

APPENDIX A IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
A						
Air Quality						
3.64	<ul style="list-style-type: none"> Watering twice per day within the worksites at North Point PTW, Wan Chai East PTW, Fung Mat Road Site, Sandy Bay PTW, Wah Fu PTW, Aberdeen PTW and SCS worksite at Aberdeen; Watering 4 times per day within worksites at the Central PTW; Barging points, if any, should be continuous watering throughout the whole unloading process; and Watering 8 times per day within worksites at the SCS works area at Wan Chai East and North Point, SCISTW and the Disinfection Facilities of SCISTW. 	To reduce dust nuisance	Contractor	Work site / during construction	Construction phase	EIAO-TM & Air Quality Objective
3.74	<p>Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts.</p> <ul style="list-style-type: none"> Skip hoist for material transport should be totally enclosed by impervious sheeting; Vehicle washing facilities should be provided at every vehicle exit point; The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore; Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; 	To reduce dust nuisance	Contractor	Work site / during construction	Construction phase	EIAO-TM & Air Quality Objective

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3.76	<p>Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather;</p> <p>Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines;</p> <p>Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs;</p> <p>Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations;</p> <p>Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit;</p> <p>Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides;</p> <p>Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites; and</p> <p>Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.</p>	To ensure compliance of the odour criterion stipulated in the EIAO-TM	Plant Operator	All PTWs and SCISTW	Operation phase	EIAO-TM
	<p>Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual.</p> <ul style="list-style-type: none"> • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimize odour escape • Scum and grease collection wells and troughs should be 					

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	<p>emptied and flushed regularly to prevent putrefaction of accumulated organics</p> <ul style="list-style-type: none"> Skim and remove floating solids and grease from primary clarifiers regularly Frequent sludge withdrawal from tanks is necessary to prevent the production of gases Sludge cake should be transferred to closed containers Sludge containers should be flushed with water regularly 					
3.77	To avoid excessive extraction of the foul air from the drop shafts of the sedimentation tanks and also from the effluent flume structure of SCISTW to deodorization system, the extraction vent(s) of the deodorization system should be located away from the top openings of the drop shafts.	To ensure compliance of the odour criterion stipulated in the EIAO-TM	Engineer	SCISTW	Design Stage	EIAO-TM
3.80	Commissioning tests for all deodorization system should be included in the Design and Construction Contract Document.	To ensure compliance of the odour criterion stipulated in the EIAO-TM	Engineer	All PTW and SCISTW	After completion of construction	EIAO-TM
B Airborne Noise						
4.56-4.61	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> Use of quiet PME, movable barriers and acoustic mats 	To reduce construction noise impacts	Contractor	All work sites	Construction phase	EIAO-TM
4.67	<p><u>Good Site Practice:</u></p> <ul style="list-style-type: none"> Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program. Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program. Mobile plant, if any, shall be sited as far away from NSRs 	To reduce construction noise impacts	Contractor	All work sites	Construction phase	EIAO-TM

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	<p>as possible.</p> <ul style="list-style-type: none"> Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum. Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 					
4.63	<p><u>Operation Phase</u></p> <ul style="list-style-type: none"> Use of acoustic louvers for air supply fans/extraction fans of transfer pumping stations and ventilation fans of deodorization unit at Sandy Bay PTW, Cyberport PTW and Wah Fu PTW. 	To reduce fixed plant noise impact	DSD	Sandy Bay PTW, Cyberport PTW and Wah Fu PTW	Design stage and operation stage	EIAO-TM and NCO
4.64	The maximum allowable sound power level (SWL) of each new transformer at Sandy Bay PTW shall be limited to 89 dB(A).	To reduce fixed plant noise impact	DSD	Sandy Bay PTW	Design stage and operation stage	EIAO-TM and NCO
C						
Water Quality						
6.349 to 6.375	<p><u>Construction Phase</u></p> <p><i>Construction Site Runoff and General Construction Activities</i></p> <p>The mitigation measures as outlined in the <i>ProPECC PN 1/94 Construction Site Drainage</i> should be adopted where applicable.</p>	To control water quality impact from construction site runoff and general construction activities	Contractor	All work sites	Construction phase	EIAO-TM, WPCO

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6.376	<p><i>Effluent Discharge</i></p> <p>There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.</p>	To control water quality impact from effluent discharges from construction sites	Contractor	All work sites	Construction phase	EIAO-TM, WPCO
6.377	<p><i>Accidental Spillage of Chemicals</i></p> <p>Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.</p>	To control water quality impact from accidental chemical spillage	Contractor	All work sites	Construction phase	EIAO-TM, WPCO, WDO
6.378	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	To control water quality impact from accidental chemical spillage	Contractor	All work sites	Construction phase	EIAO-TM, WPCO, WDO
6.379	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical	To control water quality impact from accidental	Contractor	All work sites	Construction phase	EIAO-TM, WPCO, WDO

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6.380	<p>Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. <p>Construction Works in Close Proximity of Storm Drains or Seafront</p> <p>To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable.</p> <ul style="list-style-type: none"> • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. 	chemical spillage	Contractor	All work sites	Construction phase	EIAO-TM, WPCO

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	<ul style="list-style-type: none"> Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea. 					
6.381	<p>Temporary Sewage Bypass</p> <p>It is recommended that the temporary sewage bypass required for (i) the modification to the existing pumping station at SCISTW and (ii) the interconnection between the existing main pumping station and the new pumping station on Stonecutters Island, if needed, should be scheduled at the same time as far as practicable in order to minimize the temporary discharge duration. It is also recommended that all the modification and interconnection to the existing facilities (including the modification to the existing NWKPS) should be programmed to avoid temporary sewage bypass in wet or bathing season (March to October) to minimize the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimize the impact of temporary discharges. Details are provided in the standalone EM&A Manual.</p>	To minimise the water quality impact arising from the planned temporary sewage bypass	DSD	SCISTW	Design Stage and Construction Phase	EIAO-TM and WPCO
6.344	<p><u>Operational Phase</u></p> <p>Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be</p>	To minimize the water quality impact from emergency discharge	DSD	SCISTW and all the Stage 2 PTWs	Design stage and operation stage	EIAO-TM and WPCO

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	provided as far as possible at the SCISTW to minimize the chance of emergency discharge.					
6.344	The response procedure and monitoring requirements for emergency discharge as stated in EM&A Manual should be followed.	To minimize water quality impact due to emergency discharge	DSD	SCISTW	Operation stage	EIAO-TM and WPCO
6.345	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	To minimize water quality impact due to emergency discharge	DSD	Stage 2 PTWs	Design stage and operation stage	EIAO-TM and WPCO
6.346	In case of total power outage of the dechlorination plant, the uninterruptible power supply (UPS) system to be provided would switch the power supply of the sodium bisulphite dosing pump to a backup battery almost instantaneously, allowing continuous dosage of sodium bisulphite for at least half an hour so that sufficient time can be provided for shutting down the chlorination plant to avoid the possibility of discharge of chlorinated effluent.	To minimize the discharge of chlorinated effluent under emergency situations	DSD	SCISTW	Design stage and operation stage	EIAO-TM and WPCO
6.347	The model predicted that if Stage 2B is not implemented for HATS in 2021 as scheduled, the nutrient contents (both P and N) in the marine water would ultimately increase to exceed the baseline Stage 1 level when the HATS flow is reaching its design capacity of 2.45M m ³ /day. It is recommended that the future review study for Stage 2B should review the validity of the model predictions provided in this EIA and confirm the need of enhanced nutrient removal for HATS after 2021.	To minimize the nutrient exceedances after 2021	DSD	SCISTW	Investigation Stage of Stage 2B	EIAO-TM and WPCO
6.348	It should be noted that the mixing zone for TIN predicted for Stage 2B was large with an area of about 30 km ² and the area of exceedance would encroach on the nearby water sensitive receivers (e.g. Ma Wan Fish Culture Zone). This is due to the	To minimize the TIN exceedances during Stage 2B	DSD	SCISTW	Investigation Stage of Stage 2B	EIAO-TM and WPCO

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	elevated oxidized nitrogen assumed for the proposed nitrification process at Stage 2B as well as the increased HATS effluent flow assumed for Stage 2B. It is recommended that these water quality issues should be further investigated / assessed under the future EIA for Stage 2B. Further mitigation measures / alternative treatment designs should also be considered under the future EIA for Stage 2B to mitigate / minimize the potential TIN exceedances.					
D Human Health and Ecological Risk						
7.47 & 8.66	A monitoring programme would be implemented to protect human health and ecological resources from increased TRC and CBP concentrations in seawater.	To protect human health and ecological resources from exposure to toxic substances from the effluent discharges	DSD	Water body near SCISTW	Operation phase	
E Waste Management						
9.107	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	To minimize wastage of wood	Contractor	Work sites	Construction phase	WBTC No. 19/2001
9.109	All waste materials should be segregated into categories covering: <ul style="list-style-type: none"> excavated materials suitable for reuse on-site; 	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal	Contractor	Work sites	Construction phase	

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	<ul style="list-style-type: none"> • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill. 	of waste.				
9.113	<p>Recommendations to achieve waste reduction include:-</p> <ul style="list-style-type: none"> • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials. 	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal of waste.	Contractor	Work sites	Construction phase	
9.115	<p>Recommendations for good site practices during construction activities include:-</p> <ul style="list-style-type: none"> • Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site • Training of site personnel in proper waste management and chemical waste handling procedures • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular 	To implement good site practice for handling, sorting, reuse and recycling of C&D materials	Contractor	Work sites	Construction phase	Waste Disposal Ordinance (Cap.54) ETWB TCW No. 19/2005

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	<p>collection of waste</p> <ul style="list-style-type: none"> Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors 					
9.125	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 “Construction Site Drainage”	To enhance reuse of bentonite and proper disposal of residual bentonite slurry.	Contractor	Work sites	Construction phase	ProPECC PN 1/94
9.131	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	To collect sewage from site staffs properly.	Contractor	Work sites	Construction phase	
9.133	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	To separate general refuse from C&D material and proper disposal of the refuse	Contractor	Work sites	Construction phase	
9.135	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	To facilitate recycling of recyclable materials.	Contractor	Work sites	Construction phase	
9.137	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible	To proper handling of chemical waste	Contractor	Work sites	Construction phase	Waste Disposal (Chemical Waste) (General) Regulation

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	chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.					
9.142	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	To proper disposal of marine deposit according to the contamination level	Contractor	Work sites	Construction phase	ETWB TC(W) No.34/2002
9.148	The sludge tanks should be air-tighten. Rotating brushes or other alternative devises should be installed at the upper frame of the sludge tank washing facilities to provide better cleaning of the surface around the top loading opening of the sludge tanks. Prior to making such provision, the top covers of the sludge transfer tanks should be water cleaned manually after unloading.	To alleviate potential odour emitted from sludge tanks	Operator	SCISTW	Operation Phase	
9.150	Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life	To control potential odour emitted from sludge tanks	Operator	SCISTW	Operation Phase	

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	as specified by suppliers.					
G Terrestrial Ecology						
10.92	All the proposed construction activities would be confined to developed area and wasteland of very low ecological value.	To avoid direct impact to any natural habitats identified within the assessment area.	Project proponent	All the works areas, PTWs and SCISTW	Design phase of project	EIAO TM Annex 16
10.93	To implement effective noise mitigation measures as recommended in Section 4.	To minimise noise disturbance impact to the associated wildlife during the construction phase.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16
10.94	Dust control practices such as regular watering, complete coverage of any aggregate or dusty material storage piles, and re-schedule of dusty activities during high-wind conditions as well as other measures recommended in Section 3, should be implemented.	To minimize indirect dust impact to the nearby vegetation during the construction works.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16
10.95	Fences/hoardings should be erected and installed along the boundary of the works areas.	To minimise disturbance impact to the nearby habitats and the associated wildlife.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16
10.96	Standard good site practices as suggested in Section 10 should be implemented.	To minimise disturbance impact to the nearby habitats and the associated wildlife.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16

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10.97	Provision of proper drainage system and runoff control measures such as use of sand/silt traps, oil/grease separators, sedimentation tanks, etc.	To minimise site runoff of high level of sediment solids and other pollutants from entering the nearby water bodies.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16
10.98	Provision of compensatory planting of similar native tree species in no less than 1:1 compensatory ratio in terms of quality and quantity.	To compensate removal of individual trees directly affected by proposed works.	Contractor	All the works areas, PTWs and SCISTW	Post-construction phase	EIAO TM Annex 16 & ETWB TC (Works) No. 3/2006
H Marine Ecology						
11.135	To minimize the potential indirect impacts on water quality from construction site runoff and various construction activities, the practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted.	To minimize the potential indirect impacts on water quality	Contractor	All the works area, PTWs and SCISTW	Construction Phase	EIAO-TM
11.136	To avoid/minimize the impact to corals, it is proposed that they are translocated to the eastern end of the existing seawall, which has similar hydrographic parameters and supports healthy growth of the same species and is thus considered as a suitable recipient site (Figure 11.13). Coral translocation should be carried out during the winter season (November-March) in order to avoid disturbance to the transplanted colonies during the spawning period (i.e. July to October).	To reduce adverse impacts on coral colonies recorded in the works area by translocation to an unaffected site.	Sub-contractor	Aberdeen PTW	Pre-construction phase	EIAO-TM
11.137	Dredging works will not be carried out and sheet piles or silt curtains will be used to contain filling material used during demolition/re-construction of the seawall. Water quality modelling predicts that no adverse impact on water quality at the proposed recipient (Figure 11.13) site would occur during construction works. Following this, no construction phase monitoring on translocated coral would be required. However,					

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	post-translocation monitoring is suggested to be carried out every 3 months for one year. This would be carried out by a marine ecological specialist that is approved by the Director. Translocation plan for corals will be submitted to the Director for approval prior to the commencement of construction works.					
11.139	It is recommended that temporary sewage bypass should be programmed to avoid temporary sewage bypass in wet or bathing season (March to October) in order to minimize the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimize the impact of temporary discharges. Details are provided in the standalone EM&A Manual.	To minimize water quality impact resulting from planned temporary sewage bypass.	DSD	SCISTW	Design Stage and Construction Phase	EIAO-TM and WPCO
11.140	Emergency discharges of screened sewage from PTW's would be the consequence of power or equipment failure at SCISTW. Dual power supply would be provided at the SCISTW to minimize the occurrence of power failure. In addition, standby facilities for the main treatment units and standby equipment parts / accessories would also be provided at the SCISTW in order to minimize the chance of emergency discharge. To provide a mechanism to minimize the impact of emergency discharges and facilitate subsequent management of any emergency, an emergency contingency plan has been formulated to clearly state the response procedure in case of total power or equipment failure at SCISTW (details refer to the standalone EM&A Manual). The plant operators of SCISTW should closely communicate with relevant departments including EPD and LCSD during the emergency	To minimize water quality impact due to emergency discharge	DSD	SCISTW	Design stage and operation stage	EIAO-TM and WPCO

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	discharge. An event and action plan and a detailed water quality monitoring programme for the emergency discharge is given in a standalone EM&A Manual.					
I Landscape and Visual						
Table 13.7	<ul style="list-style-type: none"> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. Existing trees to be retained on site should be carefully protected during construction. Trees unavoidably affected by the works should be transplanted where practical. Compensatory tree planting should be provided to compensate for felled trees. Control of night-time lighting. Erection of decorative screen hoarding compatible with the surrounding setting. 	To minimise potential visual intrusion to existing VSRs and compensate the possible loss of greenery from the Project	DSD	All the works areas, PTWs and SCISTW	Construction phase	EIAO-TM Annex 10, 18 ETWB TCW 2/2004 ETWB TCW No. 3/2006
Table 13.8	<ul style="list-style-type: none"> Aesthetic design of the façade of PTW and associated structures to harmonize with the surrounding settings. Shrub and Climbing Plants to soften proposed structures / Roof Greening. Buffer Tree and Shrub Planting to screen proposed associated structures. Reinstated of disturbed area 	To minimise potential visual intrusion to existing VSRs and compensate the possible loss of greenery from the Project	DSD	All the works areas, PTWs and SCISTW	Operation phase	EIAO-TM Annex 10, 18 ETWB TCW 2/2004 ETWB TCW No. 3/2006

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J						
Hazard to Life						
14A.198 & 14A.203	Limiting magnitude of ground settlement associated with shafts & tunnels construction, excavation and seawall demolition to 13mm and subject to requirements from relevant authorities.	To prevent damage to gas facilities with the HKCG Depot.	Contractor	Vibration and ground monitoring along boundary of HKCG Depot and perimeter of the gas holder for the Aberdeen project	Construction Phase	
14A.199 & 14A.204	Limiting of the vibration levels associated with the blasting programme for the Tunnel P, shafts and other construction works (including demolition & reconstruction of seawall, excavation for seawater pump house at the Aberdeen PTW) at the PTW sites to a peak particle velocity of 5mm/s and subject to requirements from relevant authorities. Moving array of sensors will be used as the tunnel is advanced.	To prevent any structural damage to HKCG Aberdeen Depot and Ap Lei Chau Shell Depot particularly the LPG compound.	Contractor	Monitoring will be undertaken at ground level.	Construction Phase	
14A.201	Limiting use of cranes in terms of locations, lifting height, swing angle and setting up safety zone.	To ensure allowable limits are not exceeded	Contractor	Exact location will be determined on site by the engineer	Construction Phase	
14A.205	Installation of gas leakage detector/alarm system in LPG compound at Ap Lei Chau Site.	To provide early warning of gas leakage in the LPG facilities	Contractor	Exact location will be determined on site by the contractor with the approval of SHELL.	Construction Phase	
14A.206	Establish emergency plan and procedures	To evacuate construction workers to a safe place during gas leakage in the gas facilities	Contractor	Construction sites for Aberdeen and Ap Lei Chau PTWs	Construction Phase	

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
14C.64	<p><i>Special Chemical Supply Contract Arrangement</i></p> <ul style="list-style-type: none"> A separate supply contract will be awarded for each of the three chemicals (sodium hypochlorite, sodium bisulphite and ferric chloride solutions). Chemical supplier will be required to provide dedicated transport specifically used for delivering the chemical to be supplied, and the road tankers will need to be registered with SCISTW. In addition, the supply contract for sodium hypochlorite will specify that the delivery barge provided will be dedicated for delivering sodium hypochlorite directly and exclusively from the supplier's production plant to SCISTW during the contract period. The delivery barge will not be allowed to provide other services, such as carrying other chemical or carrying chemicals to other facilities other than SCISTW. 	<p>To minimize the risk due to chemicals-related operation</p> <p>To minimize the risk due to chemicals-related operation</p>	<p>DSD</p> <p>Chemical Supplier</p>	<p>SCISTW</p> <p>SCISTW</p>	<p>Operational phase</p> <p>Operational Phase</p>	
14C.71-14C.72	<p><i>Dedicated Chemical Delivery Route and Road Signs</i></p> <ul style="list-style-type: none"> Specific road tanker transport route will be assigned to each chemical. Provide road signs on service road indicating the route to specific chemical storage area. 	<p>To minimize the risk due to chemicals-related operation</p>	<p>DSD and chemical supplier</p>	<p>SCISTW</p>	<p>Operational phase</p>	
14C.73	<p><i>Security of Chemical Loading Points</i></p> <ul style="list-style-type: none"> Chemical delivery staff will need to register with SCISTW staff upon entering the site. Loading points for ferric chloride, sodium hypochlorite and sodium bisulphite will be secured by locks and the keys will be kept by SCISTW staff. The chemical unloading operation cannot start without presence of SCISTW staff to open the locks. 	<p>To minimize the risk due to chemicals-related operation</p>	<p>DSD and chemical supplier</p>	<p>SCISTW</p>	<p>Operational phase</p>	
14C.77	<p><i>Clear Labelling of Chemicals-related Equipment</i></p> <ul style="list-style-type: none"> Provide clear and sufficient signage / labels to indicate 	<p>To minimize the risk due to chemicals-related</p>	<p>Chemical</p>	<p>SCISTW</p>	<p>Operational phase</p>	

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	the identity (i.e. for which chemical) of each tank farm and associated equipment including pipelines, loading points and loading hoses.	operation	Supplier			
14.C78	<p><i>Ensuring Quality of Chemical Supplier</i></p> <ul style="list-style-type: none"> Only appoint chemical suppliers with satisfactory quality system. Request the chemical supplier to employ an independent checker to audit the quality and safety management system of the supplier The chemical supplied to SCISTW can only be produced in designated chemical production plants and delivered directly from designated locations. This measure will be included in the chemical supply contract. 	To minimize the risk due to chemicals-related operation	DSD / chemical supplier	N/A	Operational phase	
14C.79-14C.84	<p><i>Procedural Control of Chemical Unloading Operation</i></p> <ul style="list-style-type: none"> Develop clear procedural controls for barge / road tanker filling and unloading operation. SCISTW staff will be present at the tank area to receive the barge / road tanker, check barge / road tanker labels, check the transport documents carried by the barge crew / road tanker driver, check type, size and colour of coupling and hose coupler, conduct chemical analysis to check the identity of delivered chemical and only then authorize the driver to unload the content. Chemical supplier needs to fax or electronically transmit copies of delivery bills-of-lading information and barge crew / road tanker driver identification to SCISTW prior to delivery barge / road tanker arriving on-site. Such information will be in compliance with the supplier's 	To minimize the risk due to chemicals-related operation	DSD	N/A	Operational phase	
		To minimize the risk due to chemicals-related operation	DSD and Chemical Supplier	SCISTW	Operational phase	
		To minimize the risk due to chemicals-related operation	Chemical Supplier	SCISTW	Operational phase	

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	<p>independently accredited quality assurance system (to ISO:9000 or equivalent).</p> <ul style="list-style-type: none"> Conduct chemical analysis to confirm the right chemical is delivered. The analysis needs to be conducted by SCISTW staff or independent checker before the chemical is authorized to be unloaded to the tank farm. If the coupling of hose connected to the barge / road tanker is found to be unmatched with the coupling of loading point of tank farm, chemical unloading operation must not proceed and the situation must be reported to the SCISTW management for follow-up actions. Chain-of-custody documentation system will be used to ensure both the supplier (factory) and SCISTW staffs have checked the chemical identity and the consistency of the chemical analysis result. 	<p>To minimize the risk due to chemicals-related operation</p> <p>To minimize the risk due to chemicals-related operation</p> <p>To minimize the risk due to chemicals-related operation</p>	<p>DSD or Independent Checker</p> <p>DSD and Chemical Supplier</p> <p>DSD and Chemical Supplier</p>	<p>SCISTW</p> <p>SCISTW</p> <p>Chemical Supply Factory and SCISTW</p>	<p>Operational phase</p> <p>Operational phase</p> <p>Operational phase</p>	
14C.88	<p><i>Special Arrangement of SCISTW Public Event</i></p> <ul style="list-style-type: none"> Public events might sometimes be held in SCISTW which allow access of public to the plant facilities. As a precautionary measure, chemical delivery operation will be suspended on days of SCISTW public event. Also, public members visiting the SCISTW will be guided by DSD staff and will not be allowed to visit the area near the chemical storage locations in SCISTW. 	<p>To minimize the risk due to chemicals-related operation</p>	DSD	SCISTW	Operational phase	
14C.167	<ul style="list-style-type: none"> Increase the height to 3.0m of a (12m + 10m =) 22m long section of the bund wall around the northernmost storage tank (which is the tank closest to the hypochlorite pipeline to the west). 	<p>To prevent mixing of ferric chloride and hypochlorite in case of simultaneous failure of storage tank and</p>	DSD	SCISTW	Design phase	

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14C.180	<p><i>Mitigation measures during construction protecting the sodium hypochlorite pipelines and ferric chloride tank farm.</i></p> <p><i>General:</i></p> <ul style="list-style-type: none"> • Employ vibration detectors and settlement markers • Develop action plan(s) for situations where vibration or settlement level is found to exceed the set limits • Designated delivery route and off-loading area for delivery trucks • Close supervision and monitoring by safety officers. If there is any construction work within 2m of the pipelines, an immediate inspection to the pipeline section and the impervious membrane wrapping should be conducted to ensure no damage to the integrity of the pipeline and the membrane Report any damage of the disinfection facilities to operators for remedial actions. • Provide indication / signs for sodium hypochlorite and ferric chloride pipelines • Regular checking of chemical delivery pipelines • Provide a physical barrier between the sodium hypochlorite tanks and the ferric chloride tanks during the construction stage before the new above ground structures for HATS Stage 2A are erected <p><i>Other construction activities:</i></p> <ul style="list-style-type: none"> • Excavation running close or parallel to sodium hypochlorite delivery pipelines and associated impervious membrane wrapping under road / pavement shall be avoided as far as possible • Use bore piles instead of percussion piles in order to keep vibration to a minimum • Maximise the distance between piling and delivery pipelines, as well as the associated impervious 	<p>pipelines</p> <p>To minimize the risk of damaging the disinfection facilities</p>	Contractor	Construction Site at SCISTW	Construction phase	

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	<p>membrane wrapping. Monitor vibration resulted from construction works to ensure the velocity and amplitude of vibration limit will not be exceeded</p> <ul style="list-style-type: none"> • Conduct hazard assessment for E&M installation and obtain Hot Work Permit before starting welding / hot works • Check and certify the stability of the construction equipment • Location of any large-scale or high-elevated equipment should be agreed with SCISTW operator before delivery • Confine hot works in designated areas. • Area within the boundaries of chemical storage facilities are subject to hazardous area control • Maximise the distance between the tunnel shaft and delivery pipelines 					
K Cultural Heritage						
Tables 15.8 - 15.11	<ul style="list-style-type: none"> • The construction vibration control limit (ppv of 25mm/s) shall be strictly followed. 	To minimize vibration impacts on the identified vibration sensitive historical buildings.	Project Proponent	Identified historical buildings/structures as mentioned in Tables 15.8, 15.9, 15.10 and 15.11	During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	
15.70	<ul style="list-style-type: none"> • Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme 	To ensure that acceptable vibration limits for historical buildings are not	Project Proponent	Identified historical buildings/structures as mentioned in Tables 15.8, 15.9,	During blasting for tunnel, shafts, effluent conveyance system and	

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		exceeded		15.10 and 15.11	disinfection facilities in the vicinity of the buildings/ structures	