

## **Appendix D**

### **Implementation of Environmental Mitigation Measures**

**Appendix 1.1 Implementation Schedule for Environmental Mitigation Measures**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Objectives of Measures and Main Concern to Address	Location	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agent	Implementation status
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<b>Miscellaneous</b>											
3.4.2.1		<u>WSD Fresh Water Service Reservoir</u> Undertake an independent study of the effects of the drill and blast tunnelling on the reservoir to the satisfaction of WSD.	Ensure stability of the reservoir during construction	WSD Fresh Water Service Reservoir	MTR Corporation/ Main Contractor	-		✓		n/a	To be implemented as per construction programme
<b>Landscape and Visual</b>											
5.12.1.2		<u>Reuse of Existing Topsoil</u> Existing topsoil shall be re-used for new planting areas within the project. The Contractor's construction plan shall consider using the soil removed for backfilling. Suitable storage ground, gathering ground and mixing ground shall be set up if necessary.	Conservation of valuable natural landscape resources	Gascoigne Road Rest Garden, Hill slopes above Chatham Road North, Roadside planters at Hung Hom Road	MTR Corporation/ Main Contractor	EIA recommendation		✓		MTR Corporation / LandsD, LCSD / HyD	Implemented
5.12.1.2		<u>Tree Transplantation</u> Transplantation is proposed for a number of trees which are generally able to provide high amenity value and are likely to survive the transplantation process.	Conservation of valuable natural landscape resources	Gascoigne Road Rest Garden, HOM Station, Yan Fung Street Rest Garden Slopes surrounding Fat Kwong Street Playground, WHA Station	MTR Corporation/ Main Contractor/ Detailed Design Consultant	All transplantation will be carried out in accordance with ETWB TCW No. 3/2006.	✓	✓		MTR Corporation / LandsD / HyD / LCSD / AFCD	Implemented
5.12.1.2		<u>Erection of Decorative Hoardings</u> Temporary decorative screen hoardings shall be designed and erected to be compatible with the existing urban context, either brightly and imaginatively or with visually unobtrusive design and colours where more appropriate. All works sites and works areas shall be surrounded by such hoardings, which shall be removed at project completion.	Visual screening of works site during construction	All works sites and Temporary Works Areas	MTR Corporation/ Main Contractor/ Detailed Design Consultant	EIA recommendation	✓	✓		Contractor	Implemented
5.12.1.2		<u>Control of night-time lighting glare</u> All security floodlights for construction sites and temporary works areas shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled	Restricting light pollution to nearby receivers	All works sites and Temporary Works Areas	Main Contractor	EIA recommendation		✓		Contractor	To be implemented as per construction programme

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		to minimize light pollution and night-time glare to nearby receivers.									
5.12.1.2		<u>Re-provision of Public Open Spaces</u> Every effort should be made to minimise use of public open spaces, however if affected by the Project they shall be re-provisioned to an equal or improved standard at completion of the project. Sensitive design and reinstatement of the affected Public Open Spaces (Gascoigne Road Rest Garden, Yan Fung Street Rest Garden, Fat Kwong Street Playground) shall be made, incorporating replacement facilities to those currently provided and using materials of quality suitable for long term use and acceptable to the relevant government departments including LCSD and PlanD, who shall be consulted on the design of the reinstated public open spaces at an early stage of the design process.	Replacement of loss of resources	Gascoigne Road Rest Garden, Yan Fung Street Rest Garden, Fat Kwong Street Playground,	MTR Corporation / Main Contractor/ Detailed Design Consultant	EIA recommendation	✓	✓	✓	LCSD	To be implemented as per construction programme
5.12.1.2		<u>Compensatory Tree Planting</u> Suitable land pockets within the project area will be used for the implementation of compensatory mitigation to offset the net loss of key landscape resources and improve visual amenity. A compensatory tree planting proposal including locations of tree compensation will be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No. 3/2006.	Replacement of loss of resources and Enhancement of visual amenity	Gascoigne Road Rest Garden, Yan Fung Street Rest Garden, Fat Kwong Street Playground, WAB, HOM Station WHA Station	MTR Corporation / Main Contractor/ Detailed Design Consultant	ETWB TCW No. 3/2006. WBTC 7/2002	✓	✓	✓	MTR Corporation / LandsD/ HyD/ LCSD/ AFCD	To be implemented as per construction programme
5.12.1.2		<u>Horizontal and Slope Greening</u> Shotcreting of cut rock slopes shall be avoided and greening applications employed throughout the project.  At HOM Station the backfill slopes shall be hydroseeded and native seedling trees planted. The station roof shall be temporarily greened should there be no further on-site development within 1 year of completion of	Mitigation of loss of resources and Enhancement of visual amenity	Gascoigne Road Rest Garden, Yan Fung Street Rest Garden, Fat Kwong Street Playground, WAB, HOM Station	MTR Corporation/ Main Contractor/ Detailed Design Consultant	WBTC 25/93 WBTC 17/2000	✓	✓	✓	MTR Corporation / LandsD	To be implemented as per construction programme

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		<p>KTE, until permanent measures are undertaken under the proposed property development stage.</p> <p>Parapets at WAB and HOM Station shall be provided with internal permanent planter boxes.</p> <p>The roof at WAB shall be greened to improve visual amelioration from surrounding high level viewers</p> <p>Station entrances at HOM and WHA shall utilise shrub planting areas to provide localised greening</p>		WHA Station							
5.12.1.2		<p><u>Planting</u></p> <p>Vertical greening / climbers shall be applied to all above ground structures against exposed walls where appropriate. Further such localised planting systems shall be instigated subject to technical operational and maintenance constraints.</p>	Mitigation of loss of resources and Enhancement of visual amenity	WAB, HOM Station	MTR Corporation/ Main Contractor/ Detailed Design Consultant	EIA recommendation	✓	✓	✓	MTR Corporation	To be implemented as per construction programme
5.12.1.2		<p><u>Architectural Design Aesthetics for the WAB at Club de Recreio</u></p> <p>The emergency access and ventilation building shall be designed in a way so as to ensure the form, material and surface detailing of this structure can fit sympathetically into the local context. The form shall consider the Cultural Heritage of the Club de Recreio site as well as other proximate buildings. The structure shall incorporate vertical greening / climbers.</p>	Enhancement of visual amenity	WAB	MTR Corporation/ Main Contractor/ Detailed Design Consultant	EIA recommendation	✓	✓	✓	MTR Corporation	To be implemented as per construction programme
5.12.1.2		<p><u>Architectural Design Aesthetics for Above-Ground Structures at HOM Station</u></p> <p>All station entrances, vent shafts, chillers and other above-ground structures shall be designed in accordance with the standardised MTR Corporation architectural theme for the KTE and other current rail projects. However specific attention shall be undertaken to ensure the form, material and surface detailing of these structures is considered to</p>	Enhancement of visual amenity	HOM Station	MTR Corporation/ Main Contractor/ Detailed Design Consultant	EIA recommendation	✓	✓	✓	MTR Corporation	To be implemented as per construction programme

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		fit into the local context in terms of the architectural character of the site.									
5.12.1.2		<p><u>Architectural Design Aesthetics for Above-Ground Structures at WHA Station</u></p> <p>These shall be designed in accordance with the standardised MTR Corporation architectural theme for the KTE and other current rail projects. However specific attention shall be undertaken to ensure the form, material and surface detailing of these structures is considered to fit into the local context in terms of the architectural character of the site.</p>	Enhancement of visual amenity	WHA Station	MTR Corporation/ Main Contractor/ Detailed Design Consultant	EIA recommendation	✓	✓	✓	MTR Corporation	To be implemented as per construction programme
<b>Air Quality</b>											
S.6.7.1.7 & S.6.9.2.3		<p>Cut-and-Cover areas in the vicinity of adits and shafts (if applicable):-</p> <ul style="list-style-type: none"> <li>▪ Heavy construction activities and wind erosion at the cut-and-cover areas, active areas for heavy construction activities:                             <ul style="list-style-type: none"> <li>- Watering every hour at exposed soil.</li> </ul> </li> <li>▪ Trucks for transportation of materials:                             <ul style="list-style-type: none"> <li>- Wheel washing facilities should be provided at all site exits. Vehicles should be washed before leaving works sites. Spoil on trucks should be well covered before leaving works sites to minimise the generation of dusty materials.</li> <li>- Haul roads within works sites should be paved and water spraying would be provided to keep the wet condition.</li> </ul> </li> </ul>	To minimise dust impacts	All relevant works sites	MTR Corporation/ Main Contractor/ Detailed Design Consultant	Air Pollution Control Ordinance	✓	✓			Implemented
S.6.7.1.7 & S.6.9.2.3		<p>Barging point at Hung Hom Finger Pier:</p> <ul style="list-style-type: none"> <li>▪ For haul roads within the area of barging point for transportation of spoil, all road surfaces should be paved and hourly water spraying should be provided to keep the wet condition as far as practical.</li> <li>▪ The spoil unloading process should be</li> </ul>	To minimise dust impacts	Barging Point at Hung Hom Finger Pier	MTR Corporation/ Main Contractor/ Detailed Design Consultant	Air Pollution Control Ordinance	✓	✓			Implemented

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		undertaken within an enclosed tipping hall. Water spraying and 3-sided screen with top should be provided at the discharge point for dust suppression. <ul style="list-style-type: none"> <li>Vehicle wheel washing facilities should be provided at the exits of the barging point.</li> </ul>									
S.6.7.1.5 & S. 6.7.1.8		Rock crushing equipment at HOM Station and barging point at Hung Hom Finger Pier if operated during construction: <ul style="list-style-type: none"> <li>A dust enclosure with fabric baghouse/cartridge filter type dust extraction and collection system or equivalent system with 99% or more dust removal efficiency for the rock crushing equipment, haul road and unloading location; and</li> <li>Watering of paved roads within the area of the rock crushing facility as good site practice.</li> </ul>	To minimise dust impacts	Rock crushing equipment at HOM Station and Barging Point at Hung Hom Finger Pier	MTR Corporation/ Main Contractor/Detail Design Consultant	Air Pollution Control Ordinance	✓	✓			To be implemented as per construction programme
S.6.7.1.5 & S.6.9.2.2		Tarpaulin covers would be provided on wire mesh covered steel cages to prevent dust emission during open blasting at HOM Station;	To minimise dust impacts	Open blasting area at HOM Station	MTR Corporation/ Main Contractor/Detail Design Consultant	EIA recommendation	✓	✓			To be implemented as per construction programme
S.6.9.2.4		Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> <li>Use of regular watering, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>Use of frequent watering for particularly dusty construction areas and areas close to ASRs.</li> <li>Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not</li> </ul>	To minimise dust impacts	All works sites	MTR Corporation/Main Contractor /Detailed Design Consultant	Air Pollution Control Ordinance	✓	✓			Implemented

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		practicable owing to frequent usage, watering should be applied to aggregate fines. <ul style="list-style-type: none"> <li>▪ Open temporary stockpiles should be avoided or covered. Prevent placing dusty material storage piles near ASRs.</li> <li>▪ Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>▪ Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> <li>▪ Imposition of speed controls for vehicles on unpaved site roads. 8km per hour is the recommended limit.</li> <li>▪ Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.</li> <li>▪ 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.</li> <li>▪ Loading, unloading, transfer, handling or storage of large amount of 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.</li> <li>▪ Covering or enclosing any conveyor belt systems will generally be fully enclosed, depending on the design, materials chosen, and dimension of the conveyor system.</li> </ul>									
<b>Air-borne Noise</b>											
S.7.9.2.6		The following good site practices should be implemented: <ul style="list-style-type: none"> <li>▪ Only well-maintained plant should be operated on-site and plants should be serviced regularly during the construction period;</li> <li>▪ Mobile plant, if any, should be sited as</li> </ul>	To minimise air-borne noise impacts	All works sites	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented

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		far from NSRs as possible; <ul style="list-style-type: none"> <li>▪ Plant known to emit noise strongly in one direction should, wherever possible, be properly orientated so that the noise is directed away from the nearby NSRs;</li> <li>▪ Use of site hoarding as a noise barrier to screen noise at low level NSRs;</li> <li>▪ Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum; and</li> <li>▪ Any material stockpiles and other structures should be effectively utilised, wherever practicable, to screen the noise from on-site construction activities.</li> </ul>									
S.7.9.2.1		The following quiet PME should be used: <ul style="list-style-type: none"> <li>▪ Air compressor</li> <li>▪ Asphalt Paver</li> <li>▪ Breaker</li> <li>▪ Bulldozer</li> <li>▪ Concrete lorry mixer</li> <li>▪ Concrete Pump / Grout Pump</li> <li>▪ Crane</li> <li>▪ Cutter, circular, steel (electric)</li> <li>▪ Dump Truck</li> <li>▪ Backhoe</li> <li>▪ Generator</li> <li>▪ Vibrating Poker, hand-held (electric)</li> <li>▪ Rock Drill</li> <li>▪ Roller, vibratory</li> <li>▪ Scraper</li> <li>▪ Water pump (electric)</li> </ul>	To minimise air-borne noise impacts	All relevant works sites	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented



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S.7.9.2.4		Movable or fixed noise barrier should be used for the following PME where practicable: <ul style="list-style-type: none"> <li>▪ Wheeled Excavator/Loader</li> <li>▪ Crane</li> <li>▪ Hydraulic Breaker</li> <li>▪ Scraper</li> <li>▪ Breaker, hand-held</li> <li>▪ Compactor, vibratory</li> <li>▪ Drill, percussive, hand-held (electric)</li> <li>▪ Concrete pump</li> <li>▪ Circular Saw, bench mounted</li> <li>▪ Truck</li> <li>▪ Bar bender and cutter (electric)</li> <li>▪ Conveyor belt</li> <li>▪ Generator, Super Silenced</li> <li>▪ Grout Pump</li> <li>▪ Saw, wire</li> <li>▪ Water Pump, Submersible (Electric)</li> <li>▪ Hydraulic Jack with Pump</li> </ul>	To minimise air-borne noise impacts	All relevant works sites	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented
S.7.9.2.4		Acoustic fabric should be used for the following PME where practicable: <ul style="list-style-type: none"> <li>▪ Compressor and Pneumatic Drilling Rig</li> <li>▪ Piling, vibrating hammer</li> <li>▪ Rock Drill</li> <li>▪ Silent Piling System</li> </ul>	To minimise air-borne noise impacts	All relevant works sites	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented
S.7.9.2.4		Noise enclosure/acoustic shed should be used for the following PME where practicable and will generally be fully enclosed depending on the design, materials chosen, and dimension of the PME: <ul style="list-style-type: none"> <li>▪ Air Compressor</li> <li>▪ Rock Crushing Equipment</li> </ul>	To minimise air-borne noise impacts	All relevant works sites	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented
S.7.9.2.4		Silencer should be used for the ventilation fans.	To minimise air-borne noise impacts	All relevant works sites	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented
S.7.9.2.6		Use of temporary hoardings along the works boundary.	To minimise air-borne noise impacts	All relevant works sites	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented

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S.7.9.2.2		Noise enclosures should be installed for the muckout points in WS1 (Gascoigne Road Rest Garden), WS7a1 (WAB at Club de Recreio) and WS26a (Fat Kwong Street Playground)	To comply with the criteria of Noise Control Ordinance.	All muckout points at WS1, WS7a1 and WS26a	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			Implemented
S.7.9.2.3		Noise enclosures should be installed for all rock crushing equipment.	To comply with the criteria of Noise Control Ordinance.	All rock crushing equipment	MTR Corporation/ Main Contractor	Noise Control Ordinance		✓			To be implemented as per construction programme
S.7.10.1.2		The maximum permissible sound power levels (max SWLs) for the fixed plant should be complied with during the selection of equipment and mitigation measures.	To comply with the criteria of Noise Control Ordinance.	All relevant location of fixed plant	MTR Corporation/ Detailed Design Consultant	Noise Control Ordinance	✓		✓		To be implemented as per construction programme
S.7.10.2.1		The detailed design for all fixed plant should incorporate the following good practice where practicable: <ul style="list-style-type: none"> <li>▪ Louvers should be orientated away from adjacent NSRs whenever practicable;</li> <li>▪ Adequate direct noise mitigation measures including silencers, acoustic louvers or acoustic enclosures should be adopted where necessary; and</li> <li>▪ Quieter plant should be chosen as far as practical.</li> </ul>	To comply with the criteria of Noise Control Ordinance.	At outlets of fixed plant including ventilation building, ventilation shafts, plant room for chiller plant and cooling towers, etc	MTR Corporation/ Detailed Design Consultant	Noise Control Ordinance	✓		✓		To be implemented as per construction programme
<b>Ground-borne Noise</b>											
S.8.7.1.2		MTR will further review the proposed mitigation measures for operational ground-borne noise during the construction stage after the tunnel boring.	To comply with the criteria of Noise Control Ordinance.	At suitable location	MTR Corporation/ Main Contractor	-	✓				To be implemented as per construction programme
S.8.7.1.3		Commissioning test is recommended to ensure compliance of the operational ground-borne noise levels	To comply with the criteria of Noise Control Ordinance.	Designated locations	MTR Corporation/ Main Contractor	Noise Control Ordinance	✓	✓	✓		To be implemented as per construction programme
<b>Water Quality</b>											
S.9.7.6		Construction site run-off and general construction activities: <ul style="list-style-type: none"> <li>▪ The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where</li> </ul>	To control water quality impact from construction site runoff and general construction activities	All works sites	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance, TM-DSS		✓			Implemented

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		applicable.									
S.9.7.6		In case seepage of uncontaminated groundwater occurs, groundwater should be pumped out from the works areas and discharged into the storm system via silt removal facilities. Uncontaminated groundwater from dewatering process should also be discharged into the storm system via silt traps.	To control water quality impact from groundwater	All works sites	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance		✓			To be implemented as per construction programme
S.9.7.6		At the barging point, mitigation measures for control of water quality impact from surface run-off should be applied and the following good site practices should also be adopted: <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ All hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material.</li> <li>▪ Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site.</li> <li>▪ Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation.</li> </ul>	To control water quality impact from barging point	Barging point	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance		✓			To be implemented as per construction programme
S.9.7.6		For effluent discharge, there is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality should meet the requirements specified in the discharge licence. Minimum distances of 100m should be maintained between the discharge points of construction site effluent and the existing seawater intakes. If	To control water quality impact from effluent discharge from construction site	All works sites	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance		✓			Implemented

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		monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of Regional Office of the EPD.									
S.9.7.6		To prevent the accidental spillage of chemicals, the Contractor should 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.	To control water quality impact from accidental chemical spillage	All works sites	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance, Waste Disposal Ordinance		✓			Implemented
S.9.7.6		Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	To control water quality impact from accidental chemical spillage	All works sites	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance, Waste Disposal Ordinance		✓			Implemented
S.9.7.6		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 follows: <ul style="list-style-type: none"> <li>▪ Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.</li> <li>▪ Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.</li> <li>▪ Storage area should be selected at a safe</li> </ul>	To control water quality impact from accidental chemical spillage	All works sites	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance, Waste Disposal Ordinance		✓		Implemented	

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		location on site and adequate space should be allocated to the storage area.									
S.9.7.6		<p>Regarding the hydrogeological impacts in the construction of cut-and-cover tunnels and associated excavations for the WAB / ventilation building, the following measures should be in place in order to mitigate any drawdown effects to the groundwater table during the operation of the temporary dewatering works:</p> <ul style="list-style-type: none"> <li>▪ Toe grouting should be applied beneath the toe level of the temporary/permanent cofferdam walls as necessary to lengthen the effective flow path of groundwater from outside and thus control the amount of water inflow to the excavation.</li> <li>▪ Recharge wells should be installed as necessary outside the excavation areas. Water pumped from the excavation areas should be recharged back into the ground.</li> </ul>	To control groundwater hydrogeological impact and groundwater drawdown	All works sites	MTR Corporation/ Main Contractor	EIAO-TM, Water Pollution Control Ordinance		✓			To be implemented as per construction programme
S.9.8.6		<p>Measures for the tunnel run-off and drainage include:</p> <ul style="list-style-type: none"> <li>▪ Track drainage channels discharge should pass through oil/grit interceptors/chambers to remove oil, grease and sediment before being pumped to the foul sewer/holding tank for further disposal.</li> <li>▪ The silt traps and oil interceptors should be cleaned and maintained regularly.</li> <li>▪ Oily contents of the oil interceptors should be transferred to an appropriate disposal facility, or to be collected for reuse, if possible.</li> </ul>	To control runoff from rail track	Tunnels and rail tracks	MTR Corporation/ Detailed Design Consultant	Water Pollution Control Ordinance	✓		✓		To be implemented as per construction programme
S.9.8.6		<p>Measures for the control of sewage effluents include:</p> <ul style="list-style-type: none"> <li>▪ Connection of domestic sewage generated from the KTE project should be diverted to the foul sewer wherever possible. If public sewer system is not</li> </ul>	To control water quality impact from sewage effluent discharge from the ventilation building and Stations	Ventilation building and Stations	MTR Corporation/ Detailed Design Consultant	EIAO-TM, Water Pollution Control Ordinance, TM-DSS, ProPECC PN	✓		✓		To be implemented as per construction programme

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		available, sewage tankering away services or on-site sewage treatment facilities should be provided to prevent direct discharge of sewage to the nearby storm system and all the discharge should comply with the requirements stipulated in the TM-DSS. <ul style="list-style-type: none"> <li>For handling, treatment and disposal of other operation stage effluent, the practices outlined in ProPECC PN 5/93 should be adopted where applicable.</li> </ul>				5/93					
<b>Waste Management Implications</b>											
S.10.5.6.1		Recommendations for good site practices: <ul style="list-style-type: none"> <li>Prepare a Waste Management Plan approved by the Engineer/Supervising Officer of the Project based on current practices on construction sites.</li> <li>Training of site personnel in, site cleanliness, proper waste management and chemical handling procedures.</li> <li>Provision of sufficient waste disposal points and regular collection of waste.</li> <li>Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.</li> <li>Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>Separation of chemical wastes for special handling and appropriate treatment.</li> </ul>	To implement good site practice for handling, sorting reuse and recycling of C&D materials	All works sites	Main Contractor	Waste Disposal Ordinance, Land (Miscellaneous Provisions) Ordinance, ETWB TC(W) No 31/2004		✓			Implemented
S.10.5.6.1		Recommendations for waste reduction measures: <ul style="list-style-type: none"> <li>Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.).</li> <li>Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or</li> </ul>	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal of waste	All works sites	Main Contractor	Waste Disposal Ordinance, Land (Miscellaneous Provisions) Ordinance		✓			Implemented

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		recycling of materials and their proper disposal. <ul style="list-style-type: none"> <li>▪ Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce.</li> <li>▪ Proper storage and site practices to minimize the potential for damage or contamination of construction materials.</li> <li>▪ Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.</li> <li>▪ Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle.</li> </ul>									
S.10.5.6.1		The Contractor should prepare and implement a Waste Management Plan as a part of the Environmental Management Plan in accordance with ETWB TCW No 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities.	To keep trace of the generation, minimization, reuse and disposal of C&D materials in the Project	All works sites	Main Contractor	ETWB TCW No 19/2005		✓			Implemented
S.10.5.6.1		Storage of materials on-site may induce adverse environmental impacts if not properly managed, recommendations to minimise the impacts include: <ul style="list-style-type: none"> <li>▪ Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution.</li> <li>▪ Maintain and clean storage areas routinely.</li> <li>▪ Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away.</li> <li>▪ Different locations should be designated</li> </ul>	To minimise potential impacts of waste storage and enhance reusable volume	All works sites	Main Contractor	-		✓			Implemented

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		to stockpile each material to enhance reuse.									
S.10.5.6.1		Waste hauliers must hold a valid permit for the collection of waste as stipulated in their permits. Removal of waste should be done in a timely manner.	To collect and remove waste generated	All works sites	Main Contractor	-		✓			Implemented
S.10.5.6.1		Implementation of trip-ticket system to monitor waste disposal and control fly-tipping. <ul style="list-style-type: none"> <li>▪ Set up warning signs at vehicular access points reminding drivers of designated disposal sites and penalties of an offence.</li> <li>▪ Installation of close-circuited television at access points of vehicles to monitor and prevent illegal dumping.</li> </ul>	To monitor disposal of waste and control fly-tipping	All works sites	Main Contractor	ETWB TC(W) No 31/2004		✓			Implemented
S.10.5.6.1		Wheel washing facilities should be provided before the trucks leave the works area.	To minimise dust impact	All works sites	Main Contractor	-		✓			Implemented
S.10.5.6.1		The Contractor should ensure the on-site separation from inert portion. The waste delivered to landfill should not contain any free water or have water content more than 70% by weight. The haulier must ensure suitable amount of waste would be loaded on different types of trucks used. A one-week notice should be given to EPD with information on Contractor's name and respective contact details.	To meet the requirement for disposal at landfill	All works sites	Main Contractor	-		✓			Implemented
S.10.5.6.1		If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for storage of chemical waste should : <ul style="list-style-type: none"> <li>▪ Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed.</li> <li>▪ Have a capacity of less than 450 litres unless the specifications have been approved by EPD; and</li> </ul>	To properly store the chemical waste within works sites and works areas	All works sites	Main Contractor	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes		✓			Implemented



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		<ul style="list-style-type: none"> <li>Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul>									
S.10.5.6.1		<p>The chemical storage areas should:</p> <ul style="list-style-type: none"> <li>Be clearly labelled to indicate corresponding chemical characteristics of the chemical waste and used for storage of chemical waste only.</li> <li>Be enclosed on at least 3 sides.</li> <li>Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.</li> <li>Have adequate ventilation.</li> <li>Be covered to prevent rainfall from entering.</li> <li>Be properly arranged so that incompatible materials are adequately separated.</li> </ul>	To prepare appropriate storage areas for chemical waste at works areas	All works sites	Main Contractor	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes		✓			Implemented
S.10.5.6.1		Lubricants, waste oils and other chemical wastes would be generated during the maintenance of vehicles and mechanical equipments. 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.	To clearly label the chemical waste at works areas	All works sites	Main Contractor	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes		✓			Implemented
S.10.5.6.1		A trip-ticket system should be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical waste. The Contractor should employ a licensed collector to transport and dispose of the chemical wastes, to either the approved CWTC at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To monitor the generation, reuse and disposal of chemical waste	All works sites	Main Contractor	Waste Disposal (Chemical Waste) (General) Regulation		✓			Implemented

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S.10.5.6.1		General refuse should be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes.	To properly store and separate from other C&D materials for subsequent collection and disposal	All works sites	Main Contractor	-		✓			Implemented
S.10.5.6.1		The recyclable component of general refuse, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	To facilitate recycling of recyclable portions of refuse	All works sites	Main Contractor	-		✓			Implemented
S.10.5.6.1		The Contractor should carry out a training programme for workers in avoiding, reducing, reusing and recycling of materials generation. Posters and leaflets advising on the use of the bins should also be provided in the sites as reminders.	To raise workers' awareness on recycling issue	All works sites	Main Contractor	-		✓			Implemented
S.10.6.4		Chemical waste during the operation of the KTE project: <ul style="list-style-type: none"> <li>▪ The requirements stipulated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes should be followed in handling of chemical waste as in construction phase.</li> <li>▪ 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 would be collected by a licensed collector to a licensed facility for final treatment and disposal.</li> <li>▪ The recommendations proposed for the mitigation of impacts from chemical waste in construction phase should also be followed.</li> </ul>	To avoid environmental impacts in handling, storage and disposal of chemical waste	Ventilation building and Stations	MTR Corporation	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, Waste Disposal (Chemical Waste) (General) Regulation			✓		Implemented
S.10.6.4		General refuse during the operation of the	To separate the general refuse from other waste	Ventilation building and	MTR Corporation	-			✓		Implemented

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		KTE project: <ul style="list-style-type: none"> <li>Provide recycling bins at designated areas for proper recycling of papers, aluminium cans and plastics bottles.</li> <li>Separation from other waste types and collected by licensed collectors at daily basis to minimize the potential impacts from odour and vermin.</li> </ul>	types and proper disposal of the refuse	Stations							
S.10.6.4		Industrial waste during the operation of the KTE project: <ul style="list-style-type: none"> <li>Separation of reusable components like steel before collection by licensed collector</li> </ul>	To recycle useful materials from industrial waste and proper disposal	Ventilation building and Stations	MTR Corporation	-		✓			Implemented
<b>Hazard to Life</b>											
S.12.12.1, S.12.12.6	Section 12.10.2.1, Section 12.10.2.4	Improved truck design to reduce the amount of combustibles in, front exhaust spark arrester, 1 x 9 kg water based and 1 x 9 kg dry chemical powder fire extinguishers. This should be combined with monthly vehicle inspection.	To meet the ALARP requirement.	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.1	Section 12.10.2.1	The explosive truck accident frequency should be minimized by implementing a dedicated training programme for both the driver and his attendants, including regular briefing sessions, implementation of a defensive driving attitude. In addition, drivers should be selected based on good safety record, and medical checks.	To meet the ALARP requirement.	-	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.1	Section 12.10.2.1	The contractor should as far as practicable combine the explosive deliveries for a given work area.	To meet the ALARP requirement.	-	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.1	Section 12.10.2.1	The explosive truck fire involvement frequency should be minimized by implementing a better emergency response and training to make sure the adequate fire extinguishers are used and attempt is made to evacuate the area of the incident or securing the explosive load if possible. All explosive vehicles should also be equipped with bigger	To meet the ALARP requirement.	-	MTR Corporation/ Main Contractor	-		✓		-	Implemented

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		capacity AFFF-type extinguishers.									
S.12.12.1	Section 12.10.2.1	A minimum headway between two consecutive truck conveyors of at least 10 min is recommended	To meet the ALARP requirement.	Along explosives transport routes	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.2	Section 12.10.2.2	Blasting activities including storage and transport of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Works areas at which explosives would be stored and/or used.	MTR Corporation/ Main Contractor	Dangerous Goods Ordinance		✓		-	Implemented
S.12.12.1 & S.12.12.7.2	Section 12.10.2.1 & Section 12.10.2.5	Only the required quantity of explosives for a particular blast should be transported to avoid the return of unused explosives to the temporary magazine.  The number of return trips to the temporary magazine with the full load of explosives or partial load should be minimised by proper co-ordination between blasting and delivery.  If disposal is required for small quantities, disposal should be made in a controlled and safe manner by a Registered Shotfirer.	To reduce the risk during explosives transport.	Works areas at which explosives would be stored and/ or used.	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.5	Section 12.10.2.4	Use only experienced driver(s) with good safety record for explosive vehicle(s). Training should be provided to ensure it covers all major safety subjects.	To ensure safe transport of explosives.	At suitable location	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.5	Section 12.10.2.4	Develop procedure to ensure that parking space on the site is available for the explosives truck. Confirmation of parking space should be communicated to truck drivers before delivery.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.3	Section 12.10.2.3	Delivery vehicles shall not be permitted to remain unattended within the temporary magazine site (or appropriately wheel-locked).	To reduce the risk of fire within the magazine	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.3	Section 12.10.2.3	Good house-keeping within and outside of the temporary magazine to ensure that combustible materials (including vegetation)	To reduce the risk of fire within the magazine	Temporary explosives	MTR Corporation/ Main Contractor	-		✓		-	Implemented

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		are removed and not allowed to accumulate.		magazine							
S.12.12.5	Section 12.10.2.4	Detonators shall not be transported in the same vehicle with other Class 1 explosives.	To reduce the risk of explosion during the transport of cartridged emulsion	-	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.2	Section 12.10.2.2	Emergency plan (i.e. temporary magazine operational manual) shall be developed to address uncontrolled fire in temporary magazine area. The case of fire near an explosive carrying truck in jammed traffic should also be covered. Drill of the emergency plan should be carried out at regular intervals.	To reduce the risk of fire.	Temporary explosives magazine and along explosives transport routes	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.2	Section 12.10.2.2	Adverse weather working guideline should be developed to clearly define procedure for transport explosives during thunderstorm.	To ensure safe transport of explosives.	Along explosives transport routes	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.2	Section 12.10.2.2	The magazine storage quantities need to be reported on a monthly basis to ensure that the two day storage capacity is not exceeded.	To reduce the risk within the magazine	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.5	Section 12.10.2.4	During transport of the explosives within the tunnel, hot work should not be permitted in the vicinity of the explosives offloading or charging activities.	To ensure safe transport of explosives.	Along explosives transport routes	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.5	Section 12.10.2.4	Ensure that UN 1.4B packaging of detonators remains intact until handed over at blasting site.	To reduce the risk of explosion during the transport of detonator.	-	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.6	Section 12.10.2.4	Steel vehicle tray welded to a steel vertical fire screen should be mounted at least 150 mm behind the drivers cab and 100 mm from the steel cargo compartment, the vertical screen shall protrude 150 mm in excess of all three (3) sides of the steel cargo compartment	To reduce the risk during explosives transport.	-	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.10	Section 12.10.2.5	Ensure cartridged emulsion with high water content should be preferred. Also, the emulsion with perchlorate formulation	To ensure safe explosives to be used.	-	MTR Corporation/ Main Contractor	-		✓		-	Implemented

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		should be avoided.									
S.12.12.3	Section 12.10.2.3	Traffic Management should be implemented within the temporary magazine site, to ensure that no more than 1 vehicle will be loaded at any time, in order to avoid accidents involving multiple vehicles within the site boundary. Based on the construction programme, considering that 6 trucks could be loaded over a peak 2 hour period, this is considered feasible.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.3	Section 12.10.2.3	The design of the fill slope close to the temporary magazine site should consider potential washout failures and incorporate engineering measures to prevent a washout causing damage to the temporary magazine stores	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	MTR Corporation/ Main Contractor/ Fill Bank Office	-		✓		-	Implemented
S.12.12.2	Section 12.10.2.2	The security plan should address different alert security level to reduce opportunity for arson / deliberate initiation of explosives. The corresponding security procedure should be implemented with respect to prevailing security alert status announced by the Government.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.3	Section 12.10.2.3	A suitable work control system should be introduced, such as an operational manual including Permit-to-Work system.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented
S.12.12.3	Section 12.10.2.3	The magazine building shall be regularly checked for water seepage through the roof, walls or floor.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	MTR Corporation/ Main Contractor	-		✓		-	Implemented

Note: D = Design  
 C = Construction  
 O = Operation