

Appendix 11.1 Implementation Schedule of Environmental Protection Measures for the Project

EIA & EM&A Ref. ⁽¹⁾	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
3. Air Quality Measures								
S3.8	Relevant dust control measures stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i> , and good site practices will be incorporated as the Contract Specifications for implementation throughout the construction period. These include: <ul style="list-style-type: none">• The works area for site clearance and excavation should be sprayed with water before, during and after the operation so as to maintain the entire surface wet.• Restricting heights from which materials are to be dropped, as far as practicable to reduce the fugitive dust arising from unloading/ loading.• Immediately before leaving a construction site, all vehicles should be washed to remove any dusty materials from the bodies and wheels. However, all spraying of materials and surfaces should avoid excessive water usage.• Where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials will not leak from the vehicle.• Erection of hoarding along the site boundary, where appropriate.• Any stockpile of dusty materials should be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and three sides.• All dusty materials should be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.• Reduce the traffic induced dust dispersion and re-suspension, the travelling speed of vehicles within the site should be controlled.• Regular maintenance of construction equipment deployed on-site will be	Whole Site / Construction Phase	Contractor(s)		✓			Air Pollution Control (Construction Dust) Regulation

⁽¹⁾ Unless otherwise stated, the reference refers to the relevant section of the EIA Report.

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	conducted to prevent black smoke emission.							
S3.8	Excavated river bed materials that are placed on trucks for disposal should be properly covered with tarpaulin sheets during transportation to minimise the release of any potential odour. The odorous excavated material should be placed as far away from the sensitive receivers as possible. Odorous river bed material excavated during construction phase should be removed off-site as soon as practicable within 24 hours to avoid any odour nuisance.	Whole Site / Construction Phase	Contractor(s)		✓			-
S3.8	During operation phase, mitigation measures are considered necessary when materials generated from the maintenance works are found to be odorous, and the following measures should be implemented by the Contractor. <ul style="list-style-type: none"> Temporarily stockpile odorous material as far away from ASRs as possible; Temporary stockpiles of odorous material will be properly covered with tarpaulin and should be removed off-site as soon as practically possible within 24 hours to avoid any odour nuisance arising; and Regular inspection at inlet chamber of existing pumping facilities to prevent accumulation of debris/materials at the inlet screens causing odour nuisance. 	Whole Site / Operation Phase	Project Proponent				✓	-
4. Noise								
S4.8	<u>Good Construction Site Practice</u> Good construction site practice and noise management can considerably reduce the potential noise impact of the construction activities on nearby NSRs. The noise benefits of these practices can vary according to specific site conditions and operations. Since the effect of the good construction site practices could not be quantified, the mitigated noise levels calculated in the subsequent sections have not taken account of this effect. The following site practices should be followed during the construction of the Project: <ul style="list-style-type: none"> Only well-maintained plant should be operated on-site and plant should be 	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM

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	<p>served regularly during the construction phase;</p> <ul style="list-style-type: none"> Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction phase; Mobile plant, if any, should be sited as far away from NSRs as possible; Machines and plant (such as trucks) 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, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 							
S4.8	<p><u>Use of Quiet PME</u></p> <p>The use of quiet PME is considered to be a practicable means to mitigate the construction noise impact. Quiet PME is defined as a PME having actual SWL lower than the value specified in the GW-TM. The total SWL of all plant items to be used on-site at each works area will be specified so that flexibility is allowed for the Contractor to select plant items to suit the construction needs.</p>	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM GW-TM
S4.8	<p><u>Adoption of Movable Noise Barriers</u></p> <p>The use of noise barriers will be an effective means to mitigate the noise impact arising from the construction works, particularly for low-rise NSRs. With reference to EIAO Guidance Note No. 9/2010 Preparation of Construction Noise Assessment Under the Environmental Impact Assessment Ordinance (EIAO GN No. 9/2010), the use of movable barrier for certain PME could generally provide a 5 dB(A) reduction for movable PME and 10 dB(A) for stationary PME.</p>	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM EIAO Guidance Note No. 9/2010
S4.8	<p><u>Use of Noise Insulation Sheet</u></p> <p>Noise insulating sheet would be adopted for PME such as drill rig. The noise</p>	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM

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	insulating sheet should be deployed such that there would be no opening or gaps on the joints. With reference to the approved EIA Report for West Island Line (WIL) (Register No.: AEIAR-126/2008 approved on 23 Dec 2008) and MTRC Contract C4420 Tsim Sha Tsui Modification Noise Assessment Report for VEP (July 2003), a reduction of over 10 dB(A) could be achieved with the use of the noise insulating sheet. For a conservative assessment, a noise reduction of 10 dB(A) for the PME with deployment of noise insulating sheet was assumed in this assessment.							
S4.8	<p><u>Adoption of Fixed Temporary Noise Barriers</u></p> <p>In view of the close proximity between NSRs and the works areas for revitalisation works inside nullah, fixed temporary noise barriers will be deployed at the working section as far as practicable. Fixed temporary noise barriers of 3m in height with skid footing should be used and located within a few metres of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. The noise barrier material should have a sufficient surface density of at least 7 kg/m² and have no openings or gaps. Reference has been made to EIAO GN No. 9/2010; it is anticipated that the major noise source of movable PMEs, such as breaker, water pump, concrete lorry mixer and excavator, will be located within the nullah at a level lower than the top of the proposed fixed temporary noise barrier, and therefore these barriers could produce at least a 5 dB(A) noise reduction.</p>	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM
S4.8	<p><u>Scheduling of PME / Construction Activities</u></p> <p><i>The maximum predicted construction noise level at the nearest secondary school is 69 dB(A). This comply with the noise criteria of 70dB(A) during normal school days but exceed the criteria of 65 dB(A) during examination period. However, this potential exceedance can be avoided with following arrangement:</i></p> <ul style="list-style-type: none"> The contractor could liaise with the school management about the arrangements during examination weeks; and 	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM

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	<ul style="list-style-type: none"> PMEs shall not be used at the closest works areas (i.e. near CCHS1) during the examination period; 							
S4.8	<p><u>Quieter Methods</u></p> <p>Handheld or excavator mounted concrete breaker is a traditional mechanical equipment for concrete breaking and removal. Using such equipment will generate loud noise, with sound power levels generally range from 108 dB(A) to 122 dB(A). The adoption of quieter equipment or methods for concrete breaking or removal could be less noisy or could reduce the noise propagation when necessary. These include high pressure water jet system, handheld concrete crusher, medium duty breaker, blade saw, wire saw and noise enclosure. These measures shall be adopted if the use of quiet PME is not sufficient in reducing the construction noise level.</p>	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM
S4.8	<p>While no unacceptable noise impact is expected due to the operation of fixed plant items, it is still recommended that the following measures be implemented as far as practicable to minimise the potential impact:</p> <ul style="list-style-type: none"> Quieter plant should be chosen as far as practical; Include noise levels specification when ordering new plant items; All openings, including louvres for ventilation and machine room doors should be oriented away from the NSRs as far as practicable; Silencers, acoustic louvres or acoustic doors should be used where necessary; and Develop and implement a regularly scheduled plant maintenance programme so that plant items are properly operated and serviced. The programme should be implemented by properly trained personnel 	YLBS / Detailed Design Phase and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	EIAO-TM Noise Control Ordinance (NCO)
S4.8	Testing and commissioning of the proposed pumping stations would be carried out prior to operation. Noise monitoring would be carried out by the Contractor to ensure fixed noise sources impact would comply with the relevant noise standards.	YLBS / Prior to Operation	Contractor(s)				✓	EIAO-TM NCO

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5. Water Quality								
S5.8	<u>General Construction Site Practice</u> The Contractor should observe and comply with the <i>Water Pollution Control Ordinance</i> and its subsidiary regulations and obtain a discharge license under the Ordinance. The Contractor should carry out the Project works in such a manner as to minimize adverse impacts on the water quality during execution of the works. In particular, the Contractor should arrange the working method to minimize the effects on the water quality within and outside the Project Site and on the transport routes. In addition, the management of construction site drainage from the Project will follow guidelines provided in <i>ProPECC PN 1/94</i> .	Whole Site / Construction Phase	Contractor(s)		✓			Water Pollution Control Ordinance (WPCO) EIAO-TM ProPECC PN 1/94
S5.8	<u>Concreting Works</u> Runoff should be carefully channelled to prevent concrete-contaminated water from entering watercourses. Adjustment of pH can be achieved by adding a suitable neutralising reagent to wastewater prior to discharge. Re-use of the supernatant from the sediment pits for washing out of concrete lorries should be practised. Any exceedance of acceptable range of pH levels in the nearby water bodies caused by inadvertent release of site runoff containing concrete should be monitored and rectified under the EM&A programme for this Project.	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM ProPECC PN 1/94
S5.8	<u>Construction Site Runoff and Drainage</u> Proper site management measures should be implemented to control site runoff and drainage, and thereby prevent high sediment loadings from reaching downstream sections of the river/stream. The Contractor should follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures. The design of the mitigation measures should be submitted by the Contractor to the Engineer for approval. These mitigation measures shall include the following practices to minimize site surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge:	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM ProPECC PN 1/94

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	<ul style="list-style-type: none"> Before commencing any work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains. Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of the construction works. Temporary ditches such as channels, earth bunds or sand bag barriers should be included to facilitate runoff discharge into the stormwater drain, via a sand/silt basin/trap. Works programme should be designed to minimize works areas at any one time, thus minimizing exposed soil areas and reducing the potential for increased siltation and runoff. Sand/silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand/silt particles from run-off where necessary. These facilities should be properly and regularly cleaned and maintained. These facilities should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. Careful programming of the works to avoid excavation works during the rainy season. Temporary access roads (if any) should be protected by crushed gravel and exposed slope surfaces shall be protected when rainstorms are likely; and Open stockpiles of construction materials on-site should be covered with tarpaulin or similar fabric during rainstorms to prevent erosion. 							
S5.8	<p><u>Use of Containment Structures and Diversion Channels</u></p> <p>The use of containment structures and diversion channels is recommended wherever practicable to facilitate a dry or at least confined excavation within the nullah. For example, nullah water should be contained within the works area before the commencement of excavation by the use of concrete blocks or sand bag barriers. Water within the contained area should be discharged to the nullah before excavation commences to create the dry conditions. Dredging/sediment removal works shall not be carried out in open waters. Nullah water should also be diverted from the works area through the use of diversion channel constructed by materials</p>	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM

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	such as concrete blocks. Indicative details of the containment structures and diversion channels are provided in <i>Drawing No. 400171/B&V/EIA/503</i> and would be provided by the Contractor to the Engineer for approval before commencement of construction works for the Project. By limiting or confining the works areas the extent of disturbance to the surrounding water bodies will be significantly reduced, and thus resulting impacts on water quality from sediment re-suspension will be reduced. These measures will be implemented to ensure compliance with the Water Pollution Control Ordinance and its subsidiary regulations.							
S5.8	<p><u><i>Sewage and Wastewater Discharge</i></u></p> <p>All discharges during the construction phase of the Project are required to comply with the <i>Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-ICW)</i> issued under Section 21 of the WPCO. Domestic sewage/wastewater generated by workforce on-site should be collected in a suitable storage facility such as portable chemical toilets. An adequate number of portable toilets will be provided during the construction phase. These toilets should be maintained in a state that will not deter the workers from using them. The collected sewage/wastewater will be discharged into the foul sewer or transferred to the Government sewage treatment works by a licensed collector.</p>	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-ICW)
S5.8	<p><u><i>Storage and Handling of Oil, Other Petroleum Products and Chemicals</i></u></p> <p>The following mitigation measures should be implemented for the storage and handling of oil, other petroleum products and chemicals:</p> <ul style="list-style-type: none"> Waste streams classifiable as chemical wastes should be properly stored, collected and treated for compliance with <i>Waste Disposal Ordinance or Disposal (Chemical Waste) (General) Regulation requirements</i>. All fuel tanks and chemical storage areas should be provided with locks and be sited on paved areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters. Waste oil should be collected and stored for recycling or disposal, in 	Whole Site / Construction Phase	Contractor(s)		✓			Waste Disposal Ordinance (WDO) Waste Disposal (Chemical Waste) (General) Regulation

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	<p>accordance with the Waste Disposal Ordinance.</p> <ul style="list-style-type: none"> Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should, as far as possible, be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. 							
S5.8	<p><u>Handling of Spillage / Leakage</u></p> <p>In the event that accidental spillage or leakage of hazardous substances / chemical wastes occur, the response procedures as listed below should be followed. It should be noted that the procedures below are not exhaustive and the contractor should propose other response procedures in the emergency contingency plan based on the particular types and quantities of chemicals or hazardous substances used, handled and stored on-site.</p> <ul style="list-style-type: none"> Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the <i>Waste Disposal Ordinance</i>. Instruct untrained personnel to keep at a safe distance well away from the spillage area. If the spillage / leakage involves highly toxic, volatile or hazardous waste, initiate emergency evacuation and call the emergency service. Only trained persons equipped with suitable protective clothing and equipment should be allowed to enter and clean up the waste spillage / leakage area. Where the spillage/ leakage is contained in the enclosed storage area, the waste can be transferred back into suitable containers by suitable handheld equipment, such as hand operated pumps, scoops or shovels. If the spillage / leakage quantity is small, it can be covered and mixed with suitable absorbing materials such as tissue paper, dry soft sand or vermiculite. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. For spillage / leakage in other areas, immediate action is required to contain the spillage / leakage. Suitable liquid absorbing materials such as tissue paper, dry soft sand or vermiculite should be used to cover the spill. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. 	Whole Site / Construction Phase	Contractor(s)		✓			WDO

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	<ul style="list-style-type: none"> Areas that have been contaminated by chemical waste spillage / leakage should be cleaned. While water is a soluble solvent for aqueous chemical wastes and water soluble organic waste, kerosene or turpentine should be used for organic chemical wastes that are not soluble in water. The waste from the cleanup operation should be treated and disposed of as chemical waste. In incidents where the spillage/ leakage may result in significant contamination of an area or risk of pollution, the EPD should be informed immediately. 							
S5.8	<p><u>Maintenance Works</u></p> <p>Maintenance may be necessary for the revitalised YLTN at regular intervals to remove excessive silts, vegetation, debris and obstruction.</p> <p>The following considerations should be included in planning for the maintenance works during operation:</p> <p>(a) Maintenance of the channels should be restricted to annual silt removal when the accumulated silt will adversely affect the hydraulic capacity of the channel, except during emergency situations where flooding risk is imminent. Desilting should be carried out by hand or light machinery during the dry season (October to March) when water flow is low.</p> <p>(b) Phasing of the works should be considered to better control and reduce any impacts caused. Where possible, works should be carried out along half width of the drainage channel in short sections. A free passage along the drainage channel is necessary to avoid forming stagnant water in any phase of the works.</p> <p>(c) Containment structures (such as sand bags barrier) should be provided for the desilting works area to facilitate a dry or at least confined working area within the drainage channel.</p> <p>(d) The locations for the disposal of the removed materials should be identified and agreement sought with the relevant departments before commencement of the maintenance works. Temporary stockpile of waste materials should be</p>	Whole Site / Operation Phase	Project Proponent				✓	-

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	located away from the channel and properly covered. These waste materials should be disposed of in a timely and appropriate manner. (e) Effective temporary flow diversion scheme should be implemented and the generated wastes should be collected and disposed off-site properly to avoid adversely affecting the water quality of the drainage system.							
S5.8	Practicable designs including energy dissipators or orientation of the pump outlets will be optimised in the detail design stage to dissipate excess energy of flowing water downstream such that the hydraulic performance of the downstream will be similar to the existing condition.	Operation Phase	Contractor(s)	✓				
S5.11 of EIA and S5.2 of EM&A Manual	Baseline monitoring should be undertaken for three times per week for a period of four weeks before commencement of the construction works to establish baseline water quality conditions of the area. Impact monitoring should be undertaken for three times per week during the construction period to obtain water quality data of the area throughout the construction period for comparison with the baseline water quality data and hence determine any water quality impacts from the construction activities. Post Project monitoring should also be undertaken three times per week for four weeks after the completion of construction works. The following parameters will be monitored under the water quality monitoring programme: <ul style="list-style-type: none"> pH (in situ measurement); Water temperature (°C) (in situ measurement); Salinity (ppt) (in situ measurement); Dissolved Oxygen (DO) (% saturation and mg/L) (in situ measurement); Turbidity (NTU) (in situ measurement); and Suspended Solids (SS) (mg/L) (laboratory analysis). 	Upstream and downstream of the Work Area / Before, During and After Construction	ET and IEC	✓	✓	✓		EIAO-TM
S5.11	Weekly site inspections and audits will be conducted to ensure that the recommended mitigation measures are properly implemented during the construction stage.	Whole Site / Construction Phase	ET and IEC		✓			EIAO-TM

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6. Waste Management								
S6.6	<u>General</u> The HKSAR Government's construction and demolition waste management policy follows the same hierarchy as for other wastes i.e. in order of desirability: avoidance, minimisation, recycling, treatment and safe disposal of waste. Training of construction staff should be undertaken by the contractor about the concept of site cleanliness and appropriate waste management procedures. The contractor should 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. Requirements for staff training should be included in the contractor’s Environmental Management Plan (EMP). Good planning and site management practice should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Proper storage and site practices will minimise the damage or contamination of construction materials. Where waste generation is unavoidable, the potential for recycling or reuse should be rigorously explored. If waste cannot be recycled, disposal routes described in the EMP should be followed. A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be implemented. In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to <i>DEVB TC(W) No. 6/2010</i> for details. Regular cleaning and maintenance of the waste storage area should be provided. Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. These measures include: • Surface of stockpiled soil should be regularly wetted with water especially	Whole Site / Detailed Design and Construction Phase	Detailed Design Engineer / Contractor(s)	✓	✓			WDO DEVB TC(W) No 6/2010 ETWB TC(W) No. 19/2005

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	<p>during dry season;</p> <ul style="list-style-type: none"> Disturbance of stockpiled soil should be minimized; Stockpiled soil should be properly covered with tarpaulin especially when heavy rain storms are predicted; Stockpiling areas should be enclosed where space is available; Stockpiling areas should be located away from the water bodies; and An independent surface water drainage system equipped with silt traps should be installed at the stockpiling area. <p>The identification of final disposal sites for C&D materials generated by the construction works will be considered during the detailed design stage of the Project when the volume and types of C&D materials can be more accurately estimated. The Public Fill Committee of CEDD should be consulted on designated outlets (e.g. public filling area) for public fill, whilst EPD should be consulted on landfills for C&D waste. Disposal of C&D waste to landfill must not have more than 50% (by weight) inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight.</p> <p>In order to avoid dust or odour impacts, any vehicle leaving a works area carrying C&D waste or public fill should have their load covered up before leaving the construction site.</p> <p>C&D materials should be disposed of at designated public fill reception facilities or landfills. Disposal of these materials for the use at other construction projects is subject to the approval of the Engineer and/or other relevant reception authorities. Furthermore, unauthorized disposal of C&D materials in particular on private agricultural land is prohibited and may be subject to relevant enforcement and regulating actions. The disposal of public fill and C&D waste will be controlled through trip-ticket system in accordance with DEVB TC(W) No. 6/2010.</p>							
S6.6	<p><u>On-site Sorting, Reuse and Recycling</u></p> <p>All waste materials should be segregated into categories covering:</p> <ul style="list-style-type: none"> Inert C&D materials suitable for reuse on-site; 	Whole Site / Construction Phase	Contractor(s)		✓			WDO WBTC Nos. 6/2002 and 6/2002A

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	<ul style="list-style-type: none"> • Inert C&D materials suitable for public fill reception facilities; • Recyclable C&D waste for recycling; • Remaining C&D waste for landfill; • Chemical waste; and • General refuse for landfill. <p>Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes.</p> <p>Sorting is important to recover materials for reuse and recycling. Specific area should be allocated for on-site sorting of C&D materials and to provide a temporary storage area for those sorted materials. If area is limited, all C&D materials should at least be sorted on-site into inert and non-inert components. Non-inert materials (C&D waste) such as bamboo, timber, vegetation, packaging waste and other organic materials should be reused and recycled wherever possible and disposed of to designated landfill only as a last resort. Inert materials (public fill) such as concrete, stone, clay, brick, soil, asphalt and the like should be separated and reused in this or other projects (subject to approval by the relevant parties in accordance with the <i>DEVB TC(W) No. 6/2010</i>) before disposed of at a public filling facility operated by CEDD. Steel and other metals should be recovered from demolition waste stream and recycled.</p> <p>The reuse of inert materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials. With the use of a crusher coarse material can be crushed to make it suitable for use as fill material where fill is required in the works. This minimises the use of imported material and maximises use of the C&D material produced.</p>							<p>DEVB TC(W) No. 6/2010</p> <p>ETWB TC(W) No. 19/2005</p>
S6.6	<p><u>Excavated Sediments</u></p> <p>The sediment should be excavated, handled, transported and disposed of in a manner that would minimize adverse environmental impacts.</p> <p>Requirements of the Air Pollution Control (Construction Dust) Regulation, where</p>	Works Site requiring sediment excavation / Construction	Contractor(s)		✓			<p>Air Pollution Control (Construction Dust) Regulation</p> <p>ETWB TC(W) No. 34/2002</p>

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	<p>relevant, shall be adhered to during excavation, transportation and disposal of the sediment.</p> <p>In order to minimize the exposure to contaminated materials, workers shall, if necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site.</p> <p>For off-site disposal, the basic requirements and procedures specified under ETWB TC(W) No. 34/2002 shall be followed. Marine Fill Committee (MFC) of CEDD is managing the disposal facilities in Hong Kong for the excavated sediment, while EPD is the authority of issuing marine dumping permit under the Dumping at Sea Ordinance (DASO).</p> <p>To ensure disposal space is allocated for the Project, the Project Proponent should be responsible for obtaining agreement from MFC on the rationale for sediment removal and the allocation of the disposal site. The contractor(s), on the other hand, should be responsible for the application of the marine dumping permit under DASO from EPD for the sediment disposal.</p> <p>The excavated sediments are expected to be loaded onto the barge at public barging point of which the exact location will be determined by the contractor(s) and agreed by EPD/CEDD and transported to the designated disposal sites allocated by MFC. The excavated sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002.</p> <p>Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiling areas for contaminated sediments should be paved with impermeable linings to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be</p>	Phase						<p>Dumping at Sea Ordinance (DASO)</p> <p>WPCO</p> <p>WDO</p>

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	<p>collected and discharged according to the Water Pollution Control Ordinance (WPCO).</p> <p>In order to minimize the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments shall be wetted during excavation / material handling and shall be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.</p> <p>The barge transporting the sediments to the designated disposal sites shall be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.</p>							
S6.6	<p><u>Chemical Waste</u></p> <p>Where the construction processes produce chemical waste, the contractor must register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD. An updated list of licensed chemical waste collector can be obtained from EPD.</p> <p>Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector.</p> <p>Chemical waste should be stored away from channels or water bodies.</p>	Whole Site / Construction Phase	Contractor(s)		✓			<p>Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</p> <p>DEVB TC(W) No. 6/2010</p>

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	<p>Suitable containers should be used for specific types of chemical wastes. The containers should be properly labelled (in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, stored safely and closely secured. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space.</p> <p>Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.</p> <p>Lubricants, waste oils and other chemical wastes are likely to be generated during construction. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill.</p> <p>The registered chemical waste producer (i.e. the contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes.</p> <p>No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water</p>							

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	runoff from the construction site.							
S6.6	<p><u>General Works Waste</u></p> <p>Concrete Waste</p> <p>Dry concrete waste (considered as public fill) should be sorted out from the other wastes and recycled for reuse or sorted out for disposal at designated public filling facilities.</p> <p>Wooden Materials</p> <p>All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being disposed of to landfill.</p> <p>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.</p> <p>Only waste material need be taken to a landfill. It should be separated from recyclable wood and steel materials. As for all waste types these materials should be reused on-site or other approved sites before disposal is considered as an option. Disposal to landfill should only be considered as a final option. Contractors are responsible for storage of re-useable materials on-site.</p> <p>General Refuse</p> <p>General refuse generated on-site should be stored in enclosed bins or skips and</p>	Whole Site / Construction Phase	Contractor(s)		✓			WDO WBTC No. 19/2001

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	<p>collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the contractor to facilitate the collection of refuse by licensed contractors. The removal of waste from the site should be arranged on a daily or at least on every second day by the contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste.</p> <p>The recyclable component of the general 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.</p> <p>Floating Refuse</p> <p>Any floating refuse trapped within the Project Area shall be collected by contractor and disposed to landfill.</p>							
S6.6	The screenings, silt materials and debris collected during operation and maintenance should be properly packed and transported to the designated landfill for disposal as soon as possible. All chemical waste should be properly stored, labelled and removed by licensed waste collectors in accordance with Waste Disposal (Chemical Waste) (General) Regulation.	Whole Site / Operation Phase	Project Proponent				✓	Waste Disposal (Chemical Waste) (General) Regulation
S6.9	<p>To facilitate monitoring and control over the contractors' performance on waste management, a waste monitoring and audit programme will be implemented throughout the construction phase and a Waste Management Plan (WMP) will be prepared and implemented by the contractor in accordance with ETWB TC(W) No. 19/2005. The aims of the monitoring and audit programme are:</p> <ul style="list-style-type: none"> To review the WMP, which will form part of the EMP in accordance with ETWB TC(W) No. 19/2005, including the quantities and types of C&D materials generated, reused and disposed of off-site; the amount of fill materials exported from/imported to the site and the quantity of timber used in temporary 	Whole Site / Construction Phase	Contractor(s)		✓			WDO ETWB TC(W) No. 19/2005

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	<p>works construction for each process/activity;</p> <ul style="list-style-type: none"> To monitor the implementation and achievement of the WMP on site to assess its effectiveness; and To monitor the follow-up actions on deficiencies identified. <p>Site inspections will be undertaken each week. Particular attention will be given to the contractor's provision of sufficient spaces, adequacy of resources and facilities for on-site sorting and temporary storage of C&D materials. The C&D materials to be disposed of from the site will be visually inspected to ensure the absence of non-inert materials (e.g. general refuse, timber, etc.). The waste to be disposed of at landfills will as practicable contain no observable inert or reusable/recyclable C&D materials (e.g. soil, broken rock, metal, and paper/cardboard packaging, etc.). Any irregularities observed during the site inspections will be raised promptly to the contractor for rectification.</p> <p>The findings of the waste inspections will be reported in the monthly Environmental Monitoring and Audit Report.</p>							
7. Ecological								
	Avoidance							
S7.8	While the Project Site is situated within the WBA, the site and construction works are designed to be confined to the Yuen Long Town Nullah that direct impacts on all other recognized sites of conservation importance including Ramsar Site, Priority Site, WCA, WBA (outside the Project Site), SSSI and CA would be avoided.	Whole Site / Detailed Design Phase	Detailed Design Engineer	✓				EIAO-TM
S7.8	According to the ecological survey data from present study, Shan Pui River recorded a relatively higher abundance of waterbirds in dry season. In order to minimize the construction noise disturbance on the nearby wetland habitats and the associated disturbance-sensitive overwintering/migratory waterbirds, which are most abundant during the dry season months, the comparatively disturbing construction works i.e. percussive piling works and demolition using breakers mounted on excavators, would therefore be scheduled outside the dry season (i.e. November to March, which is the peak overwintering period of waterbirds).	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM

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	Minimisation							
S7.8	<u>Consideration of alternative construction methods</u> – Concrete crusher would be used for demolition works to be undertaken during dry season months and demolition using breakers mounted on excavators should only be undertaken during wet season when the wetland habitats nearby the Project Site are less sensitive outside the peak overwintering.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	Due to ground conditions and programme constraints, percussive piling works would likely be unavoidable. In considering the construction noise, ecological impact and other environmental constraints, the quieter foundation methods, including bored piling by reverse circulation drill, raft foundation and shallow foundation, would be adopted as far as possible.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	<u>Careful phasing of construction activities</u> – The programme and phasing of the construction activities have been carefully planned to localise the construction disturbance within and to reduce the duration of high level of disturbances on sensitive wetland habitats and associated waterbirds. The proposed works will be conducted in 3 primary phases stated in Chapter 2 of EIA report. For example, excavation works within watercourse will be conducted in dry season to minimize the impacts to water quality and release of contaminants to aquatic habitats. Besides, the pumping stations and tidal barriers will not be constructed simultaneously, but will be constructed by 2 sections (one pumping station and half of tidal barriers at a time), to maintain the ecological connectivity.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	<u>Use of noise barriers/acoustic screens</u> – In order to further minimise the overall impacts on the nearby wetland habitats and associated waterbirds, particularly to the wetland habitats adjacent to the Project Site, noise barriers with absorptive materials of about 2-3m high will be erected along the sensitive sides of the Project Site, throughout the construction phase. The purpose is to screen the construction noise and human disturbance from the waterbirds during construction phase.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM

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S7.8	Adequate noise barriers should also be provided for the demolition using breakers mounted on excavators and percussive piling works, to further minimise the construction noise disturbance from these construction activities. Movable noise barriers should be provided to breakers mounted on excavator used for demolition works and acoustic mat should be provided to the piling plants around the rig. The contractor should provide enclosure for construction equipment, especially static plants (e.g. generator), as appropriate to minimise the noise disturbance as far as practicable.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	As ardeid night roost was recorded beside the Project Site of Kam Tin River, noise barriers with absorptive materials of about 2-3m high should be erected along the side close to the night roost location, that would screen human disturbance and noise disturbance to the night roost. As night roost may change from time to time, a pre-construction survey is recommended for areas within 100m from the Project boundary to confirm the location and status of the night roost. No construction works should be undertaken within 100m from any night roost confirmed by the pre-construction survey after 17:00 from February to September and 16:30 from October to January to avoid disturbance to avoid disturbance.	Works Site of Kam Tin River within 100m of ardeid night roost / Construction Phase	Contractor(s) – ecologists		✓			EIAO-TM
S7.8	<u>Use of quality powered mechanical equipment</u> – The Quality Powered Mechanical Equipment (QPME) system was developed by EPD to benchmark construction equipment items that are new, notably quieter, more environmentally friendly and efficient by QPME Labels. The contractor should source QPMEs for construction as far as practicable to further minimise the overall construction noise and other disturbance to the nearby wetland habitats and associated waterbirds to the maximum practical extent.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	<u>Operation of tidal barrier to allow brackish waters flushing in</u> – In order to mitigate the impacts of fragmentation in particular the water connectivity between the YLTN Section 4 and Shan Pui River, as well as the loss of brackish water habitat at YLTN Section 4, measures are being explored to retain the habitat between the existing inflatable dam and the proposed barrage as far as practicable. The operation of tidal barrier will be closed during high tide above 0.5mPD and will be opened below 0.5mPD (Appendix 2.4 of EIA report). The situation now is the waters from Deep	YLBS / Detailed Design Phase and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	EIAO-TM

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	Bay start flushing in above ~0.2mPD during high tide. Hence, the waters with sediment from Deep Bay can still be flushed into YLTN Section 4 from ~0.2-0.5mPD during high tide before closure of tidal barriers. The operation would facilitate an exchange of water, similar to the existing conditions, according to tidal fluctuations and enhance ecological connectivity through periodic opening of the tidal barriers. Additionally, the feasibility of a proposed 300mm x 300mm ecological trench underneath the soffit of the tidal barriers is being investigated to serve a similar purpose when the barriers are closed. The necessary operation modes would be further explored in the Detailed Design Stage.							
S7.8	<u>Discharge design to minimize the scouring effect to tidal mudflat</u> – The performance of the discharge system would be assessed against the YLBS' maximum discharge (i.e. under 200-year rainstorm event) and the configuration of the pumping stations is being optimised. Apart from under design weather events, no significant increase in discharge is anticipated as a result of the barrage. The orientation of the outlet and angle of discharge will be designed to prevent localized turbulent flows which could lead to scouring of the river bed and bank, thereby minimising significant changes to the existing sedimentation pattern / mudflats in Shan Pui River and Old Kam Tin River. Energy dissipators could be designed at the outlet to protect the downstream Shan Pui River from erosion by further reducing the flow velocity.	YLBS / Detailed Design Phase and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	EIAO-TM
S7.8	<u>Reducing glare/lighting</u> – No night-time construction works would be required under this Project (construction hours: 07:00 – 19:00) while the operations of the pumping stations and E&M room will be unmanned, only safety light will be turned on. In light of the presence of light sensitive mammal species of conservation importance, Great Cormorants that roost on trees at Nam Sang Wai and Bent-winged Firefly, the overall reduction of glare during both construction and operation phases should also be considered. A balance between lighting for safety, and avoiding excessive lighting can be achieved through the use of directional lighting to avoid light spill into sensitive areas, and control/timing of lighting periods of some facilities. Major construction site lighting should point inward and downward to minimize glare disturbance to wildlife at night. The intensity of light should also be controlled to the lowest possible level. To avoid the potential disturbance impact on the Bent-winged Firefly, any outdoor lighting associated with the construction works	YLBS / Detailed Design Phase, Construction Phase and Operation Phase	Detailed Design Engineer / Contractor(s) / Project Proponent	✓	✓		✓	EIAO-TM

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	of the barrage after 1800 should be avoided during May to September.							
	Mitigation							
S7.8	<i>Translocation of Gobiopertus macrolepis</i> – Within YLTN Section 4 of the Project Site, fish species of conservation importance i.e. <i>Gobiopertus macrolepis</i> was recorded. Direct impact to this species is likely in the works area of the tidal barrier during construction phase, and translocation of this species is recommended. Capture-and-translocation of this fish species will be implemented in the works area of the tidal barrier and pumping station prior to construction works to minimize the impacts on this species of conservation importance.	YLTN Section 4 / Before construction	Contractor(s) – ecologists		✓			EIAO-TM
S7.8	The capture-and-translocation exercise should be undertaken by ecologists with relevant experience. Besides the primary target of <i>Gobiopertus macrolepis</i> , other aquatic species of conservation importance should also be translocated if encountered during the capture exercise. Captured individuals will be released to suitable habitats with records of the species during the exercises. As the works area of the tidal barrier subjects to tidal influence, it is recommended the capture exercise should be conducted during low tide, to allow the fish or other aquatic fauna evacuate with the tide. Measures to prevent recolonization of aquatic fauna in the works area should be formulated.	YLTN Section 4 / Before construction	Contractor(s) – ecologists		✓			EIAO-TM
S7.8	<i>Gobiopertus macrolepis</i> were recorded along the Shan Pui River, Kam Tin River, the confluence of Shan Pui River and Kam Tin River, and the reedbed in Nam Sang Wai, all these locations can be considered as potential receptor sites for fish translocation. As the abundance of this species was higher in the reedbed of Nam Snag Wai, it is considered a more favourable habitat for this species and hence the priority of the receptor site would be there.	YLTN Section 4 / Before construction	Contractor(s) – ecologists		✓			EIAO-TM
S7.8	The detailed fish translocation plan and ecologists involved in the translocation should be submitted to relevant authorities including AFCD for approval prior to commencement of the fish translocation. The plan should include brief description on pre-translocation fish survey, translocation methodology, identification of fish receptor site, post-translocation monitoring methodology, and measures to prevent	YLTN Section 4 / Before construction	Contractor(s) – ecologists					

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	recolonization of aquatic fauna in the works area of the tidal barrier.							
8. Fisheries								
S8.8	The proposed works are confined within the Proposed Project Boundary. Fishponds within the assessment area have been avoided.	Whole Site / Construction Phase	Contractor(s)		✓			-
S8.8	<p>Controlling Site Runoff</p> <p>In order to minimize the potential indirect fisheries impacts due to deterioration of water quality on the adjacent ponds as much as possible, guidelines for handling and disposal of construction discharges as well as appropriate mitigation measures and good site practices as detailed in Water Quality Chapter to control runoff from the construction site and prevent runoff and drainage water with high levels of suspended solids and oil / grease from directly entering the nearby fishponds. In particular, measures and good site practices stipulated in the ProPECC PN 1/94 "Construction Site Drainage" and in ETWB TC (Works) No. 5/2005 "Protection of Natural Streams / Rivers from Adverse Impacts Arising from Construction Works" to minimise surface runoff and the chance of erosion should be followed to minimise potential impacts to nearby fisheries resources. Relevant mitigation measures include:</p> <ul style="list-style-type: none"> Construction works should be programmed to minimize soil excavation in the wet season (i.e. April to September). If soil excavation cannot be avoided in these months or at any time of year when rainstorms are likely, temporarily exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds; Construction works close to the inland waters should be carried out in the dry season as far as practicable where the flow in the surface channel or stream is low; Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent storm run-off from washing across exposed soil surfaces. Arrangements should always be in place in such a way that adequate surface protection measures can be 	Whole Site / Construction Phase	Contractor(s)		✓			<p>ProPECC PN 1/94</p> <p>ETWB TC(W) No. 5/2005</p> <p>WPCO</p>

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	<p>safely carried out well before the arrival of rainstorm;</p> <ul style="list-style-type: none"> • Surface run-off from construction sites should be discharged into storm drains via adequately designed sand / silt removal facilities such as sand traps, silt traps and sedimentation basins; • Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary. • Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis. • Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly (as well as at the onset of and after each rainstorm) to prevent overflows and localized flooding. 							
S8.8	<p>Minimizing Chance of Accidental Spillage and Potential Contamination of Surface Water and Groundwater</p> <p>The 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> <p>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 leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.</p> <p>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 Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as</p>	Whole Site / Construction Phase	Contractor(s)		✓			<p>WDO</p> <p>Waste Disposal (Chemical Waste) (General) Regulation</p> <p>The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance</p>

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	follows: <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. 							
S8.11 of EIA and S8.1 of EM&A Manual	As no unacceptable adverse fisheries impacts are anticipated during construction or operational phases, no specific monitoring programme for fisheries is required. Regular audits should be undertaken to ensure the effectiveness of the mitigation measures and good site practices recommended during construction phase for further controlling the water quality impacts, as these measures also serve to protect fisheries resources.	Whole Site / Construction Phase	ET and IEC		✓			EIAO-TM
9. Built Heritage								
S9.6	A condition survey will be carried out by qualified building surveyor or engineer in advance of works for identified buildings that may be affected by ground-borne vibration. The Condition Survey Report should contain descriptions of the structure, identification of fragile elements, an appraisal of the condition and working methods for any proposed monitoring and precautionary measures that are recommended.	Heritage structures HB-17, HB-18, HB-30 / Before Construction	Contractor(s)		✓			-
S9.6	Vibration monitoring should be undertaken during the construction works to ensure that safe levels of vibration are not exceeded. An Alert, Alarm and Action (AAA) vibration limit set at 5 / 6 / 7.5 mm/s for heritage buildings (PNAP APP-137-Appendix A) should be adopted. The AAA vibration limit for the buildings to be graded by AAB should be determined by the future grading. The condition survey report should highlight if the limit should be lowered after the detailed study of the condition of the buildings and structures. A monitoring schedule, the location of monitoring equipment, the frequency of monitoring, reporting requirements and action plan should be included in the condition survey report. The location of any	Heritage structures HB-17, HB-18, HB-30 / Construction Phase	Contractor(s)		✓			PNAP APP-137-Appendix A

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	monitoring equipment in the building must be approved by the owner and AMO before installation. Reinstatement to all affected areas is required.							
S9.6	A buffer zone should be provided to separate the building or structure from the construction works. The buffer zone should be clearly marked out by temporary fencing, if temporary fencing is not appropriate signage may be used to identify the heritage item to be avoided. The buffer zone should be made at least 1m from the proposed works or if this is not possible as large as the site restrictions allow.	Heritage structures HB-17, HB-18, HB-30, HB-31 / Construction Phase	Contractor(s)		✓			-
S9.6	Any proposed works in close proximity to buildings or structures used by the public have the potential to create an unsafe environment for members of the public. The contractor should ensure that safe public access if possible, through provision of clearly marked paths separated from the construction works areas is provided for any such affected cultural heritage structure.	Heritage structures HB-17, HB-18, HB-30, HB-31 / Construction Phase	Contractor(s)		✓			-
10. Landscape and Visual								
S10.7.4	CM1 - The construction area and contractor's temporary works areas should be minimised to reduce visual impacts and avoid impacts on adjacent landscape. CM2 - Reduction of construction period to practical minimum. CM3 - Phasing of the construction stage to reduce visual impacts during the construction phase. CM4 - Construction traffic kept to a practical minimum. CM5 - Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. CM6 - Avoidance of excessive height and bulk of site buildings and structures. CM7 - Control of night-time lighting by hooding all lights and through minimisation of night working periods. CM8 - All existing trees shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Documents. Under	Whole Site / Construction Phase	Contractor(s)		✓			DEVB TC(W) No. 4/2020

EIA & EM&A Ref. ⁽¹⁾	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. CM9 - Trees unavoidably affected by the works shall be transplanted where practical. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.							
S10.7.4	OM1 - Enhanced nullah bed with replacement of concrete lining with natural substrates and planting. OM2 - Enhanced nullah sides with appropriate hard and soft finishes and parapet treatments. OM3 - Enhanced adjacent streetscape with paving, planting and furniture in a manner that responds to the existing and planned urban context. OM4 - Additional viewpoints, seating areas and open space within or adjacent to nullah. OM5 - Enhanced nullah crossings including vehicular, pedestrian and utility bridges with upgraded finishes and treatments. OM6 - Sensitively designed barrage and structures in terms of scale, height and bulk (visual weight). OM7 - Barrage and drainage works visually integrated with their surroundings through use of appropriate building materials and finishes. OM8 - Barrage lighting units to be directional and minimise unnecessary light spill and glare. For further details, see "Charter on External Lighting" and "Guidelines on Industry Best Practices for External Lighting Installations" promulgated by the Environmental Bureau. OM9 - Compensatory tree planting for all felled trees in accordance with relevant Government tree protection requirements. (Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under the relevant technical circulars during the detailed design phase). OM10 - Green roofs and vertical greening on barrage pumping stations and E&M control building.	Whole Site including Barrage / Detailed Design and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	-

* Des = Design; C = Construction; Post-C = Post Construction / Before Operation; O = Operation