Appendix C

Environmental Mitigation Implementation Schedule

Environmental Mitigation Implementation Schedule – Central Kowloon Route

Note: Chapters 1 to 3 of the EIA report present the background information of the Project, identified concurrent projects, objectives and scope for various environmental aspects, and description on alternative options and construction description. Chapters 4 to 12 of the EIA report present the EIA findings and mitigation measures are described below with cross-reference to the EIA report. Chapters 13 to 15 describe the environmental monitoring requirements and conclusion.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Construction Dust Impact							
S4.3.10	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria
S4.3.10	D2	• Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.3 L/m2 to achieve the dust removal efficiency	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria
S4.3.10	D3	• Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria

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		• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing; Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground					

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		floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					
S4.3.10	D4	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp (including installation of 3-sided screen with top cover); • Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points. For the unloading of spoil from trucks at barging point, installation of	Minimize dust impact at the nearby sensitive receivers	Contractor	Kwai Chung Barging Point	Construction stage	• Air Pollution Control (Construction Dust) Regulation • To control the dust impact to meet HKAQO and TM-EIA criteria

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		3-sided screen with top cover and the provision of water sprays at the discharge point would be provided for an assumed 50% dust suppression.					
S4.3.10	D5	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	• TM-EIA
Operational Air Quality Impact							
S4.4.5.2	D7	Air purification system (APS) should be adopted to remove the pollutant concentrations before releasing to atmosphere via the three ventilation buildings. In order to maintain the performance of the APS, air pollutant sensors would be adopted in the TVS/APS to monitor the pollutant concentration levels continuously at the inlet and outlet of the system. In case that the pollutant removal efficiencies were detected below the committed 80% for both particulate and NO_2, as a contingency plan, immediate measures would be implemented to increase the overall contact time between the air pollutant and the APS to secure the pollutant removal rate.	Minimize air pollutant concentrations from the tunnel at the nearby sensitive receivers	Highways Department / Contractor	Tunnel Section	Prior to operational stage / operational stage	• APCO To control the pollutants concentration to meet HKAQO and TM-EIA criteria

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Construction Noise (Airborne)							
S5.4.1	N1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) 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, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIAO
S5.4.1	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIAO
S5.4.1	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressors, generators and handheld breakers etc..	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO

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S5.4.1	N4	Use "Quiet plants"	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO
S5.4.1	N5	Loading/unloading activities should be carried out inside the full enclosure of mucking out points	Reduce the noise levels of loading/unloading activities	Contractor	Mucking out locations	Construction stage	• Annex 5, TM-EIAO
S5.4.1	N6	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO
S5.4.1	N7	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	• TM-EIAO
S5.5.2	N8	Install temporary noise barriers along the works area at temporary Kowloon City Ferry Pier Public Transport Interchange	Reduce temporary PTI noise	Contractor	Kowloon City Ferry Pier	Different construction stages	• HKPSG
Operational Noise (Airborne)							
S5.5.1	N9	Provide noise barrier before operation of the proposed project and locations of barriers are stated as following: • Approx. 250m of full enclosure including landscape deck at a height 9m above road level at West Portal of CKR (F01); • Approx. 110 of full enclosure at a height 10m above road level at Gascoigne Road Flyover (Ferry Street section) (F02); • Approx. 200m of full enclosure at a height 7m at Gascoigne Road	Reduce operation airborne noise from road traffic	Contractor	Refer to Figure 6.1 – 6.8	Prior to operation of the Project	• TM-EIAO

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		Flyover (Kansu Street section) (NB+SB) (F03); • Approx. 120m of semi-enclosure with opening at west at a height 8m at Lin Cheung Road (S01); • Approx. 270m of semi-enclosure with opening at west at a height 8m above road level at Re-aligned Hoi Wang Road (S02); • Approx. 85m of semi-enclosure with opening at south at a height 7m above road level at Gascoigne Road Flyover (Ferry Street section) (SB) (S03); • Approx. 45m of semi-enclosure with opening at south at a height 7m above road level at Gascoigne Road Flyover (Ferry Street section) (NB+SB) (S04); • Approx. 60m of semi-enclosure with opening at north at a height 6m above road level at Gascoigne Road Flyover (Kansu Street section) (SB) (S05); • Approx. 155m of cantilevered barrier at a height 5m with 3m cantilevered at Connection E (C01); • Approx. 85m of cantilevered barrier at a height 5m with 3m cantilevered at Lin Cheung Road (C02); • Approx. 85m of cantilevered barrier at a height 5m with 3m cantilevered at Ferry Street (at-grade) (C03); • Approx. 190m of cantilevered barrier at a height 5m with 3m cantilevered at Connection E (C04); • Approx. 120m of cantilevered barrier at a height 5m with 3m cantilevered at Connection E (C05); • Approx. 170m of cantilevered barrier at a height 5m with 3m cantilevered at Connection A (C06); • Approx. 160m of cantilevered barrier at a height 5m with 1m cantilevered at Ferry Street (at-grade) (C07);					

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		• Approx. 120m of vertical barrier at a height 4m above road level at Lin Cheung Road (V01); • Approx. 190m of vertical barrier at a height 3.8m above road level at Connection D (V02); • Approx. 100m of vertical barrier at a height 5.8m above road level at Connection E (V03); • Approx. 50m of vertical barrier at a height 4m above road level at widening of Lai Cheung Road (V04); • Approx. 110m of vertical barrier at a height of 3.3m above road level at Gascoigne Road Flyover (Ferry Street section) (V05); • Approx. 100m of vertical barrier at a height of 3.8m above road level at Gascoigne Road Flyover (Ferry Street section) (central divider) (V06); • Approx. 60m of vertical barrier at a height 4.3m above road level at Gascoigne Road Flyover (Kansu Street section) (SB) (V07); and • Approx. 60m of vertical barrier at a height of 2.8m above road level at Gascoigne Road Flyover (Kansu Street section) (central divider) (V08).					
S5.5.2	N10	Provide landscape deck at Kowloon City Ferry Pier Public Transport Interchange	Reduce PTI noise	Contractor	Kowloon City Ferry Pier	Prior to operation of the Project	• HKPSG
S5.5.2	N11	• The detailed design should incorporate the following good practices in order to minimize the nuisance on the nearby NSRs. • Louvers should be orientated away from adjacent NSRs, preferably onto main roads which are less sensitive. • Direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosures should be allowed for in the design for the ventilation building.	Control operational airborne noise due to the operation of fixed plant	Engineer	Ventilation Building	Design stage	• Noise Control Ordinance

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		• The façade for these plant areas/ventilation shafts should have adequate sound insulation properties to minimise the noise emanating through the building fabric.					

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Water Quality (Construction Phase)							
S6.9.1.1	W1	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: *Construction Runoff* • At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates. • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-DSS

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		• All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means. • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows. • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. • Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage					

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		system and storm runoff being directed into foul sewers. • Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. • All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. • Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.					

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		• Adopt best management practices • All the earth works involving should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.					
S6.9.1.2	W2	*Tunnelling Works and Underground Works* • Cut-&-cover tunnelling work should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge • The wastewater with a high concentration of SS should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. • Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It should be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) should be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-DSS • TM-EIAO
S6.9.1.3	W3	*Sewage Effluent* • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-DSS

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		responsible for appropriate disposal and maintenance.					
S6.9.1.5	W4	*Groundwater from Potential Contaminated Area:* • No direct discharge of groundwater from contaminated areas should be adopted. • A discharge license under the WPCO through the Regional Office of EPD for groundwater discharge should be applied. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed during the process of discharge license application. The compliance to the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-DSS) and the existence of prohibited substance should be confirmed. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, the contaminated groundwater should be either properly treated in compliance with the requirements of the TM-DSS or properly recharged into the ground. • If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be discharged into the foul sewers. • If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-DSS. The baseline groundwater quality shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found.	Construction stage	• Water Pollution Control Ordinance • TM-DSS • TM-EIAO

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		showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances such as TPH products should be removed as necessary by installing the petrol interceptor.					
S6.7.2.1	W5	*Temporary Reclamation* • During temporary reclamation, regular litter / rubbish clearance and avoidance of illegal discharges within the embayed marine water should be undertaken. • During temporary reclamation, the perimeter silt curtain should be deployed.	To minimize water quality impact from temporary reclamation	Contractor	Temporary Reclamation	Construction stage	• Water Pollution Control Ordinance • TM-DSS • TM-EIAO
S6.9.1.6	W6	*Accidental spillage* In order to prevent accidental spillage of chemicals, the following is recommended: • All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains. • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-DSS
S6.9.2.2	W7	*Dredging Works* The following good practice shall apply for the dredging works:	To minimize sediment suspension during dredging	Contractor	Kai Tak Barging Point during	Dredging period	• Water Pollution Control Ordinance

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		• Install efficient silt curtains, i.e. at least 75% SS reduction, at the point of seawall dredging to control the dispersion of SS; • Implement water quality monitoring to ensure effective control of water pollution and recommend additional mitigation measures required; • The decent speed of grabs should be controlled to minimize the seabed impact and to reduce the volume of over-dredging; • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • The dredging rates by closed grab dredgers for temporary marine channel outside pipepile wall shall be less than 1,500 m^3/day and 125 m^3/hour (without concurrent dredging with T2 in dry season only) or 750 m^3/day and 62.5 m^3/hour for other conditions respectively. • Dredging works shall be only for the provision marine channel. No dredging work is required for temporary reclamation; and • The workfront of temporary reclamation shall be surrounded by cofferdams and the associated excavation and backfilling works for temporary reclamation shall have no contact with seawater.			dredging works		• TM-EIAO
S6.9.2.2	W8	While WSR 2 (Planned Kai Tak Cooling Water Intake). is a planned receiver, the project proponent shall liaise with the project proponent of District Cooling System (DCS) for Kai Tak Development on the implementation programme prior to wet season dredging. In case the DCS would be operated during the dredging period of CKR, additional silt screen to the cooling water intake shall be provided to WSR 2. The following specific mitigation measures shall apply for the dredging works: • In dry season, the dredging rate shall be less than 1500m3/day if	To minimize sediment suspension during dredging if the District Cooling System for Kai Tak Development would be operated in the same period	Contractor	Kai Tak Barging Point during dredging works	Dredging period	• Water Pollution Control Ordinance • TM-EIAO

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		no concurrent projects. • In all other scenario, the dredging rate shall be less than 750m3/day • Dredging works shall be only for the provision marine channel. No dredging work is required for temporary reclamation. • The workfront of temporary reclamation shall be surrounded by cofferdams and the associated excavation and backfilling works for temporary reclamation shall have no contact with seawater. • In case the DCS would be operated during the dredging period of CKR, silt screen shall be provided for WSR2.					
S6.9.2	W9	*Handling of Dredged Sediment / Barging Operation* • All barges should be fitted with tight bottom seals to prevent leakage of materials during transport; • Barges or hoppers should not be filled to a level that will cause overflow of materials or polluted water during loading or transportation; • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and • Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. • Mitigation measures for land-based activities as outlined above should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate.	To minimize and mitigate the water disturbance during dredged sediment handling/barging operation	Contractor	All land-based site and proposed Kwai Chung barging point	Construction stage	• Water Pollution Control Ordinance • TM-EIAO

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S6.9	W10	Implement a marine water quality monitoring programme	Monitor marine water quality prior to and during dredging period	Contractor	At identified monitoring location	Prior to and during dredging period	• Water Pollution Control Ordinance • TM-DSS • EIA-TM
Water Quality (Operational Phase)							
S6.9.3	W11	The following mitigation measures are only required to minimize the road runoff and wastewater discharge from APS during the operational phase, the following mitigation measures during operational phase are recommended: • Drainage discharge should pass through oil/grit interceptors/chambers to remove oil, grease and sediment before discharged into the public storm drainage/foul sewerage system; • The silt traps and oil interceptors should be cleaned and maintained regularly; • Oily contents of the oil interceptors should be transferred to an appropriate disposal facility, or to be collected for reuse, if possible; • The wastewater from ESP should be properly treated prior to either discharge to public sewerage systems or collected by licenced contractor as appropriate; and • Depending on the proprietary design and the chemical content of the aqueous solutions discharge from the NO_2 removal process, these solutions should either be collected by licenced chemical waste collectors and sent to Chemical Waste Treatment Facilities at Tsing Yi as required under the Chemical Waste Ordinance, or discharged to public sewerage systems.	To minimize the road runoff and wastewater discharge from APS during the operational phase	Highways Department / Contractors	Whole alignment	Operational Stage	• Water Pollution Control Ordinance • TM-DSS

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Waste Management (Construction Waste)							
S7.4.1	WM1	<u>*On-site sorting of C&D material*</u> • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored.	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010
S7.5.1	WM2	<u>*Construction and Demolition Material*</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt ‘Selective Demolition’ technique to demolish the existing	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.					19/2005
S7.5.1	WM3	*C&D Waste* • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005
S7.5.1	WM4	Excavated Contaminated Soils • Details of the mitigation measures on handling of the contaminated soil shall be referred to Section on Land	The contaminated soil will be excavated for on-site reuse	Contractor	PBH4	Prior to commencement of construction works within the	• Practice Guide (PG) for Investigation and Remediation of

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		Contamination below.				contaminated area	Contaminated Land • GN/GM for land contamination
S7.5.1	WM5	*Land-based and Marine-based Sediment* • All construction plant and equipment shall be designed and maintained to minimize the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location; • All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • Before moving the vessels which are used for transporting dredged material, excess material shall be cleaned from the decks and exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations; • Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action. • The Contractors shall monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the engineers; • The Contractors shall comply with the conditions in the dumping licence. • All bottom dumping vessels (Hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of	To control pollution due to marine sediment	Contractor	Along CKR alignment	Construction Stage	• ETWB TCW No. 34/2002

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		material; • The material shall be placed into the disposal pit by bottom dumping; • Contaminated marine mud shall be transported by spit barge of not less than 750m^3 capacity and capable of rapid opening and discharge at the disposal site; • Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site. • For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.					
S7.5.1	WM6	*Chemical Waste* • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.					
S7.5.1	WM7	*General Refuse* • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		local collection scheme should be considered by the Contractor.					
Waste Management (Operational Waste)							
S7.5.2	WM8	*General Refuse* A reputable waste collector should be employed to remove general refuse and industrial wastes generated from the administrative building and ventilation buildings on a daily basis to minimize odour, pest and litter impacts.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Highways Department / Contractor	Administrative building and ventilation buildings	Operational stage	• Waste Disposal Ordinance
S7.5.2	WM9	*Chemical Waste* The requirements given in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes should be followed in handling of these chemical wastes. A trip-ticket system should be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical wastes which will be collected by a licensed collector to a licensed facility for final treatment and disposal.	Minimize production of the chemical waste	Highways Department / Contractor	Administrative building and ventilation buildings	Operational stage	• Waste Disposal Ordinance

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Land Contamination							
S8.10, S8.12 & Appendix 8.4	LC1	<u>Remaining SI Works</u> The potential for land contamination issues at EBH1, EBH2, and EBH3 will be confirmed by site investigation after site possession and utility diversion by the construction contractor. Following the completion of the remaining SI works, the Project Proponent would prepare and submit a Second Supplementary CAR/RAP to EPD to present the findings of the SI works and to recommend specific remediation measures, if required. Upon completion of the remediation works, if any, a Remediation Report (RR) would be prepared and submitted to EPD for agreement prior to commencement of the construction works.	Investigation of the potential land contamination issues at EBH1, EBH2 and EBH3 which cannot be completed at the EIA stage due to underground utility and site access constraints.	Contractor	EBH1, EBH2 and EBH3	Prior to commencement of construction works at the Kowloon City Ferry Pier Public Transport Interchange (PTI) (for EBH1 & EBH2) and the works area adjacent to the To Kwa Wan Vehicle Examination Centre (for EBH3)	• Practice Guide (PG) for Investigation and Remediation of Contaminated Land • Guidance Notes for Contaminated Land Assessment and Remediation • Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management
S8.9 & Appendix 8.4	LC2	<u>Excavation of the Contaminated Soil</u> • Prior to commencement of the excavation works at the contamination zone, the zone should be clearly marked out on site and the surface levels recorded. Excavation of contaminated material should be undertaken using dedicated earth-moving plant. • The excavated contaminated soils would be stockpiled at designated area on site and covered by sheet to prevent dispersion of contamination during stockpiling. • The Contractor should pay attention to the selection of suitable groundwater lowering schemes and discharge points if the groundwater table is higher than the contaminated soils during excavation. The Contractor should also obtain a valid Water Pollution Control Ordinance (WPCO) discharge licence from EPD where applicable.	The contaminated soil will be excavated for on-site reuse	Contractor	PBH4	Prior to commencement of construction works within the contaminated area	

<table>
<tr><th>EIA Ref.</th><th>EM&A Log Ref</th><th>Recommended Mitigation Measures</th><th>Objectives of the Recommended Measures & Main Concerns to address</th><th>Implementation Agent</th><th>Location / Timing</th><th>Implementation Stage</th><th>Requirements and / or standards to be achieved</th></tr>
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<tr><td>S8.9 & Appendix 8.4</td><td>LC3</td><td>• Following completion of the excavation to the specified depth, at least one sample from the base of the excavation and four samples evenly distributed along the boundary of the excavation shall be taken for a closure assessment testing. The acceptance criterion is shown below:
<table><tr><th>Locations</th><th>Testing requirement</th><th>Acceptance Criteria</th></tr><tr><td>PBH4</td><td>PCBs</td><td>RBRGs (Public Park)</td></tr></table>• If the results of analysis below the RBRGs (Public Park), no further excavation will be required.
If the analysis indicates presence of contamination (i.e. non-compliance of the acceptance criteria), further excavation shall be carried out in 0.5m increment vertically and/or horizontally depending on the location(s) of the sample(s) which has exceeded the acceptance criteria. Further sampling shall also be conducted for compliance testing. The process of excavation, sampling and compliance testing should continue until all contaminated materials are removed and should be supervised by a Land Contamination Specialist.</td></tr>
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Appendix 8.4	LC4	• A Remediation Report (RR) to demonstrate adequate clean-up shall be prepared and submitted to EPD for endorsement prior to the commencement of any construction/development works within the sites. No construction/development works shall be carried out prior to the endorsement of the RR by EPD.					

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Hazard to Life							
S9.18	H1	Blasting activities regarding transport and use of explosives should be supervised and audited by competent site staff to ensure full compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives handling and transport would be acceptable	Contractor	Works areas at which explosives would be used	Construction phase	•Dangerous Goods Ordinance
S9.6, para.4	H2	Detonators shall not be transported in the same vehicle with other Category 1 Dangerous Goods.	To reduce the risk of explosion during the transport of cartridged emulsion	Contractor	-	Construction phase	•Dangerous Goods Ordinance
S9.6, para.8	H3	The explosives delivery trucks should be approved by Mines Division and should meet the regulatory requirements for transport of explosives.	To comply with the requirements for approval of an explosives delivery vehicle required under the License or Permit conditions	Contractor	-	Construction phase	•Dangerous Goods Ordinance
S9.10, para.7 and S9.18	H4	Blast doors should be provided for tunnels and blast cover should be provided for shaft at HMT, and kept closed during blasting, Provision of blast doors or heavy duty blast curtains should be implemented at the shafts, adits and other suitable locations to prevent flyrock and control the air overpressure.	To ensure safe use of explosives	Contractor	Tunnels and shafts	Construction phase	-
S9.18	H5	Only the required quantity of explosives for a particular blast should be transported to avoid the return.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be	Construction phase	-

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					used		
S9.18	H6	Maximum instantaneous charge (MIC) should be within the MIC as specified for the given section.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H7	The approved truck dedicated for transport of explosives should comply with the "Guidance Note on Requirements for Approval of an Explosives Delivery Vehicle" issued by CEDD Mines Division. The truck should be periodically inspected and properly maintained in good operation conditions. The fuel carried in the fuel tank should be minimized to reduce the duration of fire. Adequate fire-fighting equipment shall be provided, inspected and replaced periodically (e.g. fire extinguishers).	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	• Dangerous Goods Ordinance
S9.18	H8	The driver and his assistant should be physically healthy, experienced and have good safe driving records. The driver should hold a proper driving license for the approved transport truck. Dedicated training programme and regular road safety briefing sessions / workshops should be provided to enhance their safe driving attitude and practice. Smoking should be strictly prohibited.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-
S9.18	H9	Emergency response plans in case of road accident should be prepared and implemented. The driver and his assistant should be familiar with the emergency procedures including evacuation, and proper communication / fire-fighting equipment should be provided to the driver and his assistant.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-
S9.18	H10	Close liaison and communication among Mines Division, contractors for transport of explosives, and working staff of the tunnel blasting should be established. In case of any change of work schedule leading to cancellation or variation of explosives required, relevant parties should be informed in time to avoid unused explosives at the work sites.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-

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S9.18	H11	Close liaison and communication with Fire Services Department should be established to reduce the accidental detonation escalated from a fire. The contractors for transport of explosives should use the preferred transport routes as far as practicable.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-
S9.18	H12	Contingency plan should be prepared for transport of explosives under severe weather conditions such as rainstorms and thunderstorms.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-
S9.18	H13	For explosive transport, all packages of explosives on the truck should be properly stored in the truck compartment as required. Packaging of the explosives should remain intact (i.e. damage free) until they are transferred to the blasting site.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-
S9.18	H14	Availability of a parking space should be ensured before commencement of transport of explosives. Location for loading and unloading of explosives should be as close as possible to the shaft or the adit. No hot work should be performed in the vicinity during the time of loading and unloading.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-
S9.18	H15	Good communication and coordination should be performed for safe blasting of different chainage locations on the same day.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H16	Evacuation and secure refugee areas should be implemented / provided to the working staff.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-

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S9.18	H17	Healthy competent licensed shotfirers and blasting engineers should be employed to conduct the blasting work.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H18	Proper control measures should be enforced during explosive transport within the tunnel and charging the blast holes, such as speed limit for the truck, no hot work in the vicinity, etc.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H19	Ground vibrations of the blasting operation should be monitored and MICs should be adjusted according to the actual geotechnical features to ensure blasting vibrations within the specified PPV limit.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H20	For tunnel blasting near gas facilities, requirement of the “Gas Production and Supply Code of Practice - Avoiding Danger from Gas Pipes” should be respected. Close liaison and coordination with HKCG should be established to provide sufficient notice of the planned blasting activities in an appropriate format within a reasonable time period prior to blasting. Emergency response procedures should be prepared and implemented in case of gas leaks.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	• Gas Production and Supply Code of Practice - Avoiding Danger from Gas Pipes
S9.18	H21	For tunnel blasting near MTRC railway tunnels, close liaison and coordination with MTRC should be established to provide sufficient notice of the planned blasting activities in an appropriate format within a reasonable time period prior to blasting. Emergency response procedures should be prepared and implemented in case of any damage to the railway facilities.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H22	It is recommended to explore to minimize the use of the cartridged emulsion explosives and maximize the use of bulk emulsion explosive as far as practicable.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-

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S9.18	H23	The use of bulk emulsion where the maximum instant charge (MIC) envisaged for a particular blast is above 0.5kg. This prevents the occurrence of excessive vibrations due to potential bulk emulsion dosing inaccuracy in the case of low MIC. It is recommended to explore the bulk emulsion dosing technology so as to maximize the use of bulk emulsion explosive as far as practicable.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H24	It is recommended to explore to use smaller explosive charges such as ‘cast boosters’ or ‘mini-cast booster’ instead of cartridged emulsion as primers for bulk emulsion. This is option reduces the quantity of explosives required for transportation for the sections where bulk emulsion will be used.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction phase	-
S9.18	H25	Instrumentation and monitoring plan should be submitted to all relevant stakeholders for agreement prior to the commencement of the tunnel blasting works. Such plan should be implemented during construction of CKR tunnels.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-
S9.18	H26	Contingency plan should be submitted to all relevant stakeholders for agreement prior to the commencement of the tunnel blasting works.	To ensure safe use of explosives	Contractor	Along tunnel alignment	Construction phase	-

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Landscape & Visual							
S10.10.1 Table 10.11	LV1	• Detailed Design - Landscape All works shall be carefully designed to minimize impacts on existing landscape resources and visually sensitive receivers, particularly those of high value or high sensitivity. For this purpose, the extent of the works area will be minimised and existing trees within the works area shall be avoided were practicable. Designs which ensure the construction time frame is kept to a practical minimum should also be considered.	Minimize landscape impact	Contractor	Prior to construction	Design Phase	-
S10.10.1 Table 10.11	LV2	• <u>Detailed Design - Visual</u> Tunnel portals and all structures above ground including noise barriers shall be sensitively designed to ensure the element with colour, texture and tonal quality being compatible to the existing urban context. The 'natural terrain' idea will be applied to the design of ventilation and administration buildings. For noise barriers/ enclosures, the colour of the structural frames and the frame of the glazing panels shall give a natural look and match with the colour of the adjacent buildings in the area. Designs which ensure the construction time frame is kept to a practical minimum should also be considered.	Minimize visual impact	Contractor	Prior to construction	Design Phase	ETWB TCW No. 36/2004, ACABAS - submission is required to ACABAS for approval of any bridges and associated structures within the public highway system. ETWB TCW No. 8/2005 - submission is required to ArchSD for approval of the design of ventilation and administration buildings.

Environmental Mitigation Implementation Schedule – Central Kowloon Route

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S10.10.1 Table 10.11	LV3	• <u>Good Site Management</u> Large temporary stockpiles of excavated material shall be covered with unobtrusive sheeting to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance. Construction plant and building material shall be orderly and carefully stored in order to create a neat and tidy visual appearance.	Minimize visual impact	Contractor	Within Project Site	Construction Phase	-
S10.10.1 Table 10.11	LV4	• <u>Screen Hoarding</u> Decorative screen hoarding should be erected to screen the public from the construction area. It should be designed to be compatible with the existing urban context.	Minimize visual impact	Contractor	Within Project Site	Construction Phase	-
S10.10.1 Table 10.11	LV5	• <u>Lighting Control during Construction</u> All lighting in the construction site shall be carefully controlled to minimize light pollution and night-time glare to nearby residencies and GIC. The contractor shall consider other security measures, which shall minimize the visual impacts.	Minimize visual impact	Contractor	Within Project Site	Construction Phase	-
S10.10.1 Table 10.11	LV6	• <u>Erosion Control</u> The potential for soil erosion shall be reduced by minimizing the extent of vegetation disturbance on site and by providing a protective cover over newly exposed soil.	Minimize landscape impact	Contractor	Within Project Site	Construction Phase	-

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S10.10.1 Table 10.11	LV7	• Tree Protection & Preservation Carefully protected during construction. Tree protection measures will be detailed at the Tree Removal Application stage and plans submitted to the relevant Government Department for approval in due course in accordance with ETWB TC no. 3/2006.	Minimize landscape and visual impact	Contractor	Within Project Site	Design and Construction Phase	'Guidelines for Tree Risk Management and Assessment Arrangement on an Area Basis and on a Tree Basis', issued January 2011, Greening, Landscape and Tree Management (GLTM) Section, DevB Latest recommended horticultural practices from GLTM Section, DevB
S10.10.1 Table 10.11	LV8	• Tree Transplantation For trees unavoidably affected by the Project that have to be removed, where practical transplantation will be chosen as the top priority method of removal. If this is not possible or practical compensatory planting will be provided for trees unavoidably felled (See LV10). For trees unavoidably affected by the Project works that are transplanted, transplantation must be carried out in accordance with ETWBTC 2/2004 and 3/2006.	Minimize landscape and visual impact	Contractor	Within Project Site and designated off-site locations	Prior to Construction Phase	ETWB TCW 3/2006 Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB ETWB TCW 2/2004

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S10.10.1 Table 10.11	LV9	• Compensatory Planting For trees unavoidably affected by the Project that have to be removed, where practical transplantation will be chosen as the top priority method of removal but if this is not possible or practical compensatory planting will be provided for trees unavoidably felled. All felled trees shall be compensated for by planting trees to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006. Compensatory tree planting may be incorporated into public open spaces and along roadside amenity areas affected by the construction works and therefore be part of the bigger wider planting plans. Onsite compensation planting is preferred but if necessary, additional receptor sites outside the Works Area shall be agreed separately with Government during the Tree Felling Application process.	Minimize landscape and visual impact	Contractor	Within Project Site and designated off-site locations	Construction Phase	ETWB TCW 3/2006 Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB ETWB TCW 2/2004
S10.10.1 Table 10.11	LV10	• Screen Planting Tall screen/buffer trees, shrubs and climbers should be planted, in so far as is possible, to soften and screen proposed structures such as roads and central strip, vertical edges and buildings and to enhance streetscape greening effect where appropriate. Indiscriminate use of trees for screening must be avoided and the principle of 'right tree for the right place' must be followed. This detail will be provided at the Detailed Design stage. This measure may additionally form part of the compensatory planting and will improve and create a pleasant pedestrian environment.	Minimize visual impact and also enhance landscape.	Contractor	Within Project Site	Construction Phase	Guidelines on Greening of Noise Barriers, issued April 2012, GLTMS, DevB ETWB TCW 2/2004

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S10.10.1 Table 10.11	LV11	• <u>Green Roof</u> Roof greening will be established on ventilation and administration buildings to reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels.	Minimize landscape and visual impact	Contractor	Within Project Site	Construction Phase	-
S10.10.1 Table 10.11	LV12	• <u>Reinstatement</u> All works areas, excavated areas and disturbed areas for tunnel construction and temporary road diversion or any other proposed works shall be reinstated to former conditions or better, with reasonable landscape treatment and to the satisfaction of the relevant Government departments. (Specific mitigation for disturbance to public open space is detailed separately under LV14)	Minimize landscape impact	Contractor	Within Project Site	Construction Phase	-

<table>
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<tr><td>S10.10.1

Table 10.11</td><td>LV13</td><td>• <u>Reprovising of Public Open Space</u>

All areas of public open space affected by the Project will be re-provisioned either at the same location following the completion of temporary works, or at a separate site, as agreed with relevant Government departments. Open space should be re-provisioned in an enhanced manner.

The total area of open space affected and re-provided/ reinstated is summarised in the table below.
<table>
<tr><th>Landscape Resource Affected</th><th>Approx. Existing Area</th><th>Approx. Area taken during Construction</th><th>Approx. Area to be re-provision / reinstated</th></tr>
<tr><td>Public Square Street Playground</td><td>995 m^2</td><td>995 m2</td><td>995 m2</td></tr>
<tr><td>Shanghai Street/Market Street Playground</td><td>1,400 m^2</td><td>1,400 m2</td><td>1,400 m2</td></tr>
<tr><td>Bazaar</td><td>310 m^2</td><td>310 m2</td><td>310 m2</td></tr>
<tr><td>Temple Street / Kansu Street Temporary Rest Garden (Currently zoned as G/IC)</td><td>365 m^2</td><td>365 m^2</td><td>365 m^2</td></tr>
<tr><td>Jade Hawker Bazaar</td><td>1,395 m^2</td><td>1,395 m2</td><td>1,395 m2</td></tr>
<tr><td>Proposed open space at the original Yau Ma Tei Specialist Clinic Extension site</td><td>--</td><td>--</td><td>710 m2</td></tr>
<tr><td>Proposed Yau Ma Tei Landscape Deck</td><td>--</td><td>--</td><td>31,000 m2</td></tr>
</table></td><td>Minimize landscape impact</td><td>Contractor</td><td>Within Project Site</td><td>Construction Phase</td><td>Open space should be re-provided in an enhanced manner.</td></tr>
<tr><td>S10.10.1

Table 10.11</td><td>LV14</td><td>• <u>Landscape enhancement</u>

Implement a comprehensive landscape plan to maximize the greening opportunity and create a unique landscape for the project to blend in with the surrounding, including in re-provisioned areas. In particular:

- landscape enhancement of re-provisioned Public Transport Interchange;

- landscape deck on tunnel portals;</td><td>Minimize landscape and visual impact</td><td>Contractor</td><td>Along tunnel alignment</td><td>Construction phase</td><td>Purpose-built maintenance access without temporary traffic arrangement must be provided.</td></tr>
</table>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		- viaduct planters for trailer planting, - vertical greening of piers and walls with climbers or trailer planting; - roadside planting i.e. planting along central dividers and on road islands e.g. in the middle of roundabouts. (Roadside planting i.e. at the road edge and not in the central divider or road island, and vertical greening may be considered part of Screen Planting). Purpose-built maintenance access without temporary traffic arrangement must be provided and detailed design of landscape decks and planting, including details of maintenance access locations, will be sent to maintenance and management parties for endorsement and ensures these mitigation measures are feasible.					
S10.10.1 Table 10.11	LV15	• <u>Lighting Control during Operation</u> Roadside lighting and that at the ventilation and administration buildings should be controlled so as to minimize the visual impacts at night. For the enclosed noise barriers, lighting will be provided by two rows of continuous fluorescent lights mounted along the ceiling of the noise enclosure so drivers see continuous lines on the ceiling.	Minimize visual impact	Contractor	Within Project Site	Operation Phase	-

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Cultural Heritage Impact (Construction and Operational Phase)							
S11.4.4	CH1	• The contractor should be alerted during the construction on the possibility of locating archaeological remains and as a precautionary measure, AMO shall be informed immediately in case of discovery of antiquities or supposed antiquities in the subject sites.	To preserve any cultural heritage items which may be removed and damaged by the excavation.	Contractor	During construction works for cut and cover tunnels	During the construction phase	• AMO's requirements
S11.6 para 3	CH2	• The dredging contractor should be alerted during the construction on the possibility of locating archaeological remains, such as cannon and AMO shall be informed immediately in case of discovery of antiquities or supposed antiquities in the subject areas.	To preserve any cultural heritage items which may be removed and damaged by the dredging.	Contractor	During construction of underwater tunnel (north of To Kwa Wan Typhoon Shelter)	During the construction phase	• AMO's requirements
S12.6.1	CH3	• Protective covering should be provided for the buildings in the form of plastic sheeting; • Buffer zones should be provided between the construction works and the external walls of the buildings and should be as large as site restrictions allow and be marked out by temporary fencing or hoarding; • An underpinning scheme is required to transfer the existing column loadings to a deeper rock stratum. The supporting system includes cutting the existing ground floor slab to expose the existing pile caps and then construct transfer beams at both sides of the pile caps. The transfer beams will tie up with the existing caps. Loadings of the transfer beams will be transferred to the rock socket piles installed at the two ends of the beams; • The AAA settlement and tilting limit should be 6/8/10 mm and	Protect the building from damage from construction works	Contractor	Yau Ma Tei Police Station (New Wing) (CKR-01)	Prior to commencement of and during the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19 • AMO Proposed Vibration Limits

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		1/2000, 1/1500 and 1/1000; • Monitoring of vibration levels will be undertaken during the construction phase and the Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. The monitoring proposal should be sent to AMO for comment;. • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff of HyD to ensure compliance.					
S12.6.1	CH4	• Adopting diaphragm wall construction method; • Grout curtain should be provided in front of the building; • Recharging system should be installed as a contingency measure to mitigate the fluctuation of water table; • the AAA settlement and tilting limit should be 6/8/10 mm and 1/2000, 1/1500 and 1/1000; • Monitoring of vibration levels will be undertaken during the construction phase and the Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. The monitoring proposal should be sent to AMO for comment;. • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff of HyD to ensure compliance.	Protect the building from damage from construction works	Contractor	Yau Ma Tei Police Station (Old Wing) (CKR-01)	Prior to commencement of and during the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S12.6.1, Table 12.2	CH5	• The Alert, Alarm and Action (AAA) vibration limit will be set at 3/4/5 mm/s and a condition survey shall be carried out by the project proponent prior to the construction phase to confirm this assessment • Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded. . The monitoring proposal should be sent to AMO for comment.	Protect the building from damage from construction works	Contractor	Tin Hau Temple (CKR-02)	Prior to commencement of and during the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
							• AMO Proposed Vibration Limits
S12.6.1, Table 12.2	CH6	• The Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5mm/s. • Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded and as such appropriate vibration monitoring on the building should be complied with as appropriate. The monitoring proposal should be sent to AMO for comment.	Protect the building from damage from construction works	Contractor	Kowloon Methodist Church (CKR-10)	During the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S12.6.1, Table 12.2	Ch7	• The Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. • Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded, and as such appropriate vibration monitoring on the building should be complied with as appropriate. The monitoring proposal should be sent to AMO for comment.	Protect the building from damage from construction works	Contractor	Ma Tau Kok Animal Quarantine Depot (CKR-12)	During the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S12.6.1, Table 12.2	CH8	• A monitoring system for settlement, vibration and tilting will be determined and implemented pending determination of the future grading. A monitoring proposal will be submitted to AMO before	Protect the structure from damage from construction works	Contractor	Kowloon City Ferry Pier (CKR-13)	During the construction phase	• Guidelines for Cultural Heritage Impact

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		commencement of work if a historic building grade is accorded.					Assessment • EIAO-TM Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S12.6.1, Table 12.2	CH9	• No mitigation is required at present. If the public pier is granted Grade 1, Grade 2 or Grade 3 status, the mitigation will be revised to adhere to the requirements for protective measures for Graded Historic Buildings	To be determined	Contractor	Ma Tau Kok Public Pier (CKR-16)	During the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19
S12.6.1, Table 12.2	CH10	• A monitoring system for settlement, vibration and tilting will be determined and implemented pending determination of the future grading. A monitoring proposal will be submitted to AMO before commencement of work if a historic building grade is accorded.	Protect the structure from damage from construction works	Contractor	The Kowloon City Vehicular Ferry Pier (CKR-17)	During the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S12.6.1, Table 12.2	CH11	• A condition survey for the tunnel network should be undertaken by the project proponent to determine the present condition of the air raid tunnels and to recommend protective measures to ensure that the tunnels are not damaged by the construction works. and as such appropriate vibration monitoring on the building should be complied with as appropriate. The monitoring proposal should be sent to AMO for comment.	Protect the tunnel network from damage from construction works	Contractor	Air raid precaution tunnels of the K1 Network (CKR-14)	Prior to commencement of and during the construction phase	• Guidelines for Cultural Heritage Impact Assessment • EIAO-TM Annex 10 and Annex 19

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
							• AMO Proposed Vibration Limits

Environmental Mitigation Implementation Schedule – Central Kowloon Route

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
EM&A Project							
S13.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Highways Department	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO
S13.2 – 13.4	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Highways Department / Contractor	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO