taken in 3 days per week at mid-flood and mid-ebb tides prior to the commencement of marine works. There shall not be any marine construction activities in the vicinity if the stations during the baseline monitoring	Environmental Team of the Contractor	4 weeks prior to the commencement of marine works	CED	-	-
Monitoring Locations	13.2.1	6.2.7 Annex A	Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides. The interval between two sets of monitoring shall not be less than 36 hours.	Environmental Team of the Contractor	Construction Phase	CED	-	-
Monitoring Locations	-	6.2.8, 6.2.9 Annex A	In case there are exceedances of Action and /or Limit levels, monitoring frequency will be increased.	Environmental Team of the Contractor	Construction Phase	CED	-	-
<i>Operational Phase</i>								
Within the STD	3.7.2	-	The following measures are applicable to reduce stormwater run-off pollution within the STD: <ul style="list-style-type: none"> provision of silt traps to reduce the concentration of silt/sediments in stormwater run-off. These silt traps should be cleaned and maintained regularly to ensure that they function properly; compliance of the WPCO for Western Buffer through the issuance of relevant discharge licence for the proposed development within the STD; the stringent control on the discharge of sewage into Western Buffer with all expedient connection eliminated and untreated effluent conveyed to the Sewage Treatment Facilities for STD for treatment and disposal. <p>To facilitate EPD's enforcement works of identifying expedient connections and eliminating dry weather flows in stormdrains, inspection manholes should be provided at the connection point of side branches into the decked nullah.</p>	CED	Prior to the construction of the residential development	CED	DSD	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Waste Management								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Construction Phase								
Within construction sites	6.7.2	-	<p><i>Dredged Material</i></p> <ul style="list-style-type: none"> The volume of material dredged should be minimised as far as practicable; minimising exposure to any contaminated material by the wearing of protective gear such as gloves, providing adequate hygiene and washing facilities, and preventing eating during dredging; any contaminated sediment dredged should not be allowed to stockpile on the site and should be immediately removed from site once dredged; all vessels for marine transportation of dredged sediment should be fitted with tight fitting seals to their bottom openings to prevent leakage of materials; and loading of barges and hoppers should be controlled to prevent splashing of dredged material to the surrounding water, and barges or hoppers should under no circumstances be filled to a level which will cause other overflowing of materials or polluted water during loading or transportation. 	Contractor	Construction Phase	CED	Contractor	Works Bureau Technical Circular (WBTC) No. 3/2000, Management of Dredged/Excavated Sediment
Within construction sites	6.7.4	-	<p><i>Excavated Materials</i></p> <ul style="list-style-type: none"> If any surplus uncontaminated inert materials do arise then they may be delivered to public filling areas or other reclamation sites. Excavated materials should be segregated from other wastes to avoid possible contamination, thereby allowing disposal at public filling areas. 	Contractor	Construction Phase	CED	Contractor	

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.5	-	<p><i>C&D Waste</i></p> <ul style="list-style-type: none"> Careful design, planning and good site management can minimise over ordering and generation and waste materials such as concrete, mortars and cement grouts. the handling and disposal of bentonite slurries should be undertaken in accordance with <i>ProPECC PN 1/94</i> on construction site drainage; C&DM should be segregated on site into different waste and material types. Where site conditions allowed, different types of wastes should be segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. An on-site temporary storage area should also be provided. 	Contractor	Construction Phase	CED	Contractor	Works Bureau Technical Circular (WBTC) No. 5/98, On-site Sorting of Construction Waste on Demolition Sites
Within construction sites	6.7.6	-	<p><i>Chemical Waste</i></p> <p>Containers used for the storage of chemical wastes shall:</p> <ul style="list-style-type: none"> be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 litres unless the specifications have been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in <i>Schedule 2</i> of the <i>Regulations</i>. 	Contractor	Construction Phase	CED	Contractor	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<p>The storage area for chemical wastes shall:</p> <ul style="list-style-type: none"> • be clearly labelled and used solely for the storage of chemical waste; • be enclosed on at least 3 sides; • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • have adequate ventilation; • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and • be arranged so that incompatible materials are adequately separated. 					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
			<p>Disposal of chemical waste shall:</p> <ul style="list-style-type: none"> • be via a licensed waste collector; and • be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or • be to a reuser of the waste, under approval from the EPD. <p>The Centre for Environmental Technology operates a Waste Exchange Scheme which can assist in finding receivers or buyers.</p>					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
Within construction sites	6.7.7	-	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> • general refuse shall be stored in enclosed bins or compaction units separate from C&D and chemical wastes. Waste collector shall be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts; • General refuse is generated largely by food service activities on site, so reusable rather than disposable dishware should be used if feasible. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Authorised Person and Registered Structural Engineers, Building Department and Public Health and Municipal Services Ordinance

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
<i>Waste Auditing</i>								
Within Construction sites	6.9	-	It is recommended that audit of each waste stream should be carried out on regular basis (e.g. monthly) by an Independent Environmental Checker to determine if wastes are being managed in accordance with approved procedures and the site waste management plan. The audits should look at all aspects of waste management including waste generation, storage, recycling, transport and disposal. An appropriate audit programme would be to undertake a first audit at the commencement of the construction works and then to audit monthly thereafter.	Contractor	Construction Phase	CED	CED	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
Within Construction sites	6.9	7.2 & 7.3	In order to monitor the disposal of public fill and C&D waste at public filling facilities and landfills, respectively and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by the Environmental Team during the EM&A programme. An Independent Checker (Environment) should be responsible for auditing the result of the system.	Contractor	Construction Phase	CED	CED	WBTC No. 5/99, Trip-ticket System for Disposal of Construction and Demolition Material.
Visual and Landscape								
Construction Phase								
Within all construction sites	7.16	-	Consideration of design of all engineering structures in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	N/A	-
Within all construction sites	7.16	-	Erection of hoarding or advance planting as visual screen to works	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.16	-	Hydoseeding of all reclaimed areas.	Contractor	Construction	CED	Contractor	-
Within construction sites	7.16	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> The coastal area to the immediate west of the reclamation will be left intact, with landscaping works to enhance the natural waterfront environment for the area. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	7.16	-	Design of landscape works in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	N/A	
Operation Phase								
Within reclamation area	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	LCSD / ArchSD	Detail Design	CED	LCSD / ArchSD	HKPSG
Within construction sites	7.16	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> Footpaths will be designed to provide easy access from the residential developments to this coastal area. The provision of an indoor public swimming pool within the government complex / leisure centre at Area 6. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Land Use Impacts								
Construction								
Within construction sites	11.6	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> The coastal area to the immediate west of the reclamation will be left intact, with landscaping works to enhance the natural waterfront environment for the area. Footpaths will be designed to provide easy access from the residential developments to this coastal area. The provision of an indoor public swimming pool within the government complex / leisure centre at Area 6. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Within construction sites	11.6.2	-	<i>Reprovisioning of Kaito Pier</i> <ul style="list-style-type: none"> A marine basin with two berthing spaces and sufficient headroom under the western portion of the Bypass will accommodate the reprovisioned kaito pier 	Contractor	Construction	CED	CED (Portworks)	-
Within construction sites	11.6.3	-	<i>Careful Urban Design</i> <ul style="list-style-type: none"> A well-connected pedestrian network, e.g. elevators, escalators, stairs, ramps, footpaths and footbridges, should be considered to avoid a vertical segregation of the open spaces and to provide better linkage among activities nodes. 	Contractor / Private Developer	Detail Design	CED / Private Developer	CED / ArchSD / Private Developer	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	11.6.5	-	<p><i>Well Co-ordinated Construction Programme</i></p> <ul style="list-style-type: none"> construction programme of the STD and other projects (including Castle Peak Road widening) should be well co-ordinated to avoid insurmountable problems or conflicts. 	Contractor / CED / HyD	Detail Design / Construction	N/A	N/A	-
Biogas								
Construction Phase								
<i>Gas Monitoring</i>								
At two monitoring wells	12.9.1	Annex A	<ul style="list-style-type: none"> Monitoring of methane, carbon dioxide, oxygen and gas flow should be undertaken by qualified specialists at two monitoring wells installed across the undredged area for a period of at least one year prior to the construction of the development at the reclamation. The following criteria provide general guidelines to determine the need for protective measures: <p><i>Scenario 1</i></p> <p>If rates of methane emission are consistently much less than the trigger value (10 L m⁻² day⁻¹), including monitoring occasions when atmospheric pressure is falling quite quickly, and they do not show any rising trend over time, then the buildings will not require gas protection measures. That is if (gas flow rate in terms of L day⁻¹) x (concentration of methane in gas (in % gas)) < 200 L day⁻¹</p>	Contractor	Detail Design / Construction	CED	CED	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
At two monitoring wells (Con't)	12.9.1	Annex A	<p><i>Scenario 2</i></p> <p>If the rates of methane emission from any borehole frequently exceed the trigger value or show a rising trend such that future emission rates are likely to exceed the trigger value, then any buildings to be constructed on that part of the site will require some form of gas protection measures. That is when (gas flow rate in terms of L day⁻¹) x (concentration of methane in gas (in % gas)) > 200 L day⁻¹.</p> <p>The exact details of the gas protection measures would need to be designed to take into account the design and use of the particular buildings involved but would, most probably, include the installation of a low gas permeability membrane in the floor slab of the building. The exact area of the reclamation over which buildings would need to have gas protection measures would depend on the pattern of the results from the different monitoring boreholes and further investigation may be required to determine the area of land which is affected by gas emissions. The analysis and assessment of the results and design of any gas protection measures, should be undertaken by suitably qualified and experienced professionals who are familiar with the properties of biogas and the way in which buildings may be protected against the impacts of gases derived from the ground.</p>	Contractor	Detail Design / Construction	CED	CED	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
At two monitoring wells (Con't)	12.9.1	Annex A	<p><i>Scenario 3</i></p> <p>If there are occasional exceedances of the methane emission rate trigger value or if there is significant fluctuation of the results obtained with some readings coming close to the trigger value, then the exact pattern and any trends in the results will need to be assessed to determine their significance and whether any building protection measures are required. It might be necessary to undertake additional monitoring by extending the monitoring period, for example, if an apparently spurious high reading is noted towards the end of the monitoring period or if it seems likely that future rates of emission may exceed the trigger value.</p> <p>Whatever the results obtained from the proposed monitoring of gas emission rates, the analysis and assessment of the results and design of any gas protection measures, should be undertaken by suitably qualified and experienced professionals who are familiar with the properties of biogas and the way in which buildings may be protected against the impacts of gases derived from the ground.</p> <p><i>Scenario 4</i></p> <p>If the rates of methane emission from any borehole frequently exceed the Limit value (84.7 L m⁻² day⁻¹), or show a rising trend such that future emission rates are likely to exceed the limit value, then no buildings should be constructed on that part of the site. That is when the (gas flow rate in terms of L day⁻¹) × (concentration of methane in gas (in % gas)) > 1694 L day⁻¹.</p>	Contractor	Detail Design / Construction	CED	CED	-

Table 13.2b Implementation Schedule for Sham Tseng Bypass

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Air Quality								
<i>Construction Phase</i>								
Within all construction sites	5.7.1	-	<p>The Air Pollution (Construction Dust) Regulation, for example:</p> <ul style="list-style-type: none"> excavated dusty material should be covered by impervious sheeting and sprayed with water to keep the entire surface wet; the haul roads should be located away from sensitive receivers and sprayed with water to keep the entire road surface wet; every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site; the load carried by vehicle should be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle; and the heights from which fill materials are dropped should be controlled to a practical level to minimise the fugitive dust arising from unloading. 	Contractor	Construction Stage	CED	Contractor	Air Pollution Control (Construction Dust) Regulation
<i>Construction Air Quality Monitoring</i>								
Monitoring Locations	13.4.1	6.2.6 Annex B	Baseline monitoring should be carried out at all of the designated monitoring location(s) prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. One-hour sampling shall also be done at least 3 times per day while the highest dust impact is expected.	Environmental Team of the Contractor	At least 14 consecutive days prior to the commissioning of the construction works	CED	-	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	13.4.1	6.2.7 Annex B	Sampling for regular impact monitoring, shall be carried out at least once in every six-days at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP impact monitoring, sampling frequency of at least 3 times in every 6-days shall be undertaken when the highest dust impact occurs.	Environmental Team of the Contractor	Construction Phase	CED	-	-
Monitoring Locations	-	6.2.9 Annex B	In case of non-compliance of the air quality criteria occurs, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until exceedance stops.	Environmental Team of the Contractor	Specified times	CED	-	-
Noise								
Construction Phase								
Within all construction sites	4.7.1	-	<i>Good Site Practice</i> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs; silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works; 	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<ul style="list-style-type: none"> mobile plant should be sited as far away from NSRs as possible; and material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 					
Within all construction sites	4.7.1	-	Use of quiet PME, movable noise barriers, limit the number of plant operating concurrently and restricting the operating PME time usage to 50% and 25%	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO
<i>Construction Noise Monitoring</i>								
Monitoring Locations	-	5.2.3 & 5.2.4 Annex B	The baseline noise monitoring shall be carried out at the noise monitoring locations for a period of one week at a minimum logging interval of 15 minutes prior to the commencement of the construction	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.5 Annex B	<p>During normal construction working hours (0700 - 1900 Monday to Saturday), construction noise monitoring of $L_{Aeq, 30 \text{ minutes}}$ shall be carried out once every six days.</p> <p>If restricted hours works are undertaken, monitoring of $L_{Aeq, 15 \text{ minutes}}$ noise levels shall be carried out at the same frequency as specified for normal working hours.</p>	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.7 Annex B	In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Operational Phase								
Promenade Extension	4.7.2 Fig.4.7a	-	Promenade extension along the western end (380m long CH: 725 to CH: 1100)	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Along the central reserve of Sham Tseng Bypass (approximately 30 m long starting from CH: 570 to CH:600)	4.7.2 Fig.4.7a	-	5 m vertical barrier in absorptive material	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Along the southern side of eastbound Sham Tseng Bypass (approximately 50 m long starting from CH:600 to CH:650)	4.7.2 Fig.4.7a	-	5 m vertical barrier in absorptive material	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Along the northern side of eastbound Sham Tseng Bypass (approximately 130 m long from CH: 600 to CH:725)	4.7.2 Fig.4.7a	-	Semi-enclosure with cantilever 3 m from central reserve	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Along the western end of Sham Tseng Bypass (approximately 380 m long starting from CH: 725 to CH:1100)	4.7.2 Fig.4.7a	-	Promenade extension	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Along the southern side of the westbound Sham Tseng Bypass (approximately 100 m long starting from CH:700 to CH:800)	4.7.2 Fig.4.7a	-	3.5 m vertical barrier in reflective material	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Along the northern side of Castle Peak Road Eastbound (approximately 170 m starting from CH:2150 to CH:2325)	4.7.2 Fig.4.7b	-	6 m vertical barrier in reflective material	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Along the central reserve of Castle Peak Road (approximately 100 m long starting from CH:2150 to CH:2255)	4.7.2 Fig.4.7b	-	5 m vertical barrier in reflective material	CED	Before operation of the Sham Tseng Bypass	CED	HyD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
<i>Operational Noise Monitoring</i>								
Monitoring Locations	-	5.3.6 Annex B	Two sets of traffic noise monitoring data shall be obtained during the first year of the operation of the Bypass: <ul style="list-style-type: none"> one set of measurements at the morning traffic peak hour on normal weekdays; one set of measurements at the evening traffic peak hour on normal weekdays Exact timing for monitoring has to be confirmed with the Transport Department and agreed with EPD. During the traffic noise monitoring, traffic count, average traffic speed and percentage of heavy vehicles shall also be conducted so as to ensure the traffic noise of the peak periods are covered.	Environmental Team of Contractor	Operational Phase (after completion of the Sham Tseng Bypass)	CED	-	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Water Quality								
Construction Phase								
Within construction sites	3.7.1	-	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> • use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow; • Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance depositions rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94; • a sediment tank constructed from pre-formed individual cells of approximately 6 - 8 m³ capacity can be used for settling ground water prior to disposal. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Professional Persons on Construction Site Drainage, Professional Persons Environmental Consultative Committee, 1994 (ProPECC PN 1/94), Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991
			<ul style="list-style-type: none"> • oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain; and 					Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991
			<ul style="list-style-type: none"> • precautions and actions to be taken when a rainstorm is imminent or forecast, and during or after rainstorms. Particular attention should be paid to the control of any silty surface runoff during storms events. 					Guideline in Appendix A2 of ProPECC PN 1/94

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	3.7.1	-	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column to cause water quality impacts; all fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oil from reaching coastal waters of Ma Wan Channel. 	Contractor	Construction Phase	CED	Contractor	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Within construction sites	3.7.1	-	<p><i>Sewage from Construction Work Force</i></p> <ul style="list-style-type: none"> Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices. 	Contractor	Construction Phase	CED	Contractor	-
<i>Water Quality Monitoring (not required)</i>								
Operational Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within the bypass boundary	3.7.2	-	<p>The following measures are applicable to reduce stormwater run-off pollution within the boundary of the bypass:</p> <ul style="list-style-type: none"> • provision of silt traps to reduce the concentration of silt/sediments in stormwater run-off. These silt traps should be cleaned and maintained regularly to ensure that they function properly; • compliance of the WPCO for Western Buffer through the issuance of relevant discharge licence for the proposed storm drains associated with the bypass; 	CED	During construction of the bypass	CED	DSD	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Waste Management								
Construction Phase								
Within construction sites	6.7.4	-	<p><i>Excavated Materials</i></p> <ul style="list-style-type: none"> • If any surplus uncontaminated inert materials do arise then they may be delivered to public filling areas or other reclamation sites. • Excavated materials should be segregated from other wastes to avoid possible contamination, thereby allowing disposal at public filling areas. 	Contractor	Construction Phase	CED	Contractor	

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.5	-	<p><i>C&D Waste</i></p> <ul style="list-style-type: none"> Careful design, planning and good site management can minimise over ordering and generation and waste materials such as concrete, mortars and cement grouts. the handling and disposal of bentonite slurries should be undertaken in accordance with <i>ProPECC PN 1/94</i> on construction site drainage; C&DM should be segregated on site into different waste and material types. Where site conditions allowed, different types of wastes should be segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. An on-site temporary storage area should also be provided. 	Contractor	Construction Phase	CED	Contractor	Works Bureau Technical Circular (WBTC) No. 5/98, On-site Sorting of Construction Waste on Demolition Sites
Within construction sites	6.7.6	-	<p><i>Chemical Waste</i></p> <p>Containers used for the storage of chemical wastes shall:</p> <ul style="list-style-type: none"> be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 litres unless the specifications have been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in <i>Schedule 2 of the Regulations</i>. 	Contractor	Construction Phase	CED	Contractor	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<p>The storage area for chemical wastes shall:</p> <ul style="list-style-type: none"> • be clearly labelled and used solely for the storage of chemical waste; • be enclosed on at least 3 sides; • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • have adequate ventilation; • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and • be arranged so that incompatible materials are adequately separated. 					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
			<p>Disposal of chemical waste shall:</p> <ul style="list-style-type: none"> • be via a licensed waste collector; and • be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or • be to a reuser of the waste, under approval from the EPD. <p>The Centre for Environmental Technology operates a Waste Exchange Scheme which can assist in finding receivers or buyers.</p>					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.7	-	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> general refuse shall be stored in enclosed bins or compaction units separate from C&D and chemical wastes. Waste collector shall be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Authorised Person and Registered Structural Engineers, Building Department and Public Health and Municipal Services Ordinance
<i>Waste Auditing</i>								
Within Construction sites	6.9	-	It is recommended that audit of each waste stream should be carried out on regular basis (e.g. monthly) by an Independent Environmental Checker to determine if wastes are being managed in accordance with approved procedures and the site waste management plan. The audits should look at all aspects of waste management including waste generation, storage, recycling, transport and disposal. An appropriate audit programme would be to undertake a first audit at the commencement of the construction works and then to audit monthly thereafter.	Contractor	Construction Phase	CED	CED	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
Within Construction sites	6.9	7.2 & 7.3	In order to monitor the disposal of construction and demolition material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by the Environmental Team during the EM&A programme. An Independent Checker (Environment) should be responsible for auditing the result of the system.	Contractor	Construction Phase	CED	CED	WBTC No. 5/99, Trip-ticket System for Disposal of Construction and Demolition Material.
Visual and Landscape								
Construction Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within all construction sites	7.16	-	Consideration of design of all engineering structures in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	N/A	-
Within all construction sites	7.16	-	Consideration of design of all slopes to minimise extent of cutting and design in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	N/A	WBTC 25/93 Control of Visual Impact of Slopes
Within all construction sites	7.16	-	Minimisation of all slope cutting where possible	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.16	-	Felling of trees in accordance with WBTC 24/94 Tree Preservation <ul style="list-style-type: none"> Felling and transplanting of trees affected in accordance with Tree Felling Application and with-contract documents 	Contractor	Construction	CED	Contractor	WBTC 24/94 Tree Preservation
Within all construction sites	7.16	-	Erection of hoarding or advance planting as visual screen to works	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.16	-	Topsoils to be tested for quality and if valuable to be stockpiled no greater than 2 m high for later use	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.16	-	Design of landscape works in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	Contractor	-
Within construction sites	7.16	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> The coastal area to the immediate west of the reclamation will be left intact, with landscaping works to enhance the natural waterfront environment for the area. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Operation Phase								
Within construction sites	7.16	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> Footpaths will be designed to provide easy access from the residential developments to this coastal area. The provision of an indoor public swimming pool within the government complex / leisure centre at Area 6. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Promenade above bypass DO (not structure)	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	LCSD / ArchSD	Detail Design	CED	LCSD / ArchSD	HKPSG
Roadside hardworks	7.16	-	Design of landscape works in accordance with EIA recommendations and HyD standards	CED / LCSD	Detail Design	CED	HyD	HyD Standards

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Roadside planting	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	CED / LCSD	Detail Design	CED	LCSD	HKPSG
Amenity Areas	7.16	-	Design of landscape works in accordance with EIA recommendations and HKPSG	CED / LCSD	Detail Design	CED	LCSD / ArchSD	HKPSG
Land Use Impacts								
Construction								
Within construction sites	11.6	-	<p><i>Reprovisioning of Anglers' Beach</i></p> <ul style="list-style-type: none"> The coastal area to the immediate west of the reclamation will be left intact, with landscaping works to enhance the natural waterfront environment for the area. Footpaths will be designed to provide easy access from the residential developments to this coastal area. The provision of an indoor public swimming pool within the government complex / leisure centre at Area 6. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Within construction sites	11.6.2	-	<p><i>Reprovisioning of Kaito Pier</i></p> <ul style="list-style-type: none"> A marine basin with two berthing spaces and sufficient headroom under the western portion of the Bypass will accommodate the reprovisioned kaito pier 	Contractor	Construction	CED	CED (Portworks)	-
Within construction sites	11.6.3	-	<p><i>Careful Urban Design</i></p> <ul style="list-style-type: none"> A well-connected pedestrian network, e.g. elevators, escalators, stairs, ramps, footpaths and footbridges, should be considered to avoid a vertical segregation of the open spaces and to provide better linkage among activities nodes. 	Contractor / Private Developer	Detail Design	CED / Private Developer	CED / ArchSD / Private Developer	-
Within construction sites	11.6.5	-	<p><i>Well Co-ordinated Construction Programme</i></p> <ul style="list-style-type: none"> construction programme of the STD and other projects (including Castle Peak Road widening) should be well co-ordinated to avoid insurmountable problems or conflicts. 	Contractor / CED / HyD	Detail Design / Construction	N/A	N/A	-
Biogas								
(No biogas monitoring required)								

Table 13.2c Implementation Schedule for Sewage Pumping Station

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Air Quality								
<i>Construction Phase</i>								
Within all construction sites	5.7.1	-	<p>The Air Pollution (Construction Dust) Regulation, for example:</p> <ul style="list-style-type: none"> excavated dusty material should be covered by impervious sheeting and sprayed with water to keep the entire surface wet; the haul roads should be located away from sensitive receivers and sprayed with water to keep the entire road surface wet; every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site; the load carried by vehicle should be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle; and the heights from which fill materials are dropped should be controlled to a practical level to minimise the fugitive dust arising from unloading. 	Contractor	Construction Stage	CED	Contractor	Air Pollution Control (Construction Dust) Regulation
<i>Construction Air Quality Monitoring</i>								
Monitoring Locations	13.4.1	6.2.6 Annex C	Baseline monitoring should be carried out at all of the designated monitoring location(s) prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. One-hour sampling shall also be done at least 3 times per day while the highest dust impact is expected.	Environmental Team of the Contractor	At least 14 consecutive days prior to the commissioning of the construction works	CED	-	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	13.4.1	6.2.7 Annex C	Sampling for regular impact monitoring, shall be carried out at least once in every six-days at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP impact monitoring, sampling frequency of at least 3 times in every 6-days shall be undertaken when the highest dust impact occurs.	Environmental Team of the Contractor	Construction Phase	CED	-	-
Monitoring Locations	-	6.2.9 Annex C	In case of non-compliance of the air quality criteria occurs, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until exceedance stops.	Environmental Team of the Contractor	Specified times	CED	-	-
Operational Phase								
Sewage pumping station at Area 4	5.5.2 & 5.7.2	-	<ul style="list-style-type: none"> Installation of odour removal facilities at the air vent of the sewage pumping station; Wet Well of the sewage pumping station to be installed underground and enclosed by air-tight cover; Reinforced concrete superstructure to enclose the underground substructures including the wet well, inlet chamber, screening chamber, etc. 	CED	Prior to the operation of the sewage pumping station	CED	DSD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
Noise								
Construction Phase								
Within all construction sites	4.7.1	-	<i>Good Site Practice</i> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs; silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works; mobile plant should be sited as far away from NSRs as possible; and 	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<ul style="list-style-type: none"> material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. <p>Use of quiet PME, movable noise barriers, limit the number of plant operating concurrently and restricting the operating PME time usage to 50% and 25%</p>					
<i>Construction Noise Monitoring</i>								
Monitoring Locations	-	5.2.3 & 5.2.4 Annex C	The baseline noise monitoring shall be carried out at the noise monitoring locations for a period of one week at a minimum logging interval of 15 minutes prior to the commencement of the construction	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.5 Annex C	<p>During normal construction working hours (0700 - 1900 Monday to Saturday), construction noise monitoring of $L_{Aeq, 30 \text{ minutes}}$ shall be carried out once every six days.</p> <p>If restricted hours works are undertaken, monitoring of $L_{Aeq, 15 \text{ minutes}}$ noise levels shall be carried out at the same frequency as specified for normal working hours.</p>	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.7 Annex C	In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Operational Phase								
Sewage Pumping Station, Area 4	4.6.3	-	<p>Maximum permissible sound power level is 85 dB(A) during the day time and 75 dB(A) during the night time</p> <p>To minimize potential noise impact, the sewage pumping station is to be located underground.</p> <p>Silencer for the extraction fans of the de-odourizers, acoustic doors, acoustic louvers and obsurptive wall lining should be adopted.</p> <p>Extraction fans of the de-odourizers are to be located away from the sensitive receivers.</p>	CED	During the construction of the sewage pumping station	CED	DSD	Technical Memorandum of Environmental Impact Assessment (EIAO-TM)
<i>Operational Noise Monitoring (Not required since operational noise would be controlled under S13 of NCO)</i>								
Water Quality								
Construction Phase								
Within construction sites	3.7.1	-	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> • use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow; • Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance depositions rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94; • a sediment tank constructed from pre-formed individual cells of approximately 6 - 8 m³ capacity can be used for settling ground water prior to disposal. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Professional Persons on Construction Site Drainage, Professional Persons Environmental Consultative Committee, 1994 (ProPECC PN 1/94), Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<ul style="list-style-type: none"> oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain; and 					Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991
			<ul style="list-style-type: none"> precautions and actions to be taken when a rainstorm is imminent or forecast, and during or after rainstorms. Particular attention should be paid to the control of any silty surface runoff during storms events. 					Guideline in Appendix A2 of ProPECC PN 1/94
Within construction sites	3.7.1	-	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column to cause water quality impacts; all fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oil from reaching coastal waters of Ma Wan Channel. 	Contractor	Construction Phase	CED	Contractor	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Within construction sites	3.7.1	-	<p><i>Sewage from Construction Work Force</i></p> <ul style="list-style-type: none"> Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices. 	Contractor	Construction Phase	CED	Contractor	-
<i>Water Quality Monitoring (not required)</i>								
Operational Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within the Sewage Pumping Station	3.7.2	-	<p>Should a failure of the pumping station occur the necessary repairs should be expedited in order to limit the period of emergency discharge. The following measures shall be considered as part of the contingency plan:</p> <ul style="list-style-type: none"> • Standby pump should be provided to facilitate maintenance and repairing of equipment; • Dual (back-up) power supply should be provided. Dual power supply could be in form of ring main or an automatic-operated emergency generator with sufficient capacity to cope with the demand loading of the essential plant equipment; • If the pumping station is unmanned, a telemetry system should be provided to the nearest manned station/plant so that swift actions could be taken in case of malfunction of the unmanned facilities; • Hand-cleaned screens should be provided at the overflow bypass to prevent the discharge of floating solids into receiving water bodies. The clear spacing of the bar screen should normally be about 25mm; and • The discharge point of the overflow bypass should be below the low water. <p>To minimise the risk of failure of the pumping station, standby equipment plus dual power supply should be provided.</p> <p>Twin rising mains will be provided to allow one main closed for maintenance</p>	CED	Operational Phase (during emergency discharge condition)	CED	DSD	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within the STD	3.7.2	-	<p>The following measures are applicable to reduce stormwater run-off pollution within the boundaries of the sewage pumping station site:</p> <ul style="list-style-type: none"> • provision of silt traps to reduce the concentration of silt/sediments in stormwater run-off. These silt traps should be cleaned and maintained regularly to ensure that they function properly; • compliance of the WPCO for Western Buffer through the issuance of relevant discharge licence; 	CED	Prior to the construction of the residential development	CED	DSD	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Waste Management								
Construction Phase								
Within construction sites	6.7.4	-	<p><i>Excavated Materials</i></p> <ul style="list-style-type: none"> • If any surplus uncontaminated inert materials do arise then they may be delivered to public filling areas or other reclamation sites. • Excavated materials should be segregated from other wastes to avoid possible contamination, thereby allowing disposal at public filling areas. 	Contractor	Construction Phase	CED	Contractor	

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.5	-	<p><i>C&D Waste</i></p> <ul style="list-style-type: none"> Careful design, planning and good site management can minimise over ordering and generation and waste materials such as concrete, mortars and cement grouts. the handling and disposal of bentonite slurries should be undertaken in accordance with <i>ProPECC PN 1/94</i> on construction site drainage; C&DM should be segregated on site into different waste and material types. Where site conditions allowed, different types of wastes should be segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. An on-site temporary storage area should also be provided. 	Contractor	Construction Phase	CED	Contractor	Works Branch Technical Circular (WBTC) No. 5/98, On-site Sorting of Construction Waste on Demolition Sites
Within construction sites	6.7.6	-	<p><i>Chemical Waste</i></p> <p>Containers used for the storage of chemical wastes shall:</p> <ul style="list-style-type: none"> be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 litres unless the specifications have been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in <i>Schedule 2 of the Regulations</i>. 	Contractor	Construction Phase	CED	Contractor	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<p>The storage area for chemical wastes shall:</p> <ul style="list-style-type: none"> • be clearly labelled and used solely for the storage of chemical waste; • be enclosed on at least 3 sides; • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • have adequate ventilation; • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and • be arranged so that incompatible materials are adequately separated. 					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
			<p>Disposal of chemical waste shall:</p> <ul style="list-style-type: none"> • be via a licensed waste collector; and • be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or • be to a reuser of the waste, under approval from the EPD. <p>The Centre for Environmental Technology operates a Waste Exchange Scheme which can assist in finding receivers or buyers.</p>					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.7	-	General refuse shall be stored in enclosed bins or compaction units separate from C&D and chemical wastes. Waste collector shall be employed by the Contractor to remove general refuse from the site, separately from public fill and chemical waste, on a daily basis to minimise odour, pest and litter impacts.	Contractor	Construction Phase	CED	Contractor	Practice Note for Authorised Person and Registered Structural Engineers, Building Department and Public Health and Municipal Services Ordinance
<i>Waste Auditing</i>								
Within Construction sites	6.9	7.3	A trip-ticket system should be established and used to monitored the disposal of public fill and C&D waste at public filling facilities and landfills, respectively to control fly tipping.	Contractor	Construction Phase	CED	CED	WBTC No. 5/99, Trip-ticket System for Disposal of Construction and Demolition Material.
<i>Operational Phase</i>								
Within the Pumping Station	6.7.8 & 6.7.9	-	Chemical waste generated during the operation phase should be stored, handled and collected of in accordance with the <i>Code of Practice on the Packaging, labelling and storage of Chemical Waste</i> published by the EPD. Chemical waste should be disposed of at licensed chemical waste treatment facilities approved by the EPD. Collection of solid waste in enclosed environment. Use of fully enclosed container for transportation of waste. The frequency of collection of waste should be twice a week.	DSD	Operational Phase	DSD	DSD	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
Visual and Landscape								
Construction Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within all construction sites	7.9	-	Consideration of design of all engineering structures in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	-	
Within all construction sites	7.9	-	Erection of hoarding or advance planting as visual screen to works	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.9	-	Design of landscape works in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	Contractor	-
Operation Phase items								
Within reclamation area	7.9	-	Design of landscape works in accordance with EIA recommendations and HKPSG	DSD	Detail Design	CED	DSD	
Land Use Impacts								
Construction								
Within construction sites	11.6.5	-	<p><i>Well Co-ordinated Construction Programme</i></p> <ul style="list-style-type: none"> construction programme of the STD and other projects (including Castle Peak Road widening) should be well co-ordinated to avoid insurmountable problems or conflicts. 	Contractor / CED / HyD	Detail Design / Construction	N/A	N/A	-
Biogas								
(No biogas monitoring required)								

Table 13.2d Implementation Schedule for Castle Peak Road Underpass

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Air Quality								
<i>Construction Phase</i>								
Within all construction sites	5.7.1	-	<p>The Air Pollution (Construction Dust) Regulation, for example:</p> <ul style="list-style-type: none"> excavated dusty material should be covered by impervious sheeting and sprayed with water to keep the entire surface wet; the haul roads should be located away from sensitive receivers and sprayed with water to keep the entire road surface wet; every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site; the load carried by vehicle should be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle; and the heights from which fill materials are dropped should be controlled to a practical level to minimise the fugitive dust arising from unloading. 	Contractor	Construction Stage	CED	Contractor	Air Pollution Control (Construction Dust) Regulation
<i>Construction Air Quality Monitoring</i>								
Monitoring Locations	13.4.1	6.2.6 Annex D	Baseline monitoring should be carried out at all of the designated monitoring location(s) prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. One-hour sampling shall also be done at least 3 times per day while the highest dust impact is expected.	Environmental Team of the Contractor	At least 14 consecutive days prior to the commissioning of the construction works	CED	-	-

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	13.4.1	6.2.7 Annex D	Sampling for regular impact monitoring, shall be carried out at least once in every six-days at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP impact monitoring, sampling frequency of at least 3 times in every 6-days shall be undertaken when the highest dust impact occurs.	Environmental Team of the Contractor	Construction Phase	CED	-	-
Monitoring Locations	-	6.2.9 Annex D	In case of non-compliance of the air quality criteria occurs, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until exceedance stops.	Environmental Team of the Contractor	Specified times	CED	-	-
Operational Phase								
Inside Underpass	5.5.2	-	Ventilation System to be provided in order to meet Tunnel Air Quality guideline	CED	Prior to operation of the underpass	CED	HyD/EMSD	Tunnel Air Quality Guideline
Noise								
Construction Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within all construction sites	4.7.1	-	<p><i>Good Site Practice</i></p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs; silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works; mobile plant should be sited as far away from NSRs as possible; and material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO
Within all construction sites	4.7.1	-	Use of quiet PME, movable noise barriers, limit the number of plant operating concurrently and restricting the operating PME time usage to 50% and 25%	Contractor	Construction	CED	Contractor	PN 2/93 & EIAO
<i>Construction Noise Monitoring</i>								
Monitoring Locations	-	5.2.3 & 5.2.4 Annex D	The baseline noise monitoring shall be carried out at the noise monitoring locations for a period of one week at a minimum logging interval of 15 minutes prior to the commencement of the construction	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Monitoring Locations	-	5.2.5 Annex D	During normal construction working hours (0700 - 1900 Monday to Saturday), construction noise monitoring of $L_{Aeq, 30 \text{ minutes}}$ shall be carried out once every six days. If restricted hours works are undertaken, monitoring of $L_{Aeq, 15 \text{ minutes}}$ noise levels shall be carried out at the same frequency as specified for normal working hours.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Monitoring Locations	-	5.2.7 Annex D	In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Action Plan shall be carried out. The additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.	Environmental Team of the Contractor	Specified times	CED	-	PN 2/93 & EIAO
Operational Phase								
Monitoring Locations	-	5.3.6 Annex D	Two sets of traffic noise monitoring data shall be obtained during the first year of the operation of the Bypass: <ul style="list-style-type: none"> one set of measurements at the morning traffic peak hour on normal weekdays; one set of measurements at the evening traffic peak hour on normal weekdays Exact timing for monitoring has to be confirmed with the Transport Department and agreed with EPD. During the traffic noise monitoring, traffic count, average traffic speed and percentage of heavy vehicles shall also be conducted so as to ensure the traffic noise of the peak periods are covered.	Environmental Team of Contractor	Operational Phase (after completion of the Castle Peak Road Underpass)	CED	-	-
Water Quality								
Construction Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	3.7.1	-	<p><i>Construction Runoff and Drainage</i></p> <ul style="list-style-type: none"> • use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow; • Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance depositions rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94; • a sediment tank constructed from pre-formed individual cells of approximately 6 - 8 m³ capacity can be used for settling ground water prior to disposal. 	Contractor	Construction Phase	CED	Contractor	Practice Note for Professional Persons on Construction Site Drainage, Professional Persons Environmental Consultative Committee, 1994 (ProPECC PN 1/94), Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991
			<ul style="list-style-type: none"> • oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain; and 					Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, EPD, 1991
			<ul style="list-style-type: none"> • precautions and actions to be taken when a rainstorm is imminent or forecast, and during or after rainstorms. Particular attention should be paid to the control of any silty surface runoff during storms events. 					Guideline in Appendix A2 of ProPECC PN 1/94

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	3.7.1	-	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column to cause water quality impacts; all fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oil from reaching coastal waters of Ma Wan Channel. 	Contractor	Construction Phase	CED	Contractor	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Within construction sites	3.7.1	-	<p><i>Sewage from Construction Work Force</i></p> <ul style="list-style-type: none"> Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices. 	Contractor	Construction Phase	CED	Contractor	-
<i>Water Quality Monitoring (not required)</i>								
Operational Phase								

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within the boundary of the road	3.7.2	-	<p>The following measures are applicable to reduce stormwater run-off pollution from the road:</p> <ul style="list-style-type: none"> • provision of silt traps to reduce the concentration of silt/sediments in stormwater run-off. These silt traps should be cleaned and maintained regularly to ensure that they function properly; • compliance of the WPCO for Western Buffer through the issuance of relevant discharge licence for the discharges from the storm water system; 	CED	Prior to the construction of the road	CED	DSD	Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters
Waste Management								
Construction Phase								
Within construction sites	6.7.4	-	<p><i>Excavated Materials</i></p> <ul style="list-style-type: none"> • If any surplus uncontaminated inert materials do arise then they may be delivered to public filling areas or other reclamation sites. • Excavated materials should be segregated from other wastes to avoid possible contamination, thereby allowing disposal at public filling areas. 	Contractor	Construction Phase	CED	Contractor	

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.5	-	<p><i>C&D Waste</i></p> <ul style="list-style-type: none"> Careful design, planning and good site management can minimise over ordering and generation and waste materials such as concrete, mortars and cement grouts. the handling and disposal of bentonite slurries should be undertaken in accordance with <i>ProPECC PN 1/94</i> on construction site drainage; C&DM should be segregated on site into different waste and material types. Where site conditions allowed, different types of wastes should be segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. An on-site temporary storage area should also be provided. 	Contractor	Construction Phase	CED	Contractor	Works Bureau Technical Circular (WBTC) No. 5/98, On-site Sorting of Construction Waste on Demolition Sites
Within construction sites	6.7.6	-	<p><i>Chemical Waste</i></p> <p>Containers used for the storage of chemical wastes shall:</p> <ul style="list-style-type: none"> be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 litres unless the specifications have been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in <i>Schedule 2 of the Regulations</i>. 	Contractor	Construction Phase	CED	Contractor	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
			<p>The storage area for chemical wastes shall:</p> <ul style="list-style-type: none"> • be clearly labelled and used solely for the storage of chemical waste; • be enclosed on at least 3 sides; • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • have adequate ventilation; • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and • be arranged so that incompatible materials are adequately separated. 					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
			<p>Disposal of chemical waste shall:</p> <ul style="list-style-type: none"> • be via a licensed waste collector; and • be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or • be to a reuser of the waste, under approval from the EPD. <p>The Centre for Environmental Technology operates a Waste Exchange Scheme which can assist in finding receivers or buyers.</p>					Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Within construction sites	6.7.7	-	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> general refuse shall be stored in enclosed bins or compaction units separate from C&D and chemical wastes. Waste collector shall be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts; 	Contractor	Construction Phase	CED	Contractor	Practice Note for Authorised Person and Registered Structural Engineers, Building Department and Public Health and Municipal Services Ordinance
<i>Waste Auditing</i>								
Within Construction sites	6.9	-	It is recommended that audit of each waste stream should be carried out on regular basis (e.g. monthly) by an Independent Environmental Checker to determine if wastes are being managed in accordance with approved procedures and the site waste management plan. The audits should look at all aspects of waste management including waste generation, storage, recycling, transport and disposal. An appropriate audit programme would be to undertake a first audit at the commencement of the construction works and then to audit monthly thereafter.	Contractor	Construction Phase	CED	CED	Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354); the Crown Land Ordinance (Cap 28); Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD
Within Construction sites	6.9	7.2 & 7.3	In order to monitor the disposal of public fill and C&D waste at public filling facilities and landfills, respectively and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by the Environmental Team during the EM&A programme. An Independent Checker (Environment) should be responsible for auditing the result of the system.	Contractor	Construction Phase	CED	CED	WBTC No. 5/99, Trip-ticket System for Disposal of Construction and Demolition Material.

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Visual and Landscape								
Construction Phase								
Within all construction sites	7.9	-	Consideration of design of all engineering structures in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	-	
Within all construction sites	7.9	-	Consideration of design of all slopes to minimise extent of cutting and design in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	-	WBTC 25/93 Control of Visual Impact of Slopes
Within all construction sites	7.9	-	Minimisation of all slope cutting where possible	Contractor	Construction	CED	Contractor	
Within all construction sites	7.9	-	Felling of trees in accordance with WBTC 24/94 Tree Preservation <ul style="list-style-type: none"> Felling and transplanting of trees affected in accordance with Tree Felling Application and with-contract documents 	Contractor	Construction	CED	-	WBTC 24/94 Tree Preservation
Within all construction sites	7.9	-	Erection of hoarding or advance planting as visual screen to works	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.9	-	Topsoils to be tested for quality and if valuable to be stockpiled no greater than 2 m high for later use	Contractor	Construction	CED	Contractor	-
Within all construction sites	7.9	-	Design of landscape works in accordance with EIA recommendations	CED / Design consultant	Detail Design	CED	-	-
Operation Phase								
Roadside planting	7.9	-	Design of landscape works in accordance with EIA recommendations and HKPSG	CED / LCSD	Detail Design	CED	LCSD	HKPSG

Location	EIA Ref	EM&A Log Ref	Environmental Protection Measures	Implementation Agent	Implementation Stage	Funding Agent	Maintenance Agent	Relevant Legislation and Guidelines
Land Use Impacts								
Construction								
Within construction sites	11.6	-	<i>Reprovisioning of Anglers' Beach</i> <ul style="list-style-type: none"> The coastal area to the immediate west of the reclamation will be left intact, with landscaping works to enhance the natural waterfront environment for the area. Footpaths will be designed to provide easy access from the residential developments to this coastal area. The provision of an indoor public swimming pool within the government complex / leisure centre at Area 6. 	Private Developer / LCSD	Detail Design	CED	LCSD / ArchSD	-
Within construction sites	11.6.5	-	<i>Well Co-ordinated Construction Programme</i> <ul style="list-style-type: none"> construction programme of the STD and other projects (including Castle Peak Road widening) should be well co-ordinated to avoid insurmountable problems or conflicts. 	Contractor / CED / HyD	Detail Design / Construction	N/A	N/A	-
Biogas								
(No biogas monitoring required)								