

## Project Implementation Schedule

Note: Chapters 1 to 2 of the EIA report present the background information of the Project, identified designated project, concurrent projects, objectives and scope for various environmental aspects, and description on recommended outline development plan. Chapters 3 to 14 of the EIA report present the EIA findings and mitigation measures are described below with cross-reference to the EIA report. Chapters 15, 16 & 17 summarize the environmental monitoring requirements, environmental outcomes and conclusion.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
<b>Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)</b>							
<b>Construction Dust Impact</b>							
S3.8	D1	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 is proposed to achieve dust removal efficiency of 92.1%. 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 1.7 L/m <sup>2</sup> to achieve the respective dust removal efficiencies.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>• APCO</li> </ul> To control the dust impact to meet HKAQO and TM-EIAO
S3.8	D2	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 phase	<ul style="list-style-type: none"> <li>• APCO</li> </ul> To control the dust impact to meet HKAQO and TM-EIAO
S3.8	D3	Following dust suppression measures should also be incorporated by the Contractor to control the dust nuisance throughout the construction phase: <ul style="list-style-type: none"> <li>• 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;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones;</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious</li> </ul>	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>• APCO</li> </ul> To control the dust impact to meet HKAQO and TM-EIAO

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		<p>sheeting to ensure that the dusty materials do not leak from the vehicle;</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided 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.</li> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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 floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;</li> <li>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;</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> </ul>					

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		<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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</li> <li>• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete 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.</li> </ul>					
S3.8	D4	Implement regular dust monitoring under EM&A programme during the Construction phase.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction phase	<ul style="list-style-type: none"> <li>• TM-EIAO</li> </ul>
<b>Noise Impact (Construction Phase)</b>							
S4.9	N1	Implement the following good site management practices: <ul style="list-style-type: none"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>• 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;</li> <li>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>• mobile plant should be sited as far away from NSRs as possible and practicable; and</li> </ul>	Control construction airborne noise	Contractor	All construction sites where practicable	Construction phase	Annex 5, TM-EIAO

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		<ul style="list-style-type: none"> <li>material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>					
S4.9	N2	Install temporary site hoarding (approx 2.4m high) 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 where practicable	Construction phase	Annex 5, TM-EIAO
S4.9	N3	Install movable noise barriers, full enclosure and acoustic mat, screen the noisy plants including air compressor and generator.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction phase	Annex 5, TM-EIAO
S4.9	N4	Use of "Quiet" Plant and Working Methods	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction phase	Annex 5, TM-EIAO
S4.9	N5	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 phase	Annex 5, TM-EIAO
S4.9	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring stations	Construction phase	TM-EIAO
<b>Noise Impact (Operational Phase)</b>							
S4.9	N7	Provide noise barrier before operation of the proposed project and locations of barriers are stated as following: <ul style="list-style-type: none"> <li>KTN-NB02: Approx. 25m long, 5m high NB;</li> <li>KTN-NB15: Approx. 65m long, 3m high NB;</li> <li>KTN-NB16: Approx. 55m long, 3m high NB;</li> <li>KTN-NB17: Approx. 55m long, 3m high NB;</li> <li>KTN-NB18: Approx. 60m long, 5m high NB;</li> <li>KTN-NB21: Approx. 60m long, 5m high NB;</li> </ul>	Control operational airborne noise due to road traffic	Project Proponent/ Contractor	Refer to Figures 4.9a, 4.9b and 4.10b	Prior to operation of the Project	Annex 5, TM-EIAO

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		<ul style="list-style-type: none"> <li>• KTN-NB22: Approx. 35m long, 5m high NB;</li> <li>• KTN-NB26: Approx. 45m long, 7m vertical barrier with 3m cantilevered arm;</li> <li>• KTN-NB32: Approx. 20m long CNB ;</li> <li>• KTN-NB33: Approx. 85m long CNB ;</li> <li>• KTN-NB34: Approx. 70m long CNB ;</li> <li>• KTN-NB36: Approx. 45m long, 5m high NB;</li> <li>• KTN-NB41: Approx. 50m long, 5m high NB;</li> <li>• KTN-NB72: Approx. 115m long, 3m high NB;</li> <li>• KTN-SE04: Approx. 100m long SE with opening to south-western direction;</li> <li>• FLN-NB41: Approx. 95m long, 5m high NB;</li> <li>• FLN-NB42: Approx. 75m long CNB;</li> <li>• FLN-NB44: Approx. 290m long CNB;</li> <li>• FLN-NB45: Approx. 180m long CNB;</li> <li>• FLN-NB48: Approx. 100m long CNB;</li> <li>• FLN-NB49: Approx. 55m long CNB;</li> <li>• FLN-NB50: Approx. 70m long CNB;</li> <li>• FLN-NB51: Approx. 55m long CNB;</li> <li>• FLN-NB52: Approx. 55m long, 5m high NB;</li> <li>• FLN-NB53: Approx. 50m long, 3m high NB;</li> <li>• FLN-NB54: Approx. 50m long, 3m high NB;</li> <li>• FLN-NB55: Approx. 70m long, 3m high NB;</li> <li>• FLN-NB56: Approx. 75m long, 3m high NB;</li> <li>• FLN-NB58: Approx. 40m long, 5m high NB;</li> <li>• FLN-NB59: Approx. 65m long, 5m high NB;</li> </ul>					

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		<ul style="list-style-type: none"> <li>• FLN-NB60: Approx. 70m long, 3m high NB;</li> <li>• FLN-NB61: Approx. 70m long CNB;</li> <li>• FLN-NB62: Approx. 50m long CNB;</li> <li>• FLN-NB63: Approx. 270m long CNB;</li> <li>• FLN-NB65: Approx. 65m long, 5m high NB;</li> <li>• FLN-NB66: Approx. 85m long CNB;</li> <li>• FLN-NB67: Approx. 15m long, 5m high NB;</li> <li>• FLN-NB68: Approx. 105m long, 5m high NB;</li> <li>• FLN-NB69: Approx. 390m long, 5m high NB;</li> <li>• FLN-NB70: Approx. 285m long, 5m high NB;</li> <li>• FLN-NB71: Approx. 120m long, 5m high NB;</li> <li>• FLN-NB72: Approx. 145m long CNB;</li> <li>• FLN-NB73: Approx. 55m long, 4m high NB;</li> <li>• FLN-NB74: Approx. 260m long, 7m high NB;</li> <li>• FLN-NB75: Approx. 35m long, 3m high NB;</li> <li>• FLN-NB76: Approx. 115m long CNB;</li> <li>• FLN-NB77: Approx. 130m long, 5m high NB;</li> <li>• FLN-NB78: Approx. 45m long CNB;</li> <li>• FLN-NB79: Approx. 45m long, 5m high NB;</li> <li>• FLN-NB91: Approx. 110m long, 3m high NB;</li> <li>• FLN-NB92: Approx. 50m long CNB;</li> <li>• FLN-NB93: Approx. 65m long CNB;</li> <li>• FLN-NB94: Approx. 35m long CNB;</li> <li>• FLN-NB95: Approx. 60m long CNB;</li> <li>• FLN-NB96: Approx. 70m long CNB;</li> </ul>					

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		<ul style="list-style-type: none"> <li>FLN-NB97: Approx. 80m long, 5m high NB;</li> <li>FLN-LNS91: Approx. 100m long LNS;</li> <li>FLN-LNS92: Approx. 115m long LNS;</li> <li>FLN-LNS93: Approx. 270m long LNS;</li> <li>FLN-LNS94: Approx. 225m long LNS;</li> <li>FLN-LNS95: Approx. 700m long LNS;</li> <li>FLN-LNS96: Approx. 180m long LNS;</li> <li>FLN-LNS97: Approx. 75m long LNS;</li> <li>FLN-LNS98: Approx. 260m long LNS</li> <li>Provision of acoustic insulation with air conditioning has been allowed to the east and south facades (4/F to 8/F) of educational institutions (FLN C2-9).</li> <li>Building layout, setback distance, noise tolerant building according to Revised RODP.</li> </ul>					
S4.8	N8	<p><u>District Cooling System</u></p> <ul style="list-style-type: none"> <li>Provision of noise mitigation measures including silencers, acoustic louvers and acoustic enclosure if necessary;</li> <li>The maximum allowable sound power level (DCS KTN B1-7) shall not exceed 75 dB(A);</li> </ul> <p><u>KTN F1-3, KTN F1-4, KTN D1-12, KTN D1-13</u></p> <ul style="list-style-type: none"> <li>Provision of acoustic insulation with air conditioning has to be allowed to KTN F1-3, KTN F1-4, KTN D1-12, KTN D1-13;</li> </ul> <p><u>Pumping Station</u></p> <ul style="list-style-type: none"> <li>Provision of noise mitigation measures including silencers, acoustic louvers and acoustic enclosure if necessary;</li> <li>The maximum allowable sound power level for FLN A1-2 shall not exceed 67 dB(A)</li> </ul>	<p>Control operational airborne noise due to the operation of fixed plant</p> <p>The noise design requirement/criteria should be incorporated in the design of the relevant facilities during the planning/design stage</p>	Detailed Design Consultant/ Contractor/ Operator	All plant rooms where practicable	Detailed design, construction and operation phases	Noise Control Ordinance and its TM, TM-EIAO
S4.8	N9	Sports Ground / Sports Complex	Control operational airborne noise due to the operation	Organiser	Sports Ground /	Prior to rehearsal	Noise Control Ordinance and its

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		<ul style="list-style-type: none"> <li>Provision of cluster of small power loudspeaker if necessary;</li> <li>Provision of directional loudspeaker and orientate to point towards the audience if necessary;</li> <li>Provision of "Limiter" device in the system to set the upper bound of the output sound level if necessary</li> </ul>	<p>of fixed plant</p> <p>The noise design requirement/criteria should be incorporated in the design of the relevant facilities during the planning/design stage</p>		Sports Complex	and main event	TM, TM-EIAO
<b>Water Quality Impact (Construction Phase)</b>							
S5.7	W1	<p><u>Construction Runoff</u></p> <p>In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94), construction phase mitigation measures should be provided and the Storm Water Pollution Control Plan is given below.</p> <p><b>Storm Water Pollution Control Plan</b></p> <ul style="list-style-type: none"> <li>At the start of site establishment, 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.</li> <li>Diversion of natural stormwater should be provided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipments in order to avoid or minimize polluted runoff. Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m<sup>3</sup> capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped.</li> <li>The dikes or embankments for flood protection should be</li> </ul>	Control construction runoff	Contractor	All construction sites	Construction phase	WPCO, EIAO, TM-EIAO

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		<p>implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt/sediment trap. The silt/sediment traps should be incorporated in the permanent drainage channels to enhance deposition rates.</p> <ul style="list-style-type: none"> <li>• The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps should be undertaken by the Contractor prior to the commencement of construction.</li> <li>• Construction works should be programmed to minimize surface excavation works during the rainy seasons (April to September). All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.</li> <li>• 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.</li> <li>• Measures should be taken to minimize the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, it 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.</li> <li>• All open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m<sup>3</sup> 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.</li> <li>• 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</li> </ul>					

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		<p>the drainage system and storm runoff being directed into foul sewers.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>• 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.</li> <li>• Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the</li> </ul>					

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		meander, wetlands and fish ponds.					
S5.7	W2	<p><u>Stream Diversion</u></p> <p>In order to prevent sediment transport during riverbank works, deployment of silt curtain should be implemented, especially when construction works encroach or occur in close distance to water body. It is recommended to carry out all the riverbank works and diversion works within a cofferdam or diaphragm wall and the work areas on riverbed should be kept in dry condition.</p>	Minimize water quality impact due to stream diversion	Contractor	All streams that required diversion	Construction phase	WPCO, EIAO, TM-EIAO
S5.7	W3	<p><u>Groundwater from Contaminated Area</u></p> <ul style="list-style-type: none"> <li>For other inaccessible sites, site investigation is required when they are resumed and handed over to the Project Proponent to identify if contaminated groundwater is found.</li> <li>If the investigation results indicated that the groundwater to be generated from construction works would be contaminated, the contaminated groundwater should be either discharged into recharged wells, or properly treated in compliance with the requirements of Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters.</li> <li>If recharged well method were used, the groundwater quality in the recharged well should not be affected by recharging operation, i.e. the pollution levels of the recharged groundwater should not be higher than that in the recharging wells.</li> <li>If treatment and discharge method were used, the design of wastewater treatment facilities, such as active carbon and petrol interceptor, should be submitted to the EPD and a discharge license should be obtained under the WPCO through the Regional Offices of EPD.</li> </ul>	Minimize water quality impact due to potential groundwater from contaminated areas	Contractor	All identified groundwater-contaminated areas	Construction phase	WPCO, EIAO, TM-EIAO, TM-Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters
S5.7	W4	<p><u>Sewage from Workforce</u></p> <p>Portable chemical toilets and sewage holding tanks should be provided for handling the construction sewage generated by the workforce. A licensed Contractor should be employed to provide appropriate and adequate portable toilets and be responsible for</p>	Handling of site sewage	Contractor	All construction sites	Construction phase	WPCO, EIAO, TM-EIAO

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		<p>appropriate disposal and maintenance.</p> <p>Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water quality impact after undertaking all required measures.</p>					
<b>Waste Management (Construction Waste)</b>							
S7.6	WM1	<p><u>Waste Reduction Measures</u></p> <p>Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction:</p> <ul style="list-style-type: none"> <li>• segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal;</li> <li>• proper storage and site practices to minimize the potential for damage and 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>• sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.);</li> <li>• provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.</li> </ul>	Reduce waste generation	Contractor	All construction sites where practicable	Prior to the commencement of construction	• Waste Disposal Ordinance
S7.6	WM2	Prepare Waste Management Plan and submit to the Engineer for approval	Minimize waste generation during construction	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance

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S7.6	WM3	<p><u>Good Site Practice</u></p> <p>The following good site practices are recommended throughout the construction activities:</p> <ul style="list-style-type: none"> <li>• nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;</li> <li>• training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;</li> <li>• provision of sufficient waste disposal points and regular collection for disposal;</li> <li>• appropriate measures to minimize 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> </ul>	Minimize waste generation during construction	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance
S7.6	WM4	<p><u>Storage of Waste</u></p> <p>The following recommendation should be implemented to minimize the impacts:</p> <ul style="list-style-type: none"> <li>• waste such as soil should be handled and stored well to ensure secure containment;</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 to stockpile each material to enhance reuse;</li> </ul>	Minimize waste impacts from storage	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance
S7.6	WM5	<p><u>Collection and Transportation of Waste</u></p> <p>The following recommendation should be implemented to minimize the impacts:</p>	Minimize waste impacts from storage	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance

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		<ul style="list-style-type: none"> <li>remove waste in timely manner;</li> <li>employ the trucks with cover or enclosed containers for waste transportation;</li> <li>obtain relevant waste disposal permits from the appropriate authorities; and</li> <li>disposal of waste should be done at licensed waste disposal facilities.</li> </ul>					
S7.6	WM6	<p><u>Excavated and C&amp;D Material</u></p> <p>Wherever practicable, C&amp;D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public filling areas or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&amp;D materials:</p> <ul style="list-style-type: none"> <li>maintain temporary stockpiles and reuse excavated fill material for backfilling;</li> <li>carry out on-site sorting;</li> <li>deliver surplus artificial hard materials to Tuen Mun Area 38 recycling plant or its successor for recycling into subsequent useful products;</li> <li>make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>implement a recording system for the amount of waste generated, recycled and disposed of for checking;</li> </ul> <p>Standard formwork should be used as far as practicable in order to minimize the arising of C&amp;D waste. The use of more durable formwork (e.g. metal hoarding) or plastic facing should be encouraged in order to enhance the possibility of recycling. The purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage.</p> <p>Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area.</p>	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> <li>ETWB TCW No. 19/2005</li> </ul>
S7.6	WM7	<p><u>Contaminated Soil</u></p>	Remediate contaminated	Contractor	All construction sites	Construction	<ul style="list-style-type: none"> <li>Practice Guide for Investigation and</li> </ul>

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		As a precaution, it is recommended that standard good site practice should be implemented during the construction phase to minimize any potential exposure to contaminated soils or groundwater. The details of mitigation measures to minimize the potential environmental implications arising from the handling of contaminated materials refer to Land Contamination Section.	soil		where applicable	phase	Remediation of Contaminated Land
S7.6	WM8	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste Contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul>	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>Waste Disposal (Chemical Waste) (General) Regulation</li> <li>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</li> </ul>
S7.6	WM9	<p><u>General Waste</u></p> <ul style="list-style-type: none"> <li>General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling.</li> <li>Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean.</li> <li>A reputable waste collector should be employed to remove general refuse on a daily basis.</li> </ul>	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>Waste Disposal Ordinance</li> </ul>
S7.6	WM10	<p><u>Sewage</u></p> <ul style="list-style-type: none"> <li>The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities.</li> <li>Regularly collection by licensed collectors should be arranged to minimize potential environmental impacts.</li> </ul>	Minimize production of sewage impacts	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>Waste Disposal Ordinance</li> </ul>

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S7.6	WM11	Topsoil reuse – Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. This is considered a general measure for good site practice.	Good site practice	Contractor/ Project Proponent	Onsite	Construction Phase	<ul style="list-style-type: none"> <li>ETWB Technical Circular (Works) No. 29/2004</li> </ul>
<b>Waste Management (Operational Waste)</b>							
S7.6	WM1-B	<p><u>Sewage Sludge</u></p> <p>Sewage sludge generated from STW is suggested to be treated at the proposed Sludge Treatment Facilities (STF) at Nim Wan or landfill subject to detailed design.</p> <p>Unloading process would be operated in the designated room inside STW which should be enclosed and served by negative pressure by extracting odorous gas to deodorizing unit. The sewage sludge would be delivered by road transport in water tight containers or skips to avoid odour emission during transportation to STF or landfill.</p>	Prevent the odour and health impacts from generated sewage sludge in the STW	Operator of STW	SWHSTW and trucks for sewage sludge transportation	Operation phase	<ul style="list-style-type: none"> <li>Waste Disposal Ordinance</li> </ul>
<b>Land Contamination</b>							
S 8.4	LC1	Preparation and submission of supplementary Contamination Assessment Plan (CAP) for all inaccessible potentially contaminated sites in 2 NDAs	Verify the land contamination potential before the commencement of construction	Project Proponent / Detailed Design Consultant	All inaccessible potentially contaminated sites in 2 NDAs as listed in the CAP	After the land is resumed and handed over to the Project Proponent and prior to the commencement of SI works	<ul style="list-style-type: none"> <li>Annex 19 of the TM-EIAO, Guidelines for Assessment of Impact On Sites of Cultural Heritage and Other Impacts (Section 3 : Potential Contaminated Land Issues);</li> <li>Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management;</li> <li>Guidance Notes for Contaminated Land Assessment and</li> </ul>

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							Remediation; and <ul style="list-style-type: none"> <li>• Practice Guide for Investigation and Remediation of Contaminated Land</li> <li>• Recommendations in Health Risk Assessment</li> </ul>
S 8.4	LC2	Detailed site investigation (SI) for all inaccessible potentially contaminated sites in 2 NDAs	Verify the land contamination potential before the commencement of construction	Project Proponent / Detailed Design Consultant / Contractor	All inaccessible potentially contaminated sites in 2 NDAs as listed in the CAP	After the land is resumed and handed over to the Project Proponent	Ditto
S 8.5	LC3	Preparation and submission of supplementary Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) for all inaccessible potentially contaminated sites in 2 NDAs to EPD for agreement if land contamination is confirmed	Present the findings of SI and evaluate the potential environmental and human health impacts  Recommend appropriate mitigation measures for the contaminated soil and groundwater identified in the assessment if remediation is required	Project Proponent / Detailed Design Consultant	All inaccessible potentially contaminated sites in 2 NDAs as listed in the CAP	Prior to the commencement of any proposed construction works if land contamination is confirmed and remediation is required	Ditto
S 8.5	LC4	Preparation and submission of Remediation Report to EPD for agreement	Demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed supplementary CAR and RAP	Project Proponent / Detailed Design Consultant	All inaccessible potentially contaminated sites in 2 NDAs as listed in the CAP	Prior to the commencement of any proposed construction works if land contamination is confirmed and remediation is required	Ditto

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S 8.6	LC5	Re-appraisal of surveyed sites (if they become part of the land requirement for NDA development) that were not identified as potentially contaminated or could not be accessed for visual inspection during the site survey	Verify the land contamination potential due to potential change of land uses before the commencement of construction	Project Proponent / Detailed Design Consultant	All surveyed sites (if they become part of the land requirement for NDA development) that were not identified as potentially contaminated or could not be accessed for visual inspection during the site survey as listed in the CAP	After the land is resumed and handed over to the Project Proponent	Ditto
S 8.7.2 and Appendix 8.4	LC6	<p><u>Treatment of arsenic-containing soil</u></p> <p>“Solidification/Stabilization” (S/S) treatment method was proposed for the treatment of arsenic-containing soil. Toxicity Characteristic Leaching Procedure (TCLP) test should be undertaken after S/S in order to ensure that the contaminant will not leach to the environment. Unconfined Compressive Strength (UCS) test should be conducted, and not less than 1MPa should be met prior to the backfilling or stockpiled for future reuse within the study area.</p>	To treat the arsenic-containing soil	Government / Developer/ Contractor	KTN NDA	Prior to commencement of construction works within KTN NDA	<ul style="list-style-type: none"> <li>• TM-EIAO</li> <li>• Practice Guide (PG) for Investigation and Remediation of Contaminated Land</li> <li>• Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management</li> <li>• Guidance Notes for Contaminated Land Assessment and Remediation</li> <li>• Practice Guide for Investigation and Remediation of Contaminated Land</li> <li>• Recommendations in Health Risk Assessment</li> </ul>

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S 8.7.2 and Appendix 8.4	LC7	<p><u>Excavation and Transportation</u></p> <ul style="list-style-type: none"> <li>Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety;</li> <li>In case the soil to be excavated is situated beneath the groundwater table, it may be necessary to lower the groundwater table;</li> <li>Excavation should be carried out during dry season as far as possible to minimize runoff from excavated soils;</li> <li>Stockpiling site(s) should be lined with impermeable sheeting and banded. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or contaminated run-off during rainy season. Watering should be avoided on stockpiles of soil to minimize runoff;</li> <li>Supply of suitable backfill material after excavation, if require;</li> </ul> <p>Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or run-off, and truck bodies and tailgates should be sealed to prevent any discharge during transport or during wet season;</p> <p>Speed control for the trucks carrying excavated materials should be enforced; and</p> <p>Vehicle wheel washing facilities at the site's exit points should be established and used.</p>	To minimize the potential environmental impacts arising from the handling of contaminated materials	Contractor	KTN NDA	Prior to commencement of construction works within KTN NDA	<ul style="list-style-type: none"> <li>TM-EIAO</li> <li>Practice Guide (PG) for Investigation and Remediation of Contaminated Land</li> <li>Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management</li> <li>Guidance Notes for Contaminated Land Assessment and Remediation</li> <li>Practice Guide for Investigation and Remediation of Contaminated Land</li> <li>Recommendations in Health Risk Assessment</li> </ul>
S 8.7.2 and Appendix 8.4	LC8	<p><u>Solidification/Stabilization</u></p> <ul style="list-style-type: none"> <li>The loading, unloading, handling, transfer or storage of cement should be carried out in an enclosed system;</li> <li>Mixing process and other associated material handling activities should be properly scheduled to minimize potential noise impact and dust emission;</li> <li>The mixing facilities should be sited as far apart as practicable from the nearby noise sensitive receivers;</li> <li>Mixing of soil and cement / water / other additive(s) should</li> </ul>	To minimize the potential environmental impacts arising from the handling of contaminated materials	Contractor	KTN NDA	The course of treatment	Ditto

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		<p>be undertaken at a solidification plant to minimize the potential for leaching;</p> <ul style="list-style-type: none"> <li>• Runoff from the solidification / stabilization area should be prevented by constructing a concrete bund along the perimeter of the solidification / stabilization area;</li> <li>• If stockpile of treated soil is required, the stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or site run-off during rainy season; and</li> </ul> <p>If necessary, there should be clear and separated areas for stockpiling of untreated and treated materials.</p>					
S 8.7.2 and Appendix 8.4	LC9	<p><u>Safety Measures</u></p> <ul style="list-style-type: none"> <li>• Set up a list of safety measures for site workers;</li> <li>• Provide written information and training on safety for site workers;</li> <li>• Keep a log-book and plan showing the zones requiring treatment and clean zones;</li> <li>• Maintain a hygienic working environment;</li> <li>• Avoid dust generation;</li> <li>• Provide face and respiratory protection gear to site workers if necessary;</li> <li>• Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers if necessary;</li> <li>• Provide first aid training and materials to site worker;</li> <li>• Bulk earth moving equipment should be utilized as much as possible to minimize workers' handling and contact of the excavated materials; and</li> </ul> <p>Eating, drinking and smoking should not be allowed in the excavation areas and treatment area to avoid inadvertent ingestion of arsenic containing soil.</p>	To minimize the potential adverse effects on health and safety of construction workers	Contractor	KTN NDA	The course of treatment	Occupation Safety and Health Ordinance (OSHO) (Charter 509)

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<b>Landfill Gas Hazard</b>							
S10.6	LFG1	<ul style="list-style-type: none"> <li>• Underground rooms or void should be avoided as far as practicable in the proposed developments within the Consultation Zone and should be avoided totally in the proposed developments within the MTLL.</li> <li>• Buildings or structures within the MTLL should be at ground level with raised floor slabs which are less prone to gas ingress.</li> <li>• For the high risk category, the use of active control of gas, including barriers and detection systems are recommended. These measures include the control of gas by mechanical means e.g. ventilation of spaces with air to dilute gas, or extraction of gas using fans or blowers.</li> <li>• For the low risk category, the provision of barriers to the movement of gas is recommended. Measures recommended include the use of membranes in floors or walls, or in trenches, coupled with high permeability vents such as no-fines gravel in trenches or voids/permeable layers below structures.</li> <li>• The need and practicality of incorporating such measures should be reviewed in the detailed Qualitative LFG Hazards Assessment (QLFGHA) during the detailed design stage for developments within the 250m Consultation Zone and within MTLL. Recommendations on the detailed precautionary and protection measures to be adopted should be given in the QLFGHA.</li> <li>• The design and construction method of the proposed development within MTLL (i.e. the proposed recreational area in site E1-1) should be provided to EPD for agreement in the design stage to ensure compatibility with the landfill restoration facilities and aftercare works within MTLL, such that these facilities and works will not be affected by the construction or operation of the proposed development.</li> </ul>	To minimize the risk of LFG hazards to occupants within MTLL and its 250m Consultation Zone	Government / Developer/ Detailed Design Consultant  within MTLL and its 250m Consultation Zone	Buildings within MTLL and its 250m Consultation Zone	Detailed design phase	Landfill Gas Hazard Assessment Guidance Note
S10.6	LFG2	<ul style="list-style-type: none"> <li>• During all works, safety procedures should be implemented to minimize the risks of fires and explosions, asphyxiation of workers (especially in confined space) and toxicity effects</li> </ul>	To minimize the risk of LFG hazards to the staff and visitors within MTLL and its	Contractor	Construction sites within MTLL and its 250m Consultation	Construction phase	<ul style="list-style-type: none"> <li>• Landfill Gas Hazard Assessment Guidance</li> </ul>

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		<p>resulting from contact with contaminated soils and groundwater.</p> <ul style="list-style-type: none"> <li>• Safety officers, specifically trained with regard to LFG and leachate related hazards and the appropriate actions to take in adverse circumstances, should be present on all worksites throughout the works.</li> <li>• All personnel who work on site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of the works, the possible presence of contaminated water and the need to avoid physical contact with it.</li> <li>• Those staff who work in, or have responsibility for “at risk” areas, including bore piling and excavation works, should receive appropriate training on working in areas susceptible to LFG.</li> <li>• Enhanced personal hygiene practices including washing thoroughly after working and eating only in “clean” areas should be adopted where contact may have been made with any groundwater which is thought to be contaminated with leachate.</li> <li>• Any offices / quarters set up on site should take precautions against LFG ingress, such as being raised off the ground. Other storage premises, e.g. shipping containers, where this is not possible should be well ventilated prior to entry.</li> <li>• Adequate precautions to prevent the accumulation of LFG under site buildings and within storage shed should be taken by raising buildings off the ground where appropriate and “airing” storage containers prior to entry by personnel and ensuring adequate ventilation at all times.</li> <li>• Smoking and naked flames should be prohibited within confined spaces. “No Smoking” and “No Naked Flame” notices in Chinese and English should be posted prominently around the construction site. Safety notices should be posted warning of the potential hazards.</li> <li>• Welding, flame-cutting or other hot works may only be carried out in confined spaces when controlled by a “permit to work” procedure, properly authorized by the Safety Officer. The permit to work procedure should set down clearly the</li> </ul>	250m Consultation Zone		Zone		Note

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		<p>requirements for continuous monitoring of methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure should also require the presence of an appropriately qualified person who shall be responsible for reviewing the gas measurements as they are made, and who shall have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise should be permitted to carry out hot works in confined areas.</p> <ul style="list-style-type: none"> <li>• During the construction works, adequate fire extinguishers and breathing apparatus sets should be made available on site and appropriate training given in their use.</li> <li>• Ongoing gas monitoring should be considered for offices, stores etc set up on site.</li> </ul>					
S10.6	LFG3	<p>Utility Companies</p> <ul style="list-style-type: none"> <li>• The developers should make the utility companies aware of the location and features of the site within the Consultation Zone during the respective detailed design stage as part of the QLFGHA.</li> <li>• The utilities companies should have a responsibility to train and ensure their staff to take appropriate precautions at all times when entering enclosed spaces or plant rooms.</li> <li>• Should utility installation be required in site E1-1, the developers should make the utility companies aware of the potential constraints imposed by the landfill restoration facilities and aftercare works to ensure these facilities and works will remain unaffected. Appropriate precautionary measures against landfill gas should also be taken should utility installation be required within the MTLL.</li> </ul> <p>Building Management</p> <ul style="list-style-type: none"> <li>• The management committee of the building estate will hold a special responsibility to ensure that the occupants of the building, its staff and maintenance workers are protected from LFG and that visitors to the site are also made aware as to the</li> </ul>	To minimize the risk of LFG hazards to the occupants, maintenance personnel, visitors and other users within MTLL and its 250m Consultation Zone	Government / Developer  within MTLL and its 250m Consultation Zone	Buildings within MTLL and its 250m Consultation Zone	Operation phase	Landfill Gas Hazard Assessment Guidance Note

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		<p>dangers and the precautions required to be taken.</p> <ul style="list-style-type: none"> <li>• Of primary importance to satisfactorily upholding this responsibility will be to ensure that strict procedures for maintaining control over all temporary and /or permanent works proposed at the site are reviewed with regard to the LFG hazard. This needs to be accompanied by a comprehensive contingency plan in case of incidents, including liaison with EPD officers, Fire Services Department, Landfill Restoration Contractors and others, as necessary.</li> <li>• All construction and maintenance (including utilities) personnel working at the site should be made aware of the hazards of LFG and its possible presence on site. This should be achieved through a combination of posting warning signs in prominent places and also by access to detailed information on LFG hazards and the designs and procedural means by which these hazards are being minimized on site. In addition, entry to confined spaces such as refuse/store rooms, drainage manholes etc. should be preceded by a period of "airing" the space by opening the door widely allowing fresh air to enter. Where appropriate, monitoring of gas should also precede entry.</li> <li>• Any proposed modifications or additions to the building structure should be subject to a further assessment of LFG hazard, particularly in areas where a gas membrane has been installed. Any penetrations of the membrane must be repaired as soon as possible after detection or works completion using similar products.</li> <li>• The building management company should also make arrangement with Landfill Restoration Contractor so that they are advised of all situations which may potentially threaten the safety of the building occupants resulting from any accidents or failures at the landfill site. The building management company should also have available suitable gas monitoring equipment for any ad hoc investigations necessary relating to LFG and be in a position to undertake any future routine monitoring of gas which may be considered necessary soloing completion of the defects correction period.</li> <li>• To ensure that all the above protection and precautionary measures and issues pertaining to LFG are properly and</li> </ul>					

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		consistently addressed by future users and owners of the site, it is recommended that a comprehensive LFG hazard management system be developed by the owner of the building or its property management agency. The system should be developed by the developers of the sites as part of the QLFGHA before the occupation of the building and implemented during its operational phase.					
<i>Cultural Heritage (Pre-construction Phase)</i>							
S11.6.1	CH1	<p><u>Undertaking Further Archaeological Survey to Cover the Outstanding Areas</u></p> <p>Further archaeological surveys to cover the outstanding areas of the not-yet-surveyed-area with medium archaeological potential located in the areas with proposed development as presented in Figure 11.9 should be implemented after land resumption to confirm and verify the findings of the EIA. The survey should be conducted by a professional archaeologist and prior to fieldwork commencement, the archaeologist should obtain a Licence to Excavate and Search for Antiquities from the Authority under the AM Ordinance. It should be noted that the scope of further archaeological survey is based on the current proposed alignment. Any additional works areas which have not been covered by the current archaeological impact assessment should be covered as soon as possible. Subject to the findings of the archaeological survey to be conducted after land resumption, additional mitigation measures would be designed and implemented before the commencement of construction works to mitigate the adverse impact.</p>	To confirm and verify the findings of the EIA	Project Proponent/ Contractor/ Qualified Archaeologist	In the not-yet-surveyed-areas with medium archaeological potential located in the areas within Areas D1-11, A3-5, A3-6, B1-1, and B1-7,	After land resumption but before construction	• EIA recommendation and AMO CHIA Guideline
S11.6.1	CH2	<p><u>Undertaking Survey-cum-Rescue Excavation</u></p> <p>A Survey-cum-Rescue Excavation should be conducted after land resumption and before the commencement of construction works to define the precise archaeological deposits extent and to preserve the archaeological resources by record. The excavation should be conducted by a professional archaeologist and prior to fieldwork commencement, the archaeologist should obtain a Licence to Excavate and Search for Antiquities from the Authority under the AM Ordinance.</p>	To define the precise archaeological deposits extent and to preserve the archaeological resources as far as possible.	Project Proponent/ Contractor/ Qualified Archaeologist	In KTN NDA, for Site 3 and In FLN NDA for Site 5.	After land resumption but before construction commencement of the zones	• EIA recommendation and AMO Guidelines for Archaeological Reports; Guideline for Handling of Archaeological Finds and Archives

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S11.6.1	CH3	<p><u>Undertaking Preservation in-situ for Site 7</u></p> <p>Preservation in-situ of the cultivation deposits in Site 7 is proposed. If disturbance to the site by the design of the Central Park is unavoidable, further archaeological survey should be conducted after land resumption prior to the pre-construction stage to assess the feasibility to incorporate Site 7 into the design of the development plan of the proposed zone. Appropriate follow-up actions, including preservation of the significant archaeological deposits in-situ in the Central Park, would then be considered with the consent of AMO.</p> <p>The recommended mitigation measure of preservation in-situ with further archaeological survey should be conducted by a professional archaeologist and prior to fieldwork commencement, the archaeologist should obtain a Licence to Excavate and Search for Antiquities from the Authority under the AM Ordinance.</p>	To preserve the archaeological resources as far as possible.	Project Proponent/ Contractor/ Qualified Archaeologist	Site 7 in FLN NDA	After land resumption prior to pre-construction stage of the proposed Central Park (Area C2-8, Zoning O)	<ul style="list-style-type: none"> <li>EIA recommendation and AMO Guidelines for Archaeological Reports; Guideline for Handling of Archaeological Finds and Archives</li> </ul>
S11.6.1	CH4	<p><u>Undertaking Induction Training</u></p> <p>Induction training should be provided to the construction Contractor before the commencement of the excavation works in Spots A, D, F to H. An induction will be conducted as part of the environmental health and safety induction programme to all site staff before they are deployed on site. The induction will include an introduction on the historical development of the Site, the possible archaeological remains that may be encountered during ground excavation works as well as the reporting procedures in case suspected archaeological remains are identified. A set of the presentation material (in the form of power point presentation) with content details will be prepared by an archaeologist and submitted to AMO for reference and record purpose. The first induction briefing will be video recorded and it will be used as induction briefing material for new site staff.</p>	To preserve the archaeological resources as far as possible	Project Proponent/ Contractor/ Qualified Archaeologist	Spots A, D, F to H	Before the commencement of the excavation works and before site staff are deployed on site	
S11.6.1	CH5	<p><u>Undertaking Archaeological Impact Assessment before Construction at A1</u></p> <p>It is recommended that an Archaeological Impact Assessment to be conducted in the impacted area in Area B1-8 and B1-9 at A1 (Sheung Shui Wa Shan Site of Archaeological Interest) after land resumption and before construction when detail construction work information is available to determine the need for further</p>	To define the precise archaeological deposits extent and to preserve the archaeological resources as far as possible.	Project Proponent/ Contractor/ Qualified Archaeologist	Area B1-8 and B1-9 zoned as R4 and R3 in A1	After land resumption but before construction	<ul style="list-style-type: none"> <li>EIA recommendation and AMO Guidelines for Archaeological Reports; Guideline for Handling of Archaeological Finds and Archives</li> </ul>

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		archaeological follow up actions.					
S11.6.1	CH6	<p><u>Undertaking Archaeological Impact Assessment before Construction within A1 but except Area B1-8 and B1-9</u></p> <p>Should there be any development work within the Sheung Shui Wa Shan Site of Archaeological Interest, it is recommended that an Archaeological Impact Assessment is required after land resumption and before construction when detail construction work information is available to determine the need for further archaeological follow up actions.</p>	To define the precise archaeological deposits extent and to preserve the archaeological resources as far as possible.	Project Proponent/ Contractor/ Qualified Archaeologist	Area within A1 except Area B1-8 and B1-9 in R4 &R3 zoning	After land resumption but before construction	<ul style="list-style-type: none"> <li>EIA recommendation and AMO Guidelines for Archaeological Reports; Guideline for Handling of Archaeological Finds and Archives</li> </ul>
S11.6.2	CH7	<p><u>Undertaking baseline condition survey and baseline vibration impact assessment</u></p> <p>In case any potential vibration impact on any nearby built heritage features are identified during the pre-construction stage of the Project, prior to commencement of construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or a qualified structural engineer to define the vibration limit (a vibration limit at 7.5mm/s could be adopted for graded historic buildings) and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase so as to ensure the construction performance meets with the vibration standard stated in the EIA report. The condition survey of graded historic building should be submitted to AMO for information.</p>	To minimize the vibration impacts during pre-construction stage on any identified potential vibration impacted built heritage features	Project Proponent/ Contractor	G303 and G308	Pre-construction stage before commencement of construction works during Schedule 3 study	<ul style="list-style-type: none"> <li>EIAO-TM</li> </ul>
S11.6.2	CH8	<p><u>Undertaking baseline condition survey and baseline vibration impact assessment</u></p> <p>In case any potential vibration impact on any nearby built heritage features are identified during the pre-construction stage of the Project, prior to commencement of construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or a qualified structural engineer to define the vibration limit (a vibration limit at 7.5mm/s and 15mm/s could be adopted for graded historic buildings and historic buildings respectively) and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase so as to ensure the construction performance meets with the vibration standard</p>	To minimize the vibration impacts during pre-construction stage on any identified potential vibration impacted built heritage features	Project Proponent/ Contractor	KT57, FL05, FL18, and FL22.	Pre-construction stage before commencement of construction works	<ul style="list-style-type: none"> <li>EIAO-TM</li> </ul>

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		stated in the EIA report. The condition survey of graded historic building should be submitted to AMO for information.					
S11.6.2	CH9	<p><u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u></p> <p>Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendants of these features will be carried out the Project Proponent.</p>	To preserve the directly impacted sites by record prior to their removal / relocation	Project Proponent/ Contractor	<i>Ancillary structures of G303, HKT01, HKT02, Entrance Gate of HKT03, HKT04, KT01 to KT10, KT13, KT36, KT39, KT40, KT41, KT43, KT45, KT47, KT50, KT54, KT62 to KT63, KT69, FL01, FL16, and FL35</i>	Prior to Removal / Relocation of features before commencement of construction works during Schedule 3 study	• EIAO-TM
S11.6.2	CH10	<p><u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u></p> <p>Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendants of these features will be carried out by the Project Proponent.</p>	To preserve the directly impacted sites by record prior to their removal / relocation	Project Proponent/ Contractor	KT12 and KT61	Prior to Removal / Relocation of features before commencement of construction works	• EIAO-TM
S11.6.2	CH11	<p><u>Relocation of Built Heritages</u></p> <p>Relocation of built heritages to a reasonable location nearby may be required.</p>	To preserve the directly impacted sites by relocation	Project Proponent/ Contractor	HKT01, HKT02, Entrance Gate of HKT03	After the photographic and cartographic records and before commencement of construction works	• EIAO-TM
S11.6.2	CH12	<p><u>Drainage System and Access Route Design</u></p> <p>For the retained built heritage items in developable area, drainage system and access route would be designed to prevent the persevered flooding and maintain the accessibility to the built</p>	To prevent the persevered flooding and maintain the accessibility to the built heritage	Contractor /Detailed Design consultant	<i>The retained built heritage items</i>	Pre-construction phase	• EIAO-TM

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		heritage.					
<b>Cultural Heritage (Construction Phase)</b>							
S11.6.1	CH13	<u>Inform Upon Archaeological Discovery</u> Pursuant to the Antiquities and Monuments Ordinance, the construction Contractor should inform the AMO immediately in case of discovery of antiquities or supposed antiquities in the course of excavation works in construction phase.	Special attention should be given to areas evaluated to have archaeological potential or significance.	Contractor	All soil excavation works	Immediately upon discovery during excavation works	• EIA recommendation and AMO CHIA Guideline
S11.6.2	CH14	<u>Watertable Monitoring</u> Since the construction works and development activities may induce change in the watertable. It is recommended the Contractor should ensure that the change of watertable induced by the construction works and development activities will not result in settlement of built heritage.	To minimize the potential impacts to the built heritage items by the change of watertable induced by the works during the Construction phase	Contractor	Within NDAs	Construction phase	EIAO-TM
S11.6.2	CH15	<u>Conducting Construction Vibration Monitoring and Structural Strengthening Measures</u> Construction vibration monitoring and structural strengthening measures should be conducted during Construction phase based on the assessment result of baseline condition survey and baseline vibration impact assessment, so as to ensure the construction performance meets with the vibration standard stated in the EIA report.	To minimize the potential impacts during Construction phase on any identified potential vibration impacted built heritage features	Contractor	Identified potential vibration impacted built heritage features	Construction phase, with details specified in baseline condition survey and baseline vibration impact assessment,	EIAO-TM
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.9	LV1	General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.  With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as		Detailed Design Consultant/  Contractor/	Throughout NDAs,	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become	

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		roadside amenity strips, and open space sites.				available, to achieve early establishment	
S.12.9 MM1	LV2	Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimize land resumption	Government Developer/ Detailed Design Consultant/ Contractor/	Throughout NDA's, particularly for reservoirs	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.9 MM2	LV3	Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.  All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant/	Throughout NDAs	Prior to Construction	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines  CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) and ArchSD/Urbis Study on Green Roof Application in HK (2007).  Dev. Bureau, Greening, Landscaping & Tree Management Section, Guidelines on Greening of Noise

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		<p>elevated, should follow the guidelines stated.</p> <p>Construction time frame should also be considered and designs seek to keep it to a practical minimum.</p>					<p>Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)</p>
S12.9 MM14.4	LV4	<p>Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimize any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed.</p> <p>For example, for the stream at Siu Hang San Tsuen in FLN NDA, much of the stream is located underneath the viaduct for the proposed Fanling Bypass. In order to avoid impacts to the stream, the detailed final design of the viaduct should follow guidelines and ensure that no viaduct footings or other structures are placed in the stream.</p> <p>Bridges and box culverts should also be used to minimize the necessity of watercourse modification and protect the watercourses where necessary.</p>	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor/	All watercourses, particularly the stream at Siu Hang San Tsuen that will flow under the Fanling Bypass Eastern Section	Prior to Construction and Construction Phase	<p>Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works;</p> <p>Building Department (BD) Practice Note for Authorized Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works</p>
<b>Landscape and Visual (Construction)</b>							
S.12.9 MM3	LV5	Open Space Provision - the principles adopted in the RODP planning ensure that public open space systems are incorporated. All requirements for open space areas stipulated in the planning documents for the formulation of the Preliminary Layout Plan should be adhered to.	<p>Reprovision of open space.</p> <p>Enhance visual amenity of the area and improve the overall landscape character</p>	Government Developer/ Detailed Design Consultant/ Contractor/	Onsite as stipulated in the planning documents for the formulation of the Preliminary Layout Plan	Prior to Construction and Construction Phase	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines

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S.12.9 MM4	LV6	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>	Protect and Preserve Trees	Government Developer/ Detailed Design Consultant/ Contractor	Onsite	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.9 MM5	LV7	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	Transplant Trees where suitable for transplantation	Government Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.9 MM6	LV8	Slope Landscaping – Site formation should be reduced as far as possible. Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and</p>	Government Developer/ Detailed Design	Onsite	Prior to Construction, Construction Phase &	GEO publication (1999) – Use of Vegetation as Surface

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		tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.  In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	subsequent loss of landscape resources and character.  To ensure man-made slopes are as visually amenable as possible.	Consultant/ Contractor		Maintenance in Operation Phase	Protection on Slope;  GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
S.12.9 MM7	LV9	Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.  Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.  Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i> , <i>Diospyros vaccinioides</i> , <i>Gardenia jasminoides</i> , <i>Ixora chinensis</i> , <i>Ligustrum sinense</i> , <i>Litsea rotundifolia</i> , <i>Melastoma dodecandrum</i> , <i>Atalantia buxifolia</i> , <i>Rhodomyrtus tomentosa</i> , <i>Rhaphiolepis indica</i> , and <i>Rhododendron simsii</i> are suggested..	Compensate for trees and shrubs lost due to the Project.	Government / Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.9 MM8	LV10	Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.  The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 & E27 also).  Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i> , <i>Bischofia javanica</i> , <i>Castanopsis fissa</i> , <i>Celtis sinensis</i> , <i>Cinnamomum burmannii</i> ,	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<p><i>Cinnamomum camphora, Xanthoxylum avicennae, Hibiscus tiliaceus, Liquidambar formosana, Sapium discolor, Schefflera heptaphylla and Ilex rotunda. In addition some understory vegetation may be planted including shrubs such as Atalantia buxifolia, Diospyros vaccinioides, Gardenia jasminoides, Ixora chinensis, Ligustrum sinense, Litsea rotundifolia, Melastoma malabathricum, Melastoma dodecandrum, Rhodomyrtus tomentosa, Rhabdialepis indica, and Rhododendron simsii.</i></p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</p>					
S.12.9 MM9	LV11	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. building edges, piers).	Soften hard surfaces and facilities	Government / Developer/ Detailed Design Consultant/ Contractor	On appropriate structures	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.9 MM10	LV12	Green Roof – Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable.	Reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels. Provide greening.	Government / Developer/ Detailed Design Consultant/ Contractor	On appropriate buildings	Prior to Construction, Construction Phase & Maintenance in Operation Phase	CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011); ArchSD/Urbis Study on Green Roof Application in HK (2007)
S.12.9 MM11	LV13	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the	To screen proposed structures such as roads and buildings. Improve	Government / Developer/ Detailed	Along roads, around suitable built structures, or around	Prior to Construction, Construction	ETWBTC 3/2006

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		compensatory planting.	compatibility with the surrounding environment and create a pleasant pedestrian environment	Design Consultant/ Contractor	VSRs to contain their view out to the NDA structures.	Phase & Maintenance in Operation Phase	
S.12.9 MM12	LV14	<p>Road Greening –For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers – see MM9 Vertical Greening) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be considered for the soft landscaping of viaducts, taking into account the preference to minimize the overall viaduct bulk and integrate architectural forms and textural finishes which improve aesthetics.</p> <p>For at grade roads, planting should be considered 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, is considered part of Screen Planting)</p>	To soften the hard, straight edges and provide greening along roads.	Government / Developer/ Detailed Design Consultant/ Contractor	On viaducts or along roads.	Prior to Construction, Construction Phase & Maintenance in Operation Phase	<p>Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers;</p> <p>Development Bureau TCW No. 2/2012 – Allocation of Space for Quality Greening on Roads;</p> <p>HQ/GN/15 - Guidelines for Greening Works along Highways</p>
S.12.9 MM13 & EIA Annex 13	LV15	<p>Marsh/Wetland Compensation –The proposed Long Valley Nature Park (LVNP) will be designed and implemented to enhance on-wetland areas within the LVNP. (See E4,E15 and E25 also)</p> <p>Also see LV16, LV17, and LV18 as wetland planting should be provided along the embankments and beds of modified/reprovisioned watercourses.</p>	Compensate for Marsh/Wetland lost due to the Project.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works.
S.12.9 MM14.1	LV16	<p>Reprovision of Natural Stream – Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.</p> <p>Two short stretches of the Ma Tso Lung Stream will be affected by Project in the KTN NDA; by the LMC Eastern Connection Road on the western border of Site F1-3 and further upstream by Site E-2.</p>	Achieve a natural stream, similar to existing, including wetland planting provision for embankments	Government / Developer/ Detailed Design Consultant/ Contractor	Streams and channelized watercourses e.g. a Ma Tso Lung and Siu Han San Tsuen	Prior to Construction, Construction Phase & Maintenance in Operation Phase	<p>ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works;</p> <p>DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for</p>

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		At both these locations, the stream will be reprovisioned and maintain the flow between unaffected sections of the stream. The reprovisioned stream will be provided with a natural bed and banks, as well as having an area of marsh/ pool next to it and trees and shrubs further from the banks. (See E2, E14 and E24 also)					River Channel Design
S12.9 MM14.2	LV17	<p>Stream Buffer Planting –Providing a minimum 10 m buffer with planting (where there is a general presumption against any development taking place) along streams where they flow close to developments, confers a degree of protection to the stream course and its associated vegetation.</p> <p>For the stream at Ma Tso Lung in KTN NDA, the middle and upper sections will be designated as Green Belt zone where there is a general presumption against development as buffer to the stream.</p> <p>For the stream at Siu Hang San Tsuen in FLN NDA, within the NDA boundary much of the stream would be located underneath the viaduct for the proposed Fanling Bypass. To the south of the viaduct the stream flows through an Open Space area D1-3. In this Open Space zone a 10m buffer is proposed in which natural vegetation will be retained and enhanced and human activities will be limited in order to avoid direct impacts to the stream bed and to minimize potential indirect impacts to the stream and riparian corridor. (See E3 also)</p>	Protect natural streams	Government / Developer/ Detailed Design Consultant/ Contractor	Streams and channelized watercourses e.g. a Ma Tso Lung and Siu Han San Tsuen	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
S12.9 MM14.3	LV18	<p>Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc.</p> <p>For example, a stretch of the Ma Wat River Channel in the south of FLN NDA will have to be diverted for the construction of the</p>	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Developer/ Detailed Design Consultant/ Contractor	Channelized watercourse, particularly the Ma Wat River Channel Diversion	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design

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		Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.					
S12.9 MM15	LV19	Pond Replacement –Principles adopted in the design of the NDAs ensure that they incorporate ponds within the RODPs.  All requirements for ponds stipulated in the planning documents for the formulation of the Preliminary Layout Plan (e.g. at Fung Kong Shan Park in E1-7 of KNT ND) should be adhered to.	Reprovision for ponds lost due to the Project.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	E1-7 and C1-9 (LVNP) in KNT NDA and generally throughout NDA	Prior to Construction, Construction Phase Maintenance in Operation Phase	
S.12.9 MM16	LV20	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.  Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).	To screen undesirable views of the works site.	Contractor	Throughout NDAs	Construction Phase	
S.12.9 MM17	LV21	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Developer/ Contractor	Throughout NDAs	Construction and Operation Phases	
<b>Ecology (Prior to Construction Phase or throughout the project)</b>							
S. 13.9	E1	Egretty Habitat Creation & Management Plan (EHCMP) and Woodland Planting and Management Plan (WPMP)	Compensate for loss of Man Kam To Road egretty.  Compensate for loss of secondary woodland and hillside plantation of ecological significance.	Project Proponent/  Detailed Design Consultant (EHCMP and WPMP).	FLN area A1-7 (egretty compensation).  KTN areas E1-8 and G1-3 (woodland compensation).	Detailed design phase.	Establishment of bamboo clump of species, size and number suitable for nesting ardeids. Additional measures to attract ardeids to be detailed in EHCMP.  Woodland planting and

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
							establishment requirements to be detailed in WPMP. EIAO-TM.
S.13.9	E2	<p>Detailed design of development along lower reaches of Ma Tso Lung Stream and Ma Tso Lung San Tsuen Stream in OU zones F1-2 and F1-3 and detailed design of LMC Loop Eastern Connection Road with restoration of diverted stream and riparian corridor, permanent barrier and underpass on the at-grade section</p> <p>Compensation for the loss of seasonally wet grassland at Ma Tso Lung by habitat restoration and enhancement along diverted section of Ma Tso Lung Stream</p>	Minimize impacts on Ma Tso Lung Stream and Ma Tso Lung San Tsuen Stream and riparian corridor of importance to species of conservation significance.	Project Proponent/  Detailed Design Consultant. (design of Ma Tso Lung Stream diversion and buffer zone habitat restoration measures)	KTN areas F1-2 and F1-3 and LMC Loop Eastern Connection Road.	Detailed design and construction phases.	TM-EIAO; ETWBTCW 5/2005.
S13.9	E3	Detailed design, implementation and management of Siu Hang San Tsuen Stream to have 10m wide vegetated buffer in Open Space zone D1-3, Fanling Bypass to cross stream on viaduct.	Minimize impacts on Siu Hang San Tsuen Stream and stream fauna.	PlanD, Project Proponent/  Detailed Design Consultant/ Contractor/ Maintenance Authority	FLN area D1-3.	Detailed design, construction and operation phases.	TM-EIAO Layout Plan
S.13.9	E4	<p>Long Valley Nature Park (LVNP) designation, design and implementation.</p> <p>Enhancement of non-wetland habitats in LVNP.</p> <p>Planning for the advanced provision of alternative foraging habitat along main river channels for large waterbirds.</p>	Compensate for wetland loss arising from the project and protection of Long Valley from adverse ecological impacts including provision of additional/alternative habitat for large waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.	Project Proponent/ Detailed Design Consultant (Long Valley Nature Park Habitat Creation & Management Plan)	Long Valley KTN area C1-9 and any suitable areas to be identified during the planning stage.	Detailed design phase.	No net loss in wetland function: design requirements and mitigation targets for habitats and species to be detailed in LVNP HCMP.  TM-EIAO

### Project Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
S13.9	E5	Stringent planning control requirements in Long Valley north and west of Sheung Yue River, including Ho Sheung Heung egretty.	<p>Protect these wetland areas from indirect impacts to habitats and fauna especially breeding ardeids foraging in these areas and utilizing flight-lines from Ho Sheung Heung egretty.</p> <p>Avoid habitat loss and disturbance to fauna of conservation significance, especially nesting ardeids</p> <p>Maintenance of ecological linkages with Deep Bay ecosystem and avoidance of severance of these linkages, especially for waterbirds.</p>	PlanD.	KTN areas C2-1 and C2-2 , Ho Sheung Heung egretty and areas north of Long Valley along the Ng Tung River to the Shenzhen River.	Detailed design phase.	Layout Plan
S13.9	E6	Planning for creation of Green Corridors along the Sheung Yue, Ng Tung and Shek Sheung Rivers, retention and provision of screen plantings where feasible; and detailed design of Open Space areas and development areas along river corridors.	<p>Minimize disturbance to large waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.</p> <p>Maintain ecological linkages within NDA Project Area and between Project Area and Deep Bay ecosystem, especially for Long Valley and waterbirds.</p>	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	Areas along Ng Tung, Sheung Yue and Shek Sheung Rivers.	Detailed design, construction and operational phases.	Layout Plan; TM-EIAO.
S.13.9	E7	Building setback and mounding in locations near Long Valley. KTN area B3-12 (30m setback from road D3) and KTN area C1-1 (15m setback and mounding along northern and northeastern boundaries).	Minimization of disturbance impacts to fauna using Long Valley.	PlanD	KTN area B3-12 (30m setback from road D3) and KTN area C1-1 (15m setback and mounding along northern and northeastern boundaries).	Detailed design phase.	Layout Plan

## Project Implementation Schedule

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S13.9	E8	<p>Preparation and implementation of Guidelines for building design measures to minimize mortality and light and glare impacts to fauna. Guidelines to address the following measures:</p> <p>Use opaque, non-transparent, non-reflective noise barriers for all developments associated with the Project.</p> <p>Measures to include the following:</p> <ul style="list-style-type: none"> <li>• Fritting, or the placement of ceramic lines or dots on glass, which creates a visual barrier to birds and reduces air conditioning loads by lowering heat gain, while still allowing light transmission for interior spaces. It is most successful when the frits are applied on the outside surface. Frosted glass has similar effects;</li> <li>• Angled glass to be used only for smaller panes in buildings with a limited amount of glass;</li> <li>• The use of glass that reflects UV light (primarily visible to birds, but not to humans) to reduce collisions;</li> <li>• Film and art treatment allow glass surfaces to be used a medium of expression, often related to the nature and use of the building, as well indicating to birds their impenetrability;</li> <li>• Lightweight external screens can be added to windows or become a façade element of larger buildings, and are suitable where non-operable windows are prevalent, which is often the case in modern buildings in HK.</li> </ul>	Minimize mortality and disturbance impacts on fauna, especially mammals and birds.	PlanD/ Project Proponent/ Developer/ Detailed Design Consultant	Near Long Valley	Detailed design phase.	Layout Plan
	E9	Not used					
S13.8	E10	Review development footprint and layout of proposed developments in KTN areas D1-11a and G1-5 to avoid/minimize direct and indirect impacts on secondary woodland at Ho Sheung Heung and shrubland at Crest Hill.	Minimize loss of secondary woodland and shrubland of ecological value.	Project Proponent/ Detailed Design Consultant	KTN areas D1-11a and G1-5 to avoid/minimize direct and indirect impacts on secondary woodland at Ho Sheung Heung and Crest Hill	Detailed design phase	Layout Plan; TM-EIAO.

## Project Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
S13.9	E11	<p>No construction during ardeid breeding season (1 March to 31 July) along Sheung Yue River north or east of KTN D1-5 and east of D1-9 and C2-3, construction hours restricted to 09.00 to 17.30 during 1 March to 31 July on new pedestrian bridge over the Sheung Yue River, new pedestrian bridge over the tidal section of the Ng Tung River and existing bridge between KTN areas C2-2 and C1-8.</p> <p>Review Design and construction methods for all bridges especially those on the Sheung Yue and tidal Ng Tung Rivers and adopt methods which minimize impacts on Long Valley and the rivers, and disturbance and fragmentation impacts on fauna.</p> <p>No overlap in construction of bridges over main river channels.</p> <p>Measures to ensure no hydrological disruption to Long Valley Watercourse and water supply to Long Valley to be designed at the detailed design stage for the rechannelisation of the Long Valley Watercourse and the development of areas through which it passes, including KTN area B3-12. Contingency plan to address any disruption to be included in LVNP HCMP.</p> <p>Avoid removal or interference with screen planting undertaken under the Construction of Cycle Tracks and Associated Supporting Facilities from Sha Po Tsuen to Shek Sheung project.</p>	Minimize disturbance impacts (including cumulative impacts with cycle track project) to flight-lines of breeding ardeids.	Project Proponent/ Detailed Design Consultant/ Contractor	Along and within Sheung Yue and Ng Tung Rivers, Long Valley, Long Valley and watercourse upstream areas including KTN area B3-12	Detailed design/ construction phase.	TM-EIAO.
<b>Ecology (Construction Phase)</b>							
S. 13.9	E12	<p>Compensatory egret habitat provision and establishment.</p> <p>Review condition and location of egrettries before commencement of works. Formulate and implement additional mitigation measures as appropriate.</p> <p>Phasing of works near and within Man Kam To Road Egretty outside breeding season</p>	<p>Compensate for loss of Man Kam To Road egret habitat.</p> <p>Avoid mortality of breeding egrets</p>	Project Proponent/ Detailed Design Consultant/ Contractor	FLN area A1-7  500m from Man Kam To Road Egretty.	Construction phase.	TM-EIAO; establishment of bamboo clump of species, size and numbers suitable for nesting ardeids; if no occupation initially, utilize decoys (models, vocalisations) to encourage occupation.

## Project Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
S13.9	E13	<p>Review design and construction methods for bridges, especially those on the Sheung Yue and tidal Ng Tung Rivers, and adopt measures which minimize impacts on rivers and disturbance and fragmentation impacts on fauna.</p> <p>No construction during ardeid breeding season (1 March to 31 July) along Sheung Yue River north and east of KTN area D1-5 and east of D1-9 and C2-3 and restriction of working hours on new pedestrian bridges over the Sheung Yue River and tidal Ng Tung River to 09.00 to 17.30 during the ardeid breeding season (1 March to 31 July)</p> <p>Provision of alternative foraging habitat along main river channels for large waterbirds.</p>	Minimize impacts on rivers and disturbance and fragmentation impacts on fauna.	Project Proponent/ Detailed Design Consultant/ Contractor	Along and within the Sheung Yue, Ng Tung and Shek Sheung Rivers	Detailed design and construction phases..	TM-EIAO.
S13.9	E14	<p>Buffer zone of 15-30m as appropriate on both sides (not less than 45m total width) of Ma Tso Lung Stream north of the point where it is crossed by the LMC Loop Eastern Connection Road, and Ma Tso Lung Stream diversion during construction of the LMC Loop Eastern Connection Road; development along lower reaches of Ma Tso Lung Stream and Ma Tso Lung San Tsuen Stream in OU zones in KTN areas F1-2 and F1-3 to be set back beyond buffer.</p> <p>Construction and maintenance of permanent 1.2m high solid faunal barrier at all at-grade sections of LMC Loop eastern connection Road north of junction with road D4 within 15-30m as appropriate of Ma Tso Lung Stream buffer and construction of faunal underpass beneath road.</p> <p>Compensation for the loss of seasonally wet grassland at Ma Tso Lung by habitat restoration and enhancement along diverted section of Ma Tso Lung Stream.</p>	Minimize impacts direct and indirect impacts of habitat loss, disturbance, pollution and fragmentation on Ma Tso Lung Stream and marsh and riparian corridor of importance to species of conservation significance.	PlanD/ Project Proponent/ Developer/ Detailed Design Consultant/ Contractor.  (Design of Ma Tso Lung Stream diversion and buffer zone habitat restoration measures)	KTN areas H1-1, F1-2 and F1-3 and Lok Ma Chau Loop Eastern Connection Road.	Detailed design and construction phases.	Layout Plan
S.13.9	E15	Creation and enhancement of proposed Long Valley Nature Park and creation and enhancement of wetland and buffer planting within LVNP.	Compensate for wetland loss arising from the project.	Project Proponent/ Contractor (LVNP Detailed Habitat Creation & Management Plan)	Long Valley, (KTN area C1-9).	Construction phase.	TM-EIAO; no net loss in wetland function; design requirements and mitigation targets for habitats and species to be detailed in LVNP Habitat Creation &

## Project Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
							Management Plan.
S13.9	E16	<p>Creation of Green Corridors along the Sheung Yue, Ng Tung and Shek Sheung Rivers, retention and provision of screen plantings where feasible; provision of Open Space areas and development areas along river corridors;</p> <p>Design and erection of 2m high solid dull green site barrier fence between river channel and any active works area along or adjacent to Ng Tung, Sheung Yue and Shek Sheung Rivers.</p> <p>Ng Tung, Sheung Yue and Shek Sheung Rivers screen planting.</p>	Minimize disturbance to waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.	Detailed Design Consultant/ Contractor	Ng Tung, Sheung Yue and Shek Sheung Rivers	Detailed design and Construction phases.	TM-EIAO.
S.13.9	E17	<p>Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance on edge of development areas, including along any roads adjacent to or penetrating into areas/habitats of ecological importance.</p> <p>Erection of a 2m high dull green site barrier fence at the edge of the works area or 30m from Ma Tso Lung Stream and tributaries, whichever distance is the greater.</p> <p>Prevention of dust impact from active works areas from sites adjacent to Ho Sheung Heung and Crest Hill woodland and shrubland in KTN area D1-7, D1-11 and G1-3.</p>	<p>Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.</p> <p>Measures to minimize flight-line impacts to birds, especially breeding ardeids.</p>	Contractor	<p>Interface between areas/habitats/fauna/flora of ecological importance (e.g. KTN areas B1-3, C1-5, C1-6, C1-9, C2-2, C2-4, C2-5, D1-8, E1-8, G1-3, H1-1, Ma Tso Lung Stream and tributaries; FLN areas A1-3, A1-7 and A1-9) and works areas; and around any works areas north of the Fanling Bypass and north of the Ng Tung River west of the western terminus of the Fanling Bypass.</p> <p>Riparian corridor of Ma Tso Lung Stream and tributaries.</p>	Construction phase.	TM-EIAO.
S13.9	E18	Compensatory woodland planting, management and maintenance.	Compensate for loss of secondary woodland and hillside plantation of ecological significance.	Project Proponent / Contractor	KTN areas E1-8 and G1-3.	Construction phase.	TM-EIAO.

## Project Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
S13.9	E19	Use opaque, non-transparent, non-reflective noise barriers for all construction sites.  Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Contractor	All construction sites	Construction phase.	TM-EIAO.
S13.9	E20	Pre-site clearance check for presence of flora or fauna of conservation significance and bat roosts. If any are found, measures should be proposed and implemented to avoid, minimize and/or compensate for impacts; including adjustments to design, timing of works, translocation and translocation. Seek agreement of relevant authorities including AFCD in respect of proposed measures, then implement.  Pre-site clearance check on all construction sites and pre –works commencement check on watercourses to be physically and/or hydrologically impacted by construction activities for presence of protected plant species/specimens of conservation significance. If any are found consider adjustments to avoid, minimize and/or compensate for impacts; including adjustments to design, timing of works, translocation and translocation. Seek agreement of relevant authorities including AFCD in respect of proposed measures, then implement.  Pre-site clearance of construction sites in Crest Hill area, KTN areas D1-7, D1-11 and G1-5 (where Eurasian Hobby was recorded) and on Cheung Po Tau, FLN area A3-1 (where Grey Nightjar was recorded) for presence of any breeding birds/breeding sites. If any are found consider adjustments to avoid, minimize and/or compensate for impacts; including adjustments to design, timing of works, translocation and translocation. Seek agreement of relevant authorities including AFCD in respect of proposed measures, then implement.  Pre-site clearance check on all construction sites for presence of Chinese Bullfrog, translocation to suitable areas including LVNP.	Minimize impacts to flora and fauna of conservation significance. Minimize impacts to protected fauna and flora species.  Formulate and implement mitigation measures to avoid, minimize and/or compensate for impacts; including adjustments to design, timing of works, translocation and translocation.	Government/ Developer/ Contractor/ Ecologist	All construction sites.	Prior to clearance of vegetation and structures.	TM-EIAO.
S13.9	E21	Pre-works commencement check on watercourses to be physically and/or hydrologically impacted by construction activities for presence of flora or fauna of conservation significance and bat roosts. If any are found consider adjustments to avoid, minimize	Minimize impacts to flora and fauna of conservation significance. Minimize impacts to protected fauna	Government/ Developer/ Contractor/	All construction sites.	Prior to clearance of vegetation and	TM-EIAO.

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
		<p>and/or compensate for impacts; including adjustments to design, timing of works, transplantation and translocation. Seek agreement of relevant authorities including AFCD in respect of proposed measures, then implement.</p> <p>Pre-site clearance check on all construction sites for presence of reptile species of conservation significance, capture and translocate to receptor site; review translocation options in respect to species in Ma Tso Lung area and determine whether release locally or elsewhere is appropriate. Seek agreement of relevant authorities including AFCD in respect of proposed measures then implement.</p> <p>Pre-works commencement check on watercourses to be physically and/or hydrologically impacted by construction activities for presence of Small Snakehead and <i>Sommaniathelphusa zanklon</i>. Capture any <i>Sommaniathelphusa zanklon</i> found and translocate to Ma Tso Lung Stream/ other suitable areas including LVNP.</p>	<p>and flora species.</p> <p>Consider and implement adjustments to avoid, minimize or compensate for impacts; including adjustments to design, timing of works, transplantation and translocation.</p>	Ecologist		structures.	
S13.9	E22	Prevention of dust, run-off and pollutants impacting Deep Bay catchment area and areas of ecological importance.	Avoid increase to pollution entering ecologically sensitive Deep Bay ecosystem.	Contractor	All construction sites	Construction	TM-EIAO
<b>Ecology (Operational Phase)</b>							
S. 13.9	E23	Compensatory egret habitat establishment and maintenance.	Compensate for loss of Man Kam To Road egret habitat.	Project Proponent / Contractor / Maintenance Authority	FLN area A1-7.	Operation phase.	Maintenance of bamboo clump suitable for nesting ardeids; if no occupation initially, utilize decoys (models, vocalisations) to encourage occupation.
S13.9	E24	Buffer zone of 15 - 30m on both sides of Ma Tso Lung Stream, Ma Tso Lung San Tsuen and tributaries.  Maintenance of permanent 1.2m high solid fauna barrier at all at-	Minimize impacts on Ma Tso Lung Stream and riparian corridor of importance to species of	Government / Developer	KTN areas H1-1, F1-2 and F1-3 and Lok Ma Chau Loop link	Operation phase.	TM-EIAO.

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
		grade sections of LMC Loop Eastern Connection Road north of junction with road DP4 and maintenance of faunal underpass. .	conservation significance.		road.		
S. 13.9	E25	Long Valley Nature Park habitat establishment and maintenance.	Compensate for wetland loss arising from the Project.	Project Proponent / Contractor / AFCD	Long Valley (KTN area C1-9)	Operation phase.	TM-EIAO; no net loss in wetland function: design requirements and mitigation targets for habitats and species detailed in LVNP Habitat Creation & Management Plan.
S13.9	E26	Management and maintenance of Ng Tung, Sheung Yue and Shek Sheung Rivers screen planting and Open Space areas and development areas along river corridors.	Minimize disturbance to waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.	Maintenance Authority	Ng Tung, Sheung Yue and Shek Sheung Rivers.	Operation phase.	TM-EIAO.
S13.9	E27	Compensatory woodland planting, management and maintenance.	Compensate for loss of secondary woodland and hillside plantation of ecological significance.	Maintenance Authority	KTN areas E1-8 and G1-3.	Operational phase.	TM-EIAO.
S13.9	E28	Use opaque, non-transparent, non-reflective noise barriers for all roads.  Unnecessary lighting should be avoided.  Potential impacts of nocturnal avian collision with buildings should be minimized by not creating sky glow from the use of night-time lighting at or near the top of buildings or other structures. In addition to avoiding uplighting, light spillage should be minimized, while green and blue lights should be used where possible. As far as possible, lights should be controlled by motion sensors, and operations should be managed in such a way as reduce or eliminate night lighting near windows.	Minimize mortality impacts on birds.	Government / Developer	Permanent.	Operation phase.	TM-EIAO.

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**Note: Specific Mitigation Measures for Designated Projects**

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
<b><i>Specific Mitigation Measures for Designated Projects</i></b>							
<b><i>DP1 - San Tin Highway and Fanling Highway Kwu Tung Section Widening (between San Tin Interchange and Po Shek Wu Interchange) (Major Improvement)</i></b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.9	N1-DP1	Provide noise barrier before operation of the proposed project and locations of barriers are stated as following: <ul style="list-style-type: none"> <li>• KTN-NB42: Approx. 545m long, 3m high NB;</li> <li>• KTN-NB43: Approx. 525m long, 3m high NB;</li> <li>• KTN-NB44: Approx. 255m long, 5m high NB;</li> <li>• KTN-NB45: Approx. 340m long, 5m high NB;</li> <li>• KTN-NB46: Approx. 380m long, 5m high NB;</li> <li>• KTN-NB47: Approx. 445m long , 3m high NB;</li> <li>• KTN-NB49: Approx. 375m long, 5m high NB;</li> <li>• KTN-NB50: Approx. 360m long CNB;</li> <li>• KTN-NB51: Approx. 325m long CNB;</li> <li>• KTN-NB53: Approx. 60m long CNB;</li> <li>• KTN-NB54: Approx. 125m long, 5m high NB;</li> <li>• KTN-NB56: Approx. 160m long CNB;</li> <li>• KTN-NB57: Approx. 535m long, 5m high NB;</li> <li>• KTN-NB58: Approx. 675m long CNB;</li> <li>• KTN-NB59: Approx. 115m long CNB;</li> <li>• KTN-NB60: Approx. 840m long CNB;</li> <li>• KTN-NB61: Approx. 1105m long CNB;</li> <li>• KTN-NB62: Approx. 575m long CNB;</li> </ul>	Control operational airborne noise due to road traffic	Project Proponent/ Contractor	Refer to Appendix 5-1	Prior to operation of the Project	Annex 5, TM-EIAO

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
		<ul style="list-style-type: none"> <li>• KTN-NB64: Approx. 670m long CNB;</li> <li>• KTN-NB66: Approx. 340m long CNB;</li> <li>• KTN-NB67: Approx. 330m long CNB;</li> <li>• KTN-NB68: Approx. 210m long CNB;</li> <li>• KTN-NB77: Approx. 320m Long, 3m high NB;</li> <li>• KTN-SE10: Approx. 125m long SE with opening to south direction;</li> <li>• KTN-FE04: Approx. 195m long FE;</li> <li>• KTN-FE05: Approx. 165m long FE</li> </ul>					
<i>Water Quality Impacts (Operational Phase)</i>							
S5.8	W1-DP1	<p><u>Road runoff</u></p> <p>In order to ensure the sand/silt traps removal efficiencies, the following measures should be implemented:</p> <ul style="list-style-type: none"> <li>• The sand/silt traps should be regularly cleaned to prevent the build-up of sediments that could adversely affect the performance of the traps; and</li> <li>• Storm drains and culverts should be cleaned at the end of the dry season, prior to the commencement of the wet season to remove any deposited sediments that could be eroded during the highly turbulent conditions present during first flush.</li> </ul> <p>In addition, the following measures should be implemented:</p> <ul style="list-style-type: none"> <li>• The sewer system should be designed to adequately cater for the projected sewage flows and loads to avoid the necessity for expedient connections to storm drains; and</li> <li>• Oil/grease traps should be installed in areas where such substances could be present in surface run-off, such as along roads, around petrol stations, workshops, food markets and restaurants.</li> </ul>	Control water quality impact	Project Proponent / Detailed Design Consultant, Operator	All road works	Detailed design phase, Operation phase	WPCO, EIAO, TM-EIAO
<i>Cultural Heritage (Pre-construction Phase)</i>							

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S11.6.2	CH1-DP1	<p><u>Undertaking baseline condition survey and baseline vibration impact assessment</u></p> <p>In case any potential vibration impact on any nearby built heritage features are identified during the pre-construction stage of the Project, prior to commencement of construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or a qualified structural engineer to define the vibration limit (a vibration limit at 7.5mm/s and 15mm/s could be adopted for graded historic buildings and historic buildings respectively) and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase so as to ensure the construction performance meets with the vibration standard stated in the EIA report. The condition survey of graded historic building should be submitted to AMO for information.</p>	To minimize the vibration impacts during pre-construction stage on any identified potential vibration impacted built heritage features	Project Proponent/ Contractor	G202 and HKT03 (Main Building)	Pre-construction stage before commencement of construction works	EIAO-TM
S11.6.2	CH2-DP1	<p><u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u></p> <p>Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendents of these features will be carried out the Project Proponent.</p>	To preserve the directly impacted sites by record prior to their removal / relocation	Project Proponent/ Contractor	<i>HKT08 and Entrance Gate of HKT03</i>	Prior to Removal / Relocation of features before commencement of construction works	EIAO-TM
S11.6.2	CH3-DP1	<p><u>Relocation of Built Heritages</u></p> <p>Relocation of built heritages to a reasonable location nearby may be required.</p>	To preserve the directly impacted sites by relocation	Project Proponent/ Contractor	<u>Entrance Gate of HKT03</u>	After the photographic and cartographic records and before commencement of construction works	EIAO-TM
<i>Cultural Heritage (Construction Phase)</i>							
S11.6.2	CH4-	<u>Conducting Construction Vibration Monitoring and Structural</u>	To minimize the potential	Contractor	Identified potential	Construction	EIAO-TM

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?
	DP1	<p><u>Strengthening Measures</u></p> <p>Construction vibration monitoring and structural strengthening measures should be conducted during Construction phase based on the assessment result of baseline condition survey and baseline vibration impact assessment, so as to ensure the construction performance meets with the vibration standard stated in the EIA report.</p>	impacts during Construction phase on any identified potential vibration impacted built heritage features		vibration impacted built heritage features	phase, with details specified in baseline condition survey and baseline vibration impact assessment,	
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.A9	LV1-DP1	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor/	<u>Throughout NDAs.</u>	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.A9 MM1	LV2-DP1	<p>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.</p>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor/	<u>Throughout NDAs, particularly for reservoirs</u>	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.A9	LV3-DP1	Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept	Improve visual amenity of the new buildings, NDAs in	Detailed Design	<u>Throughout NDAs</u>	Prior to Construction	Hong Kong Planning Standards and

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MM2		<p>to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.</p> <p>All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.</p> <p>Construction time frame should also be considered and designs seek to keep it to a practical minimum.</p>	general and integrate as best possible into the surrounding landscape	Consultant/			<p>Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines</p> <p>CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) and ArchSD/Urban Study on Green Roof Application in HK (2007).</p> <p>Dev. Bureau, Greening, Landscaping &amp; Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)</p>
S.12.A9 MM14.4	LV4-DP1	<p>Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimize any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed.</p> <p>For example, for the stream at Siu Hang San Tsuen in FLN NDA, much of the stream is located underneath the viaduct for the proposed Fanling Bypass. In order to avoid impacts to the stream, the detailed final design of the viaduct should follow guidelines and ensure that no viaduct footings or other structures are placed in the</p>	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	<u>All watercourses, particularly the stream at Siu Hang San Tsuen that will flow under the Fanling Bypass Eastern Section</u>	Prior to Construction and Construction Phase	<p>Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works;</p>

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		stream.  Bridges and box culverts should also be used to minimize the necessity of watercourse modification and protect the watercourses where necessary.					Building Department (BD) Practice Note for Authorized Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
S.12.A9 MM4	LV5-DP1	Tree Protection & Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.  A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.A9 MM5	LV6-DP1	Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.  A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.  For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004  HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit

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		transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.					
S.12.A9 MM6	LV7-DP1	<p>Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <p>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</p>	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
S.12.A9 MM7	LV8-DP1	<p>Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.</p> <p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <p>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i> are suggested..</p>	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.A9 MM8	LV9-DP1	Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance	<u>In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<p>in the northern FLN NDA.</p> <p>The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 &amp; E27 also).</p> <p>Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i>, <i>Bischofia javanica</i>, <i>Castanopsis fissa</i>, <i>Celtis sinensis</i>, <i>Cinnamomum burmannii</i>, <i>Cinnamomum camphora</i>, <i>Xanthoxylum avicennae</i>, <i>Hibiscus tiliaceus</i>, <i>Liquidambar formosana</i>, <i>Sapium discolor</i>, <i>Schefflera heptaphylla</i> and <i>Ilex rotunda</i>. In addition some understory vegetation may be planted including shrubs such as <i>Atalantia buxifolia</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma malabathricum</i>, <i>Melastoma dodecandrum</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i>.</p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</p>		Authority			
S.12.A9 MM9	LV10- DP1	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.A9 MM11	LV11- DP1	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant	Government / Detailed Design Consultant/ Contractor	<u>Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.</u>	Prior to Construction, Construction Phase & Maintenance in Operation	ETWBTC 3/2006

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			pedestrian environment			Phase	
S.12.A9 MM12	LV12- DP1	<p>Road Greening –For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers – see MM9 Vertical Greening) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be considered for the soft landscaping of viaducts, taking into account the preference to minimize the overall viaduct bulk and integrate architectural forms and textural finishes which improve aesthetics.</p> <p>For at grade roads, planting should be considered 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, is considered part of Screen Planting)</p>	To soften the hard, straight edges and provide greening along roads.	Government / Detailed Design Consultant/ Contractor	<u>On viaducts or along roads.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	<p>Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers;</p> <p>Development Bureau TCW No. 2/2012 – Allocation of Space for Quality Greening on Roads;</p> <p>HQ/GN/15 - Guidelines for Greening Works along Highways</p>
S.12.A9 MM13 & EIA Annex 13	LV13- DP1	<p>Marsh/Wetland Compensation –The proposed Long Valley Nature Park (LVNP) will be designed and implemented to enhance on-wetland areas within the LVNP. (See E4,E15 and E25 also)</p> <p>Also see LV16, LV17, and LV18 as wetland planting should be provided along the embankments and beds of modified/ re-provisioned watercourses.</p>	Compensate for Marsh/ Wetland lost due to the Project.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/ rivers from adverse impacts arising from construction works.
S.12.A9 MM14.3	LV14- DP1	<p>Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc.</p> <p>For example, a stretch of the Ma Wat River Channel in the south</p>	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Detailed Design Consultant/ Contractor	<u>Channelized watercourse, particularly the Ma Wat River Channel/ Diversion</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design

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		of FLN NDA will have to be diverted for the construction of the Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.					
<b>Landscape and Visual (Construction)</b>							
S.12.A9 MM16	LV15- DP1	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.  Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).	To screen undesirable views of the works site.	Contractor	<i>Throughout NDAs</i>	Construction Phase	
S.12.A9 MM17	LV16- DP1	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Contractor	<i>Throughout NDAs</i>	Construction and Operation Phases	
<b>Ecology ( Construction Phase)</b>							
S.13.9	E1-DP1	Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.  Measures to minimize flight-line impacts to birds, especially breeding ardeids.	Contractor	South side of any works areas south of the current Fanling Highway to the west of the point where the Highway is immediately to the north of Europa Garden.	Construction phase.	TM-EIAO.
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.9	E2-DP1	Use opaque, non-transparent, non-reflective noise barriers.  Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Detailed Design Consultant/	Throughout.	Detailed design phase, Construction	TM-EIAO.

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				Contractor/ Maintenance Authority		phase and Operation phase.	
<b>DP2- Castle Peak Road Diversion (Major Improvement)</b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.9	N1-DP2	Provide noise barrier before operation of the proposed project and locations of barriers are stated as following: <ul style="list-style-type: none"> <li>• KTN-NB52: Approx. 75m long CNB;</li> <li>• KTN-NB55: Approx. 145m long CNB;</li> <li>• KTN-NB-63 Approx. 380m long CNB;</li> <li>• KTN-SE-09: Approx. 85m long SE with opening to south direction</li> </ul>	Control operational airborne noise due to road traffic	Contractor / Project Proponent	Refer to Appendix 5-1	Prior to operation of the Project	Annex 5, TM-EIAO
<i>Water Quality Impacts (Operational Phase)</i>							
S5.8	W1-DP2	<u>Road runoff</u> In order to ensure the sand/silt traps removal efficiencies, the following measures should be implemented: <ul style="list-style-type: none"> <li>• The sand/silt traps should be regularly cleaned to prevent the build-up of sediments that could adversely affect the performance of the traps; and</li> <li>• Storm drains and culverts should be cleaned at the end of the dry season, prior to the commencement of the wet season to remove any deposited sediments that could be eroded during the highly turbulent conditions present during first flush.</li> </ul> In addition, the following measures should be implemented: <ul style="list-style-type: none"> <li>• The sewer system should be designed to adequately cater for the projected sewage flows and loads to avoid the necessity for expedient connections to storm drains; and</li> <li>• Oil/grease traps should be installed in areas where such substances could be present in surface run-off, such as along roads, around petrol stations, workshops, food markets and</li> </ul>	Control water quality impact	Project Proponent / Detailed Design Consultant, Operator	All road works	Detailed design phase, Operation phase	WPCO, EIAO, TM-EIAO

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		restaurants.					
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.A9	LV1-DP2	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor	<u>Throughout NDAs.</u>	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.A9 MM1	LV2-DP2	<p>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.</p>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor	<u>Throughout NDAs, particularly for reservoirs</u>	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.A9 MM2	LV3-DP2	<p>Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as</p>	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant	<u>Throughout NDAs</u>	Prior to Construction	<p>Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines</p> <p>CIBSE HK Branch, Technical Guidelines for Green Roof</p>

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		<p>shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.</p> <p>All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.</p> <p>Construction time frame should also be considered and designs seek to keep it to a practical minimum.</p>					<p>Systems in Hong Kong (2011) and ArchSD/Urban Study on Green Roof Application in HK (2007).</p> <p>Dev. Bureau, Greening, Landscaping &amp; Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)</p>
S.12.A9 MM14.4	LV4-DP2	<p>Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimize any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed.</p> <p>For example, for the stream at Siu Hang San Tsuen in FLN NDA, much of the stream is located underneath the viaduct for the proposed Fanling Bypass. In order to avoid impacts to the stream, the detailed final design of the viaduct should follow guidelines and ensure that no viaduct footings or other structures are placed in the stream.</p> <p>Bridges and box culverts should also be used to minimize the necessity of watercourse modification and protect the watercourses where necessary.</p>	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	<u>All watercourses, particularly the stream at Siu Hang San Tsuen that will flow under the Fanling Bypass Eastern Section</u>	Prior to Construction and Construction Phase	<p>Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works;</p> <p>Building Department (BD) Practice Note for Authorized Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from</p>

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							construction works
S.12.A9 MM4	LV5-DP2	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.A9 MM5	LV6-DP2	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.A9 MM6	LV7-DP2	Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of</p>	Government / Detailed Design Consultant/	<u>Onsite</u>	Prior to Construction, Construction Phase & Maintenance	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope;

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		and site conditions allow.  In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	landscape resources and character.  To ensure man-made slopes are as visually amenable as possible.	Contractor		in Operation Phase	GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
S.12.A9 MM7	LV8-DP2	Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.  Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.  Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i> , <i>Diospyros vaccinioides</i> , <i>Gardenia jasminoides</i> , <i>Ixora chinensis</i> , <i>Ligustrum sinense</i> , <i>Litsea rotundifolia</i> , <i>Melastoma dodecandrum</i> , <i>Atalantia buxifolia</i> , <i>Rhodomyrtus tomentosa</i> , <i>Rhaphiolepis indica</i> , and <i>Rhododendron simsii</i> are suggested..	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.A9 MM8	LV9-DP2	Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.  The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 & E27 also).  Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i> , <i>Bischofia javanica</i> , <i>Castanopsis fissa</i> , <i>Celtis sinensis</i> , <i>Cinnamomum burmannii</i> , <i>Cinnamomum camphora</i> , <i>Xanthoxylum avicennae</i> , <i>Hibiscus</i>	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	<u>In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<p><i>tiliaceus, Liquidambar formosana, Sapium discolor, Schefflera heptaphylla and Ilex rotunda. In addition some understory vegetation may be planted including shrubs such as Atalantia buxifolia, Diospyros vaccinioides, Gardenia jasminoides, Ixora chinensis, Ligustrum sinense, Litsea rotundifolia, Melastoma malabathricum, Melastoma dodecandrum, Rhodomyrtus tomentosa, Rraphiolepis indica, and Rhododendron simsii.</i></p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</p>					
S.12.A9 MM9	LV10-DP2	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.A9 MM11	LV11-DP2	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	<u>Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.A9 MM12	LV12-DP2	Road Greening –For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers – see MM9 Vertical Greening) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be considered for the soft landscaping of viaducts, taking into account	To soften the hard, straight edges and provide greening along roads.	Government / Detailed Design Consultant/ Contractor	<u>On viaducts or along roads.</u>	Prior to Construction, Construction Phase & Maintenance in Operation	Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers; Development Bureau

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		<p>the preference to minimize the overall viaduct bulk and integrate architectural forms and textural finishes which improve aesthetics.</p> <p>For at grade roads, planting should be considered 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, is considered part of Screen Planting)</p>				Phase	<p>TCW No. 2/2012 – Allocation of Space for Quality Greening on Roads;</p> <p>HQ/GN/15 – Guidelines for Greening Works along Highways</p>
S.12.A9 MM13 & EIA Annex 13	LV13-DP2	<p>Marsh/Wetland Compensation –The proposed Long Valley Nature Park (LVNP) will be designed and implemented to enhance on-wetland areas within the LVNP. (See E4,E15 and E25 also)</p> <p>Also see LV16, LV17, and LV18 as wetland planting should be provided along the embankments and beds of modified/ re-provisioned watercourses.</p>	Compensate for Marsh/Wetland lost due to the Project.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works.
S.12.A9 MM14.3	LV14-DP2	<p>Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc.</p> <p>For example, a stretch of the Ma Wat River Channel in the south of FLN NDA will have to be diverted for the construction of the Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.</p>	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Detailed Design Consultant/ Contractor	<u>Channelized watercourse, particularly the Ma Wat River Channel Diversion</u>	Prior to Construction, Construction & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design
S.12.A9 MM15	LV15-DP2	<p>Pond Replacement –Principles adopted in the design of the NDAs ensure that they incorporate ponds within the RODPs.</p> <p>All requirements for ponds stipulated in the planning documents for the formulation of the Preliminary Layout Plan (e.g. at Fung</p>	Reprovision for ponds lost due to the Project.	Project Proponent/ Detailed Design	<u>E1-7 and C1-9 (LVNP) in KNT NDA and generally throughout NDA</u>	Prior to Construction, Construction Phase	

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		Kong Shan Park in E1-7 of KNT ND) should be adhered to.		Consultant/ Contractor/ Maintenance Authority		Maintenance in Operation Phase	
<b>Landscape and Visual (Construction)</b>							
S.12.A9 MM16	LV16-DP2	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.  Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).	To screen undesirable views of the works site.	Contractor	<i>Throughout NDAs</i>	Construction Phase	
S.12.A9 MM17	LV17-DP2	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Contractor	<i>Throughout NDAs</i>	Construction and Operation Phases	
<b>Ecology (Prior to Construction Phase)</b>							
S. 13.9	E1-DP2	Egretry Habitat Creation & Management Plan (EHCMP) and Woodland Planting and Management Plan (WPMP)	Compensate for loss of Man Kam To Road egretry.  Compensate for loss of secondary woodland and hillside plantation of ecological significance.	Project Proponent/  Detailed Design Consultant (EHCMP and WPMP).	FLN area A1-7 (egretry compensation).  KTN areas E1-8 and G1-3 (woodland compensation).	Detailed design phase.	Establishment of bamboo clump of species, size and number suitable for nesting ardeids. Additional measures to attract ardeids to be detailed in EHCMP.  Woodland planting and establishment requirements to be detailed in WPMP.

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							EIAO-TM.
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.9	E2-DP2	Use opaque, non-transparent, non-reflective noise barriers. Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Detailed Design Consultant/ Contractor/ Maintenance Authority	Within NDA.	Detailed design phase, Construction phase and Operation phase.	TM-EIAO.
<b>Ecology (Construction Phase)</b>							
S.13.9	E3-DP2	Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.	Contractor.	Interface between areas/habitats of ecological importance (KTN area B1-3) and works areas.	Construction phase.	TM-EIAO.
S13.9	E4-DP2	Compensatory native woodland planting.	Compensate for loss of plantation of ecological significance.	Project Proponent / Contractor	KTN NDA areas E1-8 and G1-3.	Construction phase.	TM-EIAO.
<b>Ecology (Operational Phase)</b>							
S13.9	E5-DP2	Maintenance of compensatory native woodland planting.	Compensate for loss of plantation of ecological significance.	Maintenance Authority	KTN areas E1-8 and G1-3.	Operational phase	TM-EIAO.
<b>Cultural Heritage (Pre-construction Phase)</b>							
S11.6.1	CH1-DP2	<u>Undertaking Induction Training</u> Induction training should be provided to the construction contractor before the commencement of the excavation works in Site 4. An induction will be conducted as part of the environmental health and safety induction programme to all site staff before they are deployed on site. The induction will include	To preserve the archaeological resources as far as possible	Project Proponent/ Contractor/ Qualified Archaeologist	Site 4	Before the commencement of the excavation works and before site staff are	

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		an introduction on the historical development of the Site, the possible archaeological remains that may be encountered during ground excavation works as well as the reporting procedures in case suspected archaeological remains are identified. A set of the presentation material (in the form of power point presentation) with content details will be prepared by an archaeologist and submitted to AMO for reference and record purpose. The first induction briefing will be video recorded and it will be used as induction briefing material for new site staff.				deployed on site	
S11.6.2	CH2-DP2	<p><u>Undertaking baseline condition survey and baseline vibration impact assessment</u></p> <p>In case any potential vibration impact on any nearby built heritage features are identified during the pre-construction stage of the Project, prior to commencement of construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or a qualified structural engineer to define the vibration limit (a vibration limit at 7.5mm/s and 15mm/s could be adopted for graded historic buildings and historic buildings respectively) and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase so as to ensure the construction performance meets with the vibration standard stated in the EIA report. The condition survey of graded historic building should be submitted to AMO for information.</p>	To minimize the vibration impacts during pre-construction stage on any identified potential vibration impacted built heritage features	Project Proponent/ Contractor	G202, G203, HKT03 (Main Building)	Pre-construction stage before commencement of construction works	EIAO-TM
S11.6.2	CH3-DP2	<p><u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u></p> <p>Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendents of these features will be carried out the Project</p>	To preserve the directly impacted sites by record prior to their removal / relocation	Project Proponent/ Contractor	<i>HKT08 and Entrance Gate of HKT03</i>	Prior to Removal / Relocation of features before commencement of construction	EIAO-TM

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		Proponent.				works	
S11.6.2	CH4-DP2	<u>Relocation of Built Heritages</u> Relocation of built heritages to a reasonable location nearby may be required.	To preserve the directly impacted sites by relocation	Project Proponent/ Contractor	<u>Entrance Gate of HKT03</u>	After the photographic and cartographic records and before commencement of construction works	EIAO-TM
<b>Cultural Heritage (Construction Phase)</b>							
S11.6.2	CH5-DP2	<u>Conducting Construction Vibration Monitoring and Structural Strengthening Measures</u> Construction vibration monitoring and structural strengthening measures should be conducted during Construction phase based on the assessment result of baseline condition survey and baseline vibration impact assessment, so as to ensure the construction performance meets with the vibration standard stated in the EIA report.	To minimize the potential impacts during Construction phase on any identified potential vibration impacted built heritage features	Project Proponent/ Contractor	Identified potential vibration impacted built heritage features	Construction phase, with details specified in baseline condition survey and baseline vibration impact assessment,	EIAO-TM
<b>DP3- KTN NDA Road P1 and P2 (New Road) and associated new Kwu Tung Interchange (New Road) and Pak Shek Au Interchange Improvement (Major Improvement)</b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.9	N1-DP3	Provide noise barrier before operation of the proposed project and locations of barriers are stated as following: <ul style="list-style-type: none"> <li>• KTN-NB11: Approx. 60m long CNB;</li> <li>• KTN-NB12: Approx. 240m long CNB;</li> <li>• KTN-NB13: Approx. 60m long CNB;</li> <li>• KTN-NB14: Approx. 45m long, 3m high NB;</li> </ul>	Control operational airborne noise due to road traffic	Project Proponent/ Contractor	Refer to Appendix 5-1	Prior to operation of the Project	Annex 5, TM-EIAO

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		<ul style="list-style-type: none"> <li>• KTN-NB27: Approx. 100m long CNB;</li> <li>• KTN-NB28: Approx. 115m long CNB;</li> <li>• KTN-NB29: Approx. 40m long, 3m high NB;</li> <li>• KTN-NB30: Approx. 60m long, 5m high NB;</li> <li>• KTN-NB31: Approx. 45m long, 3m high NB;</li> <li>• KTN-NB39: Approx. 65m long, 7m vertical barrier with 3m cantilevered arm;</li> <li>• KTN-NB40: Approx. 55m long CNB;</li> <li>• KTN-NB48: Approx. 160m long, 5m high ANB;</li> <li>• KTN-NB71: Approx. 50m long, 7m vertical barrier with 3m cantilevered arm;</li> <li>• KTN-NB80: Approx. 25m long CNB;</li> <li>• KTN-NB81: Approx. 20m long CNB;</li> <li>• KTN-SE06: Approx. 20m long SE with opening to north-eastern direction;</li> <li>• KTN-SE08: Approx. 105m long SE with opening to north-eastern direction;</li> <li>• KTN-FE01: Approx. 105m long FE;</li> <li>• KTN-FE03: Approx. 115m long FE</li> </ul>					
<i>Water Quality Impacts (Operational Phase)</i>							
S5.7	W1-DP3	<p><u>Road runoff</u></p> <p>In order to ensure the sand/silt traps removal efficiencies, the following measures should be implemented:</p> <ul style="list-style-type: none"> <li>• Vehicle dust, tyre scraps and oils might be washed away from the road surface / open areas to the nearby water courses by surface runoff or road surface cleaning.</li> <li>• Subject to detailed design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period</li> </ul>	Control water quality impact	Project Proponent / Detailed Design Consultant, Operator / Maintenance Authority	All road works	Detailed design phase, Operation phase	WPCO, EIAO, TM-EIAO

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		rainstorm. Proper drainage systems with silt traps and oil interceptors should be installed					
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.A9	LV1-DP3	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor	<u>Throughout NDAs.</u>	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.A9 MM1	LV2-DP3	<p>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.</p>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor	<u>Throughout NDAs, particularly for reservoirs</u>	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.A9 MM2	LV3-DP3	<p>Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered</p>	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant	<u>Throughout NDAs</u>	Prior to Construction	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines  CIBSE HK Branch, Technical Guidelines

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		<p>for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.</p> <p>All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.</p> <p>Construction time frame should also be considered and designs seek to keep it to a practical minimum.</p>					<p>for Green Roof Systems in Hong Kong (2011) and ArchSD/Urbis Study on Green Roof Application in HK (2007).</p> <p>Dev. Bureau, Greening, Landscaping &amp; Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)</p>
S.12.A9 MM14.4	LV4-DP3	<p>Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimize any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed.</p> <p>For example, for the stream at Siu Hang San Tsuen in FLN NDA, much of the stream is located underneath the viaduct for the proposed Fanling Bypass. In order to avoid impacts to the stream, the detailed final design of the viaduct should follow guidelines and ensure that no viaduct footings or other structures are placed in the stream.</p> <p>Bridges and box culverts should also be used to minimize the necessity of watercourse modification and protect the watercourses where necessary.</p>	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	<u>All watercourses, particularly the stream at Siu Hang San Tsuen that will flow under the Fanling Bypass Eastern Section</u>	Prior to Construction and Construction Phase	<p>Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works;</p> <p>Building Department (BD) Practice Note for Authorized Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts</p>

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							arising from construction works
S.12.A9 MM4	LV5-DP3	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.A9 MM5	LV6-DP3	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.A9 MM6	LV7-DP3	Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and</p>	Government / Detailed Design Consultant/	<u>Onsite</u>	Prior to Construction, Construction Phase &	GEO publication (1999) – Use of Vegetation as Surface

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		seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.  In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	subsequent loss of landscape resources and character.  To ensure man-made slopes are as visually amenable as possible.	Contractor		Maintenance in Operation Phase	Protection on Slope;  GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
S.12.A9 MM7	LV8-DP3	Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.  Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.  Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i> , <i>Diospyros vaccinioides</i> , <i>Gardenia jasminoides</i> , <i>Ixora chinensis</i> , <i>Ligustrum sinense</i> , <i>Litsea rotundifolia</i> , <i>Melastoma dodecandrum</i> , <i>Atalantia buxifolia</i> , <i>Rhodomyrtus tomentosa</i> , <i>Rhaphiolepis indica</i> , and <i>Rhododendron simsii</i> are suggested..	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.A9 MM8	LV9-DP3	Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.  The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 & E27 also).  Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i> , <i>Bischofia javanica</i> , <i>Castanopsis fissa</i> , <i>Celtis sinensis</i> , <i>Cinnamomum burmannii</i> ,	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	<u>In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<p><i>Cinnamomum camphora, Xanthoxylum avicennae, Hibiscus tiliaceus, Liquidambar formosana, Sapium discolor, Schefflera heptaphylla and Ilex rotunda. In addition some understory vegetation may be planted including shrubs such as Atalantia buxifolia, Diospyros vaccinioides, Gardenia jasminoides, Ixora chinensis, Ligustrum sinense, Litsea rotundifolia, Melastoma malabathricum, Melastoma dodecandrum, Rhodomyrtus tomentosa, Rhabdialepis indica, and Rhododendron simsii.</i></p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</p>					
S.12.A9 MM9	LV10-DP3	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.A9 MM11	LV11-DP3	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	<u>Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.A9 MM12	LV12-DP3	Road Greening – For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers – see MM9 Vertical Greening) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be	To soften the hard, straight edges and provide greening along roads.	Government / Detailed Design Consultant/ Contractor	<u>On viaducts or along roads.</u>	Prior to Construction, Construction Phase & Maintenance in Operation	Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers;

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		<p>considered for the soft landscaping of viaducts, taking into account the preference to minimize the overall viaduct bulk and integrate architectural forms and textural finishes which improve aesthetics.</p> <p>For at grade roads, planting should be considered 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, is considered part of Screen Planting)</p>				Phase	<p>Development Bureau TCW No. 2/2012 – Allocation of Space for Quality Greening on Roads;</p> <p>HQ/GN/15 - Guidelines for Greening Works along Highways</p>
S.12.A9 MM13 EIA Annex 13	LV13-DP3	<p>Marsh/Wetland Compensation –The proposed Long Valley Nature Park (LVNP) will be designed and implemented to enhance on-wetland areas within the LVNP. (See E4,E15 and E25 also)</p> <p>Also see LV16, LV17, and LV18 as wetland planting should be provided along the embankments and beds of modified/ re-provisioned watercourses.</p>	Compensate for Marsh/Wetland lost due to the Project.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works.
S.12.A9 MM14.3	LV14-DP3	<p>Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc.</p> <p>For example, a stretch of the Ma Wat River Channel in the south of FLN NDA will have to be diverted for the construction of the Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.</p>	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Detailed Design Consultant/ Contractor	<u>Channelized watercourse, particularly the Ma Wat River Channel Diversion</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design
S.12.A9 MM15	LV15-DP3	<p>Pond Replacement –Principles adopted in the design of the NDAs ensure that they incorporate ponds within the RODPs.</p> <p>All requirements for ponds stipulated in the planning documents for</p>	Reprovision for ponds lost due to the Project.	Project Proponent/ Detailed	<u>E1-7 and C1-9 (LVNP) in KNT NDA and generally</u>	Prior to Construction, Construction	

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		the formulation of the Preliminary Layout Plan (e.g. at Fung Kong Shan Park in E1-7 of KNT ND) should be adhered to.		Design Consultant/ Contractor/ Maintenance Authority	<u>throughout NDA</u>	Phase Maintenance in Operation Phase	
<b>Landscape and Visual (Construction)</b>							
S.12.A9 MM16	LV16-DP3	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.  Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).	To screen undesirable views of the works site.	Contractor	<u>Throughout NDAs</u>	Construction Phase	
S.12.A9 MM17	LV17-DP3	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Contractor	<u>Throughout NDAs</u>	Construction and Operation Phases	
<b>Ecology (Prior to Construction Phase)</b>							
S. 13.9	E1-DP3	Egretty Habitat Creation & Management Plan (EHCMP) and Woodland Planting and Management Plan (WPMP)	Compensate for loss of Man Kam To Road egretty.  Compensate for loss of secondary woodland and hillside plantation of ecological significance.	Project Proponent/  Detailed Design Consultant (EHCMP and WPMP).	FLN area A1-7 (egretty compensation).  <u>KTN areas E1-8 and G1-3 (woodland compensation).</u>	Detailed design phase/ Advance works.	Establishment of bamboo clump of species, size and numbers suitable for nesting ardeids. Additional measures to attract ardeids to be detailed in EHCMP.  Woodland planting and establishment requirements to be detailed in WPMP.

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							EIAO-TM.
S.13.9	E2-DP3	Habitat Creation & Management Plan (HCMP) for Long Valley Nature Park (LVNP).	Compensate for wetland loss arising from the project and protection of Long Valley from adverse ecological impacts including provision of additional habitat for large waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.	Project Proponent/ Detailed Design Consultant (LVNP HCMP).	Long Valley	Detailed design phase.	No net loss in wetland function: design requirements and mitigation targets for habitats and species to be detailed in LVNP HCMP.
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.9	E3-DP3	Use opaque, non-transparent, non-reflective noise barriers. Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Detailed Design Consultant/ Contractor Maintenance Authority.	Throughout.	Detailed design, Construction and Operation phases.	TM-EIAO.
<b>Ecology (Construction Phase)</b>							
S.13.9	E4-DP3	Creation of proposed Long Valley Nature Park and creation and enhancement of wetland and woodland areas and buffer planting within LVNP.	Compensate for wetland loss arising from the project.	Project Proponent/ Contractor (LVNP Detailed Habitat Creation & Management Plan).	Long Valley	Construction phase.	TM-EIAO; no net loss in wetland function: design requirements and mitigation targets for habitats and species to be detailed in LVNP Detailed Habitat Creation & Management Plan.
S.13.9	E5-DP3	Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance on edge of development areas, including along any roads adjacent to or penetrating into areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.  Measures to minimize flight-line impacts to birds,	Contractor.	Interface between areas/habitats of ecological importance (KTN areas B1-3, H1-1) and works areas.	Construction phase.	TM-EIAO.

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			especially breeding ardeids.				
S13.9	E6-DP3	Compensatory native woodland planting.	Compensate for loss of plantation of ecological significance.	Project Proponent / Contractor	KTN areas E1-8 and G1-3.	Construction phase.	TM-EIAO.
<b>Ecology (Operational Phase)</b>							
S.13.9	E7-DP3	Operation, management and maintenance of proposed Long Valley Nature Park.	Compensate for wetland loss arising from the project and protection of Long Valley from adverse impact including provision of additional habitat for large waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.	Project Proponent / Contractor/ AFCD	<u>Long Valley, KTN area C1-9.</u>	Operation phase.	No net loss in wetland function: design requirements and mitigation targets for habitats and species to be detailed in LVNP Detailed Management Plan.
S13.9	E8-DP3	Maintenance of compensatory native woodland planting.	Compensate for loss of plantation of ecological significance.	Maintenance Authority	<u>KTN areas E1-8 and G1-3.</u>	Operation phase	TM-EIAO.
<b>Cultural Heritage (Pre-construction Phase)</b>							
S11.6.1	CH1-DP3	<u>Undertaking Survey-cum-Rescue Excavation</u> A Survey-cum-Rescue Excavation should be conducted after land resumption and before the commencement of construction works to define the precise archaeological deposits extent and to preserve the archaeological resources by record. The excavation should be conducted by a professional archaeologist and prior to fieldwork commencement, the archaeologist should obtain a Licence to Excavate and Search for Antiquities from the Authority under the AM Ordinance.	To define the precise archaeological deposits extent and to preserve the archaeological resources as far as possible.	Project Proponent/ Contractor/ Qualified Archaeologist	In KTN NDA, for Site 2 and Spots C and I.	After land resumption but before construction commencement of the zones	EIA recommendation and AMO Guidelines for Archaeological Reports; Guideline for Handling of Archaeological Finds and Archives
S11.6.1	CH2-DP3	<u>Undertaking Further Archaeological Survey to Cover the Outstanding Areas</u> Further archaeological surveys to cover the outstanding areas of the not-yet-surveyed-area with medium archaeological potential located with areas with proposed development as presented in	To confirm and verify the findings of the EIA	Project Proponent/ Contractor/ Qualified Archaeologist	In the not-yet-surveyed-areas with medium archaeological potential located within the work	After land resumption but before construction	EIA recommendation and AMO CHIA Guideline

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		Figure 11.9 should be implemented after land resumption to confirm and verify the findings of the EIA. The survey should be conducted by a professional archaeologist and prior to fieldwork commencement, the archaeologist should obtain a Licence to Excavate and Search for Antiquities from the Authority under the AM Ordinance. It should be noted that the scope of further archaeological survey is based on the current proposed alignment. Any additional works areas which have not been covered by the current archaeological impact assessment should be covered as soon as possible. Subject to the findings of the archaeological survey to be conducted after land resumption, additional mitigation measures would be designed and implemented before the commencement of construction works to mitigate the adverse impact.			extent of DP3		
S11.6.2	CH2-DP3	<p><u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u></p> <p>Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendents of these features will be carried out by the Project Proponent.</p>	To preserve the directly impacted sites by record prior to their removal / relocation	Project Proponent/ Contractor	KT38, KT44, and KT52	Prior to Removal / Relocation of features before commencement of construction works	EIAO-TM
<b>DP4- KTN NDA Road D1 to D5 (New Road)</b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.9	N1-DP4	<p>Provide noise barrier before operation of the proposed project and locations of barriers are stated as following:</p> <ul style="list-style-type: none"> <li>• KTN-NB04: Approx. 35m long, 3m high NB;</li> <li>• KTN-NB05: Approx. 40m long, 3m high NB;</li> <li>• KTN-NB06: Approx. 65m long CNB;</li> <li>• KTN-NB07: Approx. 65m long CNB;</li> <li>• KTN-NB08: Approx. 105m long CNB;</li> <li>• KTN-NB09: Approx. 60m long, 3m high NB;</li> </ul>	Control operational airborne noise due to road traffic	Project Proponent /Contractor	<u>Refer to Appendix 5-1</u>	Prior to operation of the Project	Annex 5, TM-EIAO

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		<ul style="list-style-type: none"> <li>• KTN-NB10: Approx. 90m long, 3m high NB;</li> <li>• KTN-NB19: Approx. 30m long, 3m high NB;</li> <li>• KTN-NB20: Approx. 70m long, 5m high NB;</li> <li>• KTN-NB23: Approx. 80m long, 5m high NB;</li> <li>• KTN-NB24: Approx. 95m long, 7m vertical barrier with 3m cantilevered arm;</li> <li>• KTN-NB25: Approx. 30m long CNB;</li> <li>• KTN-NB35: Approx. 40m long CNB;</li> <li>• KTN-NB37: Approx. 80m long CNB;</li> <li>• KTN-NB38: Approx. 100m long, 3m high NB;</li> <li>• KTN-NB69: Approx. 120m long, 5m high NB;</li> <li>• KTN-NB70: Approx. 30m long, 7m vertical barrier with 3m cantilevered arm;</li> <li>• KTN-NB73: Approx. 75m long CNB;</li> <li>• KTN-NB75: Approx. 45m long, 3m high NB;</li> <li>• KTN-NB76: Approx. 40m long, 3m high NB;</li> <li>• KTN-NB82: Approx. 45m long, 3m high NB;</li> <li>• KTN-SE03: Approx. 75m long SE with opening to north-western direction;</li> <li>• KTN-SE05: Approx. 80m long SE with opening to south direction;</li> <li>• KTN-SE07: Approx. 95m long SE with opening to south-eastern direction;</li> </ul> <p>KTN-FE02: Approx. 130m long FE</p>					
<i>Water Quality Impacts (Operational Phase)</i>							
S5.7	W1-DP4	<p><u>Road runoff</u></p> <p>In order to ensure the sand/silt traps removal efficiencies, the following measures should be implemented:</p>	Control water quality impact	Project Proponent / Detailed Design	All road works	Detailed design stage, Operation	WPCO, EIAO, TM-EIAO

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		<ul style="list-style-type: none"> <li>Vehicle dust, tyre scraps and oils might be washed away from the road surface / open areas to the nearby water courses by surface runoff or road surface cleaning.</li> </ul> <p>Subject to detailed design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period rainstorm. Proper drainage systems with silt traps and oil interceptors should be installed</p>		Consultant/ Maintenance Authority		phase	
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.A9	LV1-DP4	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor	<u>Throughout NDAs.</u>	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.A9 MM1	LV2-DP4	<p>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.</p>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor/	<u>Throughout NDAs, particularly for reservoirs</u>	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.A9 MM2	LV3-DP4	<p>Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and</p>	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding	Detailed Design Consultant/	Throughout NDAs	Prior to Construction	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department

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		<p>colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.</p> <p>All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.</p> <p>Construction time frame should also be considered and designs seek to keep it to a practical minimum.</p>	landscape				<p>(As at Aug 2011); Sustainable Building Design Guidelines</p> <p>CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) and ArchSD/Urbis Study on Green Roof Application in HK (2007).</p> <p>Dev. Bureau, Greening, Landscaping &amp; Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)</p>
S.12.A9 MM4	LV4-DP4	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will</p>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006

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		propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.					
S.12.A9 MM5	LV5-DP4	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.A9 MM6	LV6-DP4	<p>Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <p>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</p>	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
S.12.A9 MM7	LV7-DP4	Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider locations	Prior to Construction, Construction Phase & Maintenance in Operation	ETWB TCW 3/2006 and 2/2004

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		<p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <p>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i> are suggested..</p>				Phase	
S.12.A9 MM8	LV8-DP4	<p>Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.</p> <p>The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 &amp; E27 also).</p> <p>Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i>, <i>Bischofia javanica</i>, <i>Castanopsis fissa</i>, <i>Celtis sinensis</i>, <i>Cinnamomum burmannii</i>, <i>Cinnamomum camphora</i>, <i>Xanthoxylum avicennae</i>, <i>Hibiscus tiliaceus</i>, <i>Liquidambar formosana</i>, <i>Sapium discolor</i>, <i>Schefflera heptaphylla</i> and <i>Ilex rotunda</i>. In addition some understory vegetation may be planted including shrubs such as <i>Atalantia buxifolia</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma malabathricum</i>, <i>Melastoma dodecandrum</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i>.</p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is</p>	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.					
S.12.A9 MM9	LV9-DP4	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	On appropriate structures	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.A9 MM11	LV10-DP4	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.A9 MM12	LV11-DP4	Road Greening –For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers – see MM9 Vertical Greening) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be considered for the soft landscaping of viaducts, taking into account the preference to minimize the overall viaduct bulk and integrate architectural forms and textural finishes which improve aesthetics.  For at grade roads, planting should be considered 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, is considered part of Screen Planting)	To soften the hard, straight edges and provide greening along roads.	Government / Detailed Design Consultant/ Contractor	On viaducts or along roads.	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers;  Development Bureau TCW No. 2/2012 – Allocation of Space for Quality Greening on Roads;  HQ/GN/15 - Guidelines for Greening Works along Highways
S.12.A9 MM13 & EIA Annex 13	LV12-DP4	Marsh/Wetland Compensation –The proposed Long Valley Nature Park (LVNP) will be designed and implemented to enhance on-wetland areas within the LVNP. (See E4,E15 and E25 also)  Also see LV16, LV17, and LV18 as wetland planting should be provided along the embankments and beds of modified/ re-	Compensate for Marsh/Wetland lost due to the Project.	Project Proponent/ Detailed Design Consultant/ Contractor/	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works.

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		provisioned watercourses.		Maintenance Authority		Phase	
S.12.A9 MM15	LV13-DP4	Pond Replacement –Principles adopted in the design of the NDAs ensure that they incorporate ponds within the RODPs. All requirements for ponds stipulated in the planning documents for the formulation of the Preliminary Layout Plan (e.g. at Fung Kong Shan Park in E1-7 of KNT ND) should be adhered to.	Reprovision for ponds lost due to the Project.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	E1-7 and C1-9 (LVNP) in KNT NDA and generally throughout NDA	Prior to Construction, Construction Phase Maintenance in Operation Phase	
<b>Landscape and Visual (Construction)</b>							
S.12.A9 MM16	LV14-DP4	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used. Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).	To screen undesirable views of the works site.	Contractor			
S.12.A9 MM17	LV15-DP4	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase. Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Contractor	<u>Throughout NDAs</u>	Construction and Operation Phases	
<b>Ecology (Prior to Detailed Design Prior to Construction Phase)</b>							
S.13.9	E1-DP4	Egretty Habitat Creation & Management Plan (EHCMP) and Woodland Planting and Management Plan (WPMP)	Compensate for loss of Man Kam To Road egretty. Compensate for loss of secondary woodland and hillside plantation of ecological significance.	Project Proponent/ Detailed Design Consultant (EHCMP and	FLN area A1-7 (egretty compensation). KTN areas E1-8 and G1-3 (woodland compensation).	Detailed design phase.	Establishment of bamboo clump suitable for nesting ardeids. Additional measures to attract ardeids to be detailed in EHCMP.

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				WPMP).			Woodland planting and establishment requirements to be detailed in WPMP. EIAO-TM.
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.9	E2-DP4	Use opaque, non-transparent, non-reflective noise barriers. Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Detailed Design Consultant/ Contractor Maintenance Authority.	Throughout.	Throughout.	TM-EIAO.
<b>Ecology (Construction Phase)</b>							
S.13.9	E3-DP4	Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.	Contractor.	Interface between areas/habitats of ecological importance (KTN areas B1-3, E1-8, G1-3 and H1-1) and works areas	Construction phase.	TM-EIAO.
S13.9	E4-DP4	Compensatory native woodland planting.	Compensate for loss of plantation of ecological significance.	Project Proponent / Contractor	KTN areas E1-8 and G1-3.	Construction phase.	TM-EIAO.
S13.8	E5-DP4	Maintenance of compensatory native woodland planting.	Compensate for loss of plantation of ecological significance.	Maintenance Authority.	KTN areas E1-8 and G1-3.	Operation phase	TM-EIAO.
<b>Cultural Heritage (Pre-construction Phase)</b>							
S11.6.1	CH1-DP4	<u>Undertaking Survey-cum-Rescue Excavation</u> A Survey-cum-Rescue Excavation should be conducted after land resumption and before the commencement of construction works	To define the precise archaeological deposits extent and to preserve the	Project Proponent / Contractor/	In KTN NDA, for Site 1	After land resumption but before	EIA recommendation and AMO Guidelines for Archaeological

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		to define the precise archaeological deposits extent and to preserve the archaeological resources by record. The excavation should be conducted by a professional archaeologist and prior to fieldwork commencement, the archaeologist should obtain a Licence to Excavate and Search for Antiquities from the Authority under the AM Ordinance.	archaeological resources as far as possible.	Qualified Archaeologist		construction commencement of the zones	Reports; Guideline for Handling of Archaeological Finds and Archives
S11.6.1	CH2-DP4	<p><u>Undertaking Further Archaeological Survey to Cover the Outstanding Areas</u></p> <p>Further archaeological surveys to cover the outstanding areas of the not-yet-surveyed-area with medium archaeological potential located with areas with proposed development as presented in <b>Figure 11.9</b> should be implemented after land resumption to confirm and verify the findings of the EIA. The survey should be conducted by a professional archaeologist and prior to fieldwork commencement, the archaeologist should obtain a Licence to Excavate and Search for Antiquities from the Authority under the AM Ordinance. It should be noted that the scope of further archaeological survey is based on the current proposed alignment. Any additional works areas which have not been covered by the current archaeological impact assessment should be covered as soon as possible. Subject to the findings of the archaeological survey to be conducted after land resumption, additional mitigation measures would be designed and implemented before the commencement of construction works to mitigate the adverse impact.</p>	To confirm and verify the findings of the EIA	Project Proponent/ Contractor/ Qualified Archaeologist	In the not-yet-surveyed-areas with medium archaeological potential located within the work extent of DP4	After land resumption but before construction	EIA recommendation and AMO CHIA Guideline
S11.6.1	CH3-DP4	<p><u>Undertaking Induction Training</u></p> <p>Induction training should be provided to the construction Contractor before the commencement of the excavation works in Spot E. An induction will be conducted as part of the environmental health and safety induction programme to all site staff before they are deployed on site. The induction will include an introduction on the historical development of the Site, the possible archaeological remains that may be encountered during ground excavation works as well as the reporting procedures in case suspected archaeological remains are identified. A set of the presentation material (in the form of power point presentation) with content details will be prepared by an archaeologist and submitted to AMO for reference and record purpose. The first induction briefing will be video recorded and it will be used as induction briefing material for</p>	To preserve the archaeological resources as far as possible	Project Proponent/ Contractor/ Qualified Archaeologist	Spot E	Before the commencement of the excavation works and before site staff are deployed on site	

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		new site staff.					
S11.6.2	CH4-DP4	<p><u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u></p> <p>Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendents of these features will be carried out by the Project Proponent.</p>	To preserve the directly impacted sites by record prior to their removal / relocation	Project Proponent/ Contractor	Entrance Gate of HKT03, KT16, KT17 and KT18	Prior to Removal / Relocation of features before commencement of construction works	EIAO-TM
S11.6.2	CH5-DP4	<p><u>Undertaking baseline condition survey and baseline vibration impact assessment</u></p> <p>In case any potential vibration impact on any nearby built heritage features are identified during the pre-construction stage of the Project, prior to commencement of construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or a qualified structural engineer to define the vibration limit (a vibration limit at 15mm/s could be adopted for historic buildings) and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase so as to ensure the construction performance meets with the vibration standard stated in the EIA report.</p>	To minimize the vibration impacts during pre-construction stage on any identified potential vibration impacted built heritage features	Project Proponent/ Contractor	HKT03 (Main Building) and G308	Pre-construction stage before commencement of construction works	EIAO-TM
S11.6.2	CH6-DP4	<p><u>Relocation of Built Heritages</u></p> <p>Relocation of built heritages to a reasonable location nearby may be required.</p>	To preserve the directly impacted sites by relocation	Project Proponent/ Contractor	Entrance Gate of HKT03	After the photographic and cartographic records and before commencement of construction works	EIAO-TM
<b>Cultural Heritage (Construction Phase)</b>							
S11.6.2	CH7-DP4	<u>Conducting Construction Vibration Monitoring and Structural</u>	To minimize the potential impacts during Construction	Contractor	Identified potential vibration impacted	Construction phase, with	EIAO-TM

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		<p><u>Strengthening Measures</u></p> <p>Construction vibration monitoring and structural strengthening measures should be conducted during Construction phase based on the assessment result of baseline condition survey and baseline vibration impact assessment, so as to ensure the construction performance meets with the vibration standard stated in the EIA report.</p>	phase on any identified potential vibration impacted built heritage features		built heritage features	details specified in baseline condition survey and baseline vibration impact assessment,	
<b>DP5- New sewage pumping stations (SPSs) in KTN NDA</b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.8	N1-DP5	<ul style="list-style-type: none"> <li>Provision of noise mitigation measures including silencers, acoustic louvers and acoustic enclosure if necessary;</li> <li>The maximum allowable sound power level for KTN D1-3 and KTN F1-2 shall not exceed 89 and 76 dB(A) respectively.</li> </ul>	Control operational airborne noise due to the operation of fixed plant	Contractor	All plant rooms where practicable	Prior to operation of the Project	Noise Control Ordinance and its TM, TM-EIAO
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.B9	LV1-DP5	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor/	Throughout NDAs,	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.B9 MM1	LV2-DP5	<ul style="list-style-type: none"> <li>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize</li> </ul>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor/	Throughout NDAs, particularly for reservoirs	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes

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		landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.					
S.12.B9 MM2	LV3-DP5	<p>Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.</p> <ul style="list-style-type: none"> <li>• All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.</li> <li>• Construction time frame should also be considered and designs seek to keep it to a practical minimum.</li> </ul>	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant/	Throughout NDAs	Prior to Construction	<p>Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines</p> <p>CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) and ArchSD/Urbis Study on Green Roof Application in HK (2007).</p> <p>Dev. Bureau, Greening, Landscaping &amp; Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise</p>

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							Barriers (April 2012)
S.12.B9 MM4	LV4-DP5	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <ul style="list-style-type: none"> <li>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</li> </ul>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.B9 MM5	LV5-DP5	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <ul style="list-style-type: none"> <li>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</li> </ul> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.B9 MM6	LV6-DP5	Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and</p>	Government / Detailed Design Consultant/	Onsite	Prior to Construction, Construction Phase &	GEO publication (1999) – Use of Vegetation as Surface

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		<p>seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <ul style="list-style-type: none"> <li>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</li> </ul>	<p>subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Contractor		Maintenance in Operation Phase	<p>Protection on Slope;</p> <p>GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes</p>
S.12.B9 MM7	LV7-DP5	<p>Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.</p> <p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <ul style="list-style-type: none"> <li>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus tomentosa</i>, <i>Raphiolepis indica</i>, and <i>Rhododendron simsii</i> are suggested..</li> </ul>	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.B9 MM8	LV8-DP5	<p>Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.</p> <p>The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 &amp; E27 also).</p> <p>Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i>, <i>Bischofia javanica</i>,</p>	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<p><i>Castanopsis fissa, Celtis sinensis, Cinnamomum burmannii, Cinnamomum camphora, Xanthoxylum avicennae, Hibiscus tiliaceus, Liquidambar formosana, Sapium discolor, Schefflera heptaphylla and Ilex rotunda. In addition some understory vegetation may be planted including shrubs such as Atalantia buxifolia, Diospyros vaccinioides, Gardenia jasminoides, Ixora chinensis, Ligustrum sinense, Litsea rotundifolia, Melastoma malabathricum, Melastoma dodecandrum, Rhodomyrtus tomentosa, Rhapsiolepis indica, and Rhododendron simsii.</i></p> <ul style="list-style-type: none"> <li>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</li> </ul>					
S.12.B9 MM9	LV9-DP5	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.B9 MM10	LV10-DP5	<ul style="list-style-type: none"> <li>Green Roof – Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable.</li> </ul>	Reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels. Provide greening.	Government / Detailed Design Consultant/ Contractor	<u>On appropriate buildings</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011); ArchSD/Urban Study on Green Roof Application in HK (2007)

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S.12.B9 MM11	LV11-DP5	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	<u>Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.B9 MM14.3	LV12-DP5	Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc. <ul style="list-style-type: none"> <li>For example, a stretch of the Ma Wat River Channel in the south of FLN NDA will have to be diverted for the construction of the Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.</li> </ul>	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Detailed Design Consultant/ Contractor	<u>Channelized watercourse, particularly the Ma Wat River Channel Diversion</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design
<b>Landscape and Visual (Construction)</b>							
S.12.B9 MM16	LV13-DP5	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used. <ul style="list-style-type: none"> <li>Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).</li> </ul>	To screen undesirable views of the works site.	Contractor	<u>Throughout NDAs</u>	Construction Phase	

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S.12.B9 MM17	LV14-DP5	<p>Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.</p> <ul style="list-style-type: none"> <li>Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.</li> </ul>	To minimize glare impact to adjacent VSRs	Government / Contractor	<i>Throughout NDAs</i>	Construction and Operation Phases	
<b>Ecology (Construction Phase)</b>							
S.13.9	E1-DP5	Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.	Contractor.	<u>Interface between areas/habitats of ecological importance and works areas (all sides of KTN area F1-2).</u>	Construction phase.	TM-EIAO.
<b>DP6- Proposed railway station and associated facilities in KTN NDA (To be conducted under separate study).</b>							
<b>DP7- Utilization of Treated Sewage Effluent from SWHSTW</b>							
<b>Water (Operational Phase)</b>							
S5.7	W1-DP7	<p><u>Emergency discharge</u></p> <p>Emergency discharge may be required due to the failure of on-site STW. In order to prevent and minimize the impact due to the emergency discharge, the following precautionary measures shall be included in the STW design:</p> <ul style="list-style-type: none"> <li>To facilitate maintenance and repairing of equipment, standby unit should be provided;</li> <li>Dual power supply, or back-up power, should be provided, perfectly in the format of ring main or automatic-operated emergency generator with sufficient capacity to cope with the demand loading of the essential plant equipment;</li> <li>Telemetry system should be provided to the closet manned plant for unmanned facilities, such that swift actions could be</li> </ul>	Control water quality impact	Operator	<u>SWHSTW</u>	Operation phase	WPCO, EIAO, TM-EIAO

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		<p>taken in case of malfunction of unmanned facilities; and</p> <p>To prevent the discharge of floating solids, manually cleaned screens should be provided at the overflow bypass.</p>					
<b><i>Landscape and Visual (Construction Phase and Operational Phase)</i></b>							
S.12.9 MM4	LV1-DP7	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.9 MM9	LV2-DP7	<p>Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. building edges, piers).</p>	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.9 MM10	LV3-DP7	<p>Green Roof – Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable.</p>	Reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels. Provide greening.	Government / Detailed Design Consultant/ Contractor	<u>On appropriate buildings</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011); ArchSD/Urban Study on Green Roof Application in HK (2007)

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<b>DP8- Po Shek Wu Interchange Improvement (Major Improvement)</b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.9	N1-DP8	<p>Provide noise barrier before operation of the proposed project and locations of barriers are stated as following:</p> <ul style="list-style-type: none"> <li>• FLN-NB01: Approx. 95m long, 5m high NB;</li> <li>• FLN-NB02: Approx. 70m long, 3m high NB;</li> <li>• FLN-NB03: Approx. 115m long CNB;</li> <li>• FLN-FE01: Approx. 150m long FE;</li> <li>• FLN-SE01: Approx. 325m long SE with opening to west direction;</li> </ul> <p>FLN-SE02: Approx. 450m long SE with opening to west direction</p>	Control operational airborne noise due to road traffic	Project Proponent / Contractor	<u>Refer to Figure 4.9b</u>	Prior to operation of the Project	Annex 5, TM-EIAO
<i>Water Quality Impacts (Operational Phase)</i>							
S5.7	W1-DP8	<p><u>Road runoff</u></p> <p>In order to ensure the sand/silt traps removal efficiencies, the following measures should be implemented:</p> <ul style="list-style-type: none"> <li>• Vehicle dust, tyre scraps and oils might be washed away from the road surface / open areas to the nearby water courses by surface runoff or road surface cleaning.</li> </ul> <p>Subject to detailed design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period rainstorm. Proper drainage systems with silt traps and oil interceptors should be installed</p>	Control water quality impact	Project Proponent / Detailed Design Consultant,/ Maintenance Authority	All road works	Detailed design phase, Operation phase	WPCO, EIAO, TM-EIAO
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.C9	LV1-DP8	General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state		Detailed Design Consultant/	<u>Throughout NDAs,</u>	Prior to Construction, Construction & for all planting,	

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		to suit future land use, should be adhered to.  With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.		Contractor		this should be installed as soon as the areas become available, to achieve early establishment	
S.12.C9 MM1	LV2-DP8	Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor	<u>Throughout NDAs, particularly for reservoirs</u>	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.C9 MM2	LV3-DP8	Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.  All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant	<u>Throughout NDAs</u>	Prior to Construction	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines  CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) and ArchSD/Urban Study on Green Roof Application in HK (2007).  Dev. Bureau, Greening,

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		<p>well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.</p> <p>Construction time frame should also be considered and designs seek to keep it to a practical minimum.</p>					<p>Landscaping &amp; Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)</p>
S.12.C9 MM4	LV4-DP8	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12. C9 MM5	LV5-DP8	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit

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		<p>be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>					
S.12. C9 MM6	LV6-DP8	<p>Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <p>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</p>	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction, Construction & Maintenance in Operation Phase	<p>GEO publication (1999) – Use of Vegetation as Surface Protection on Slope;</p> <p>GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes</p>
S.12.C9 MM7	LV7-DP8	<p>Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.</p> <p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <p>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i> are suggested..</p>	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12. C9 MM8	LV8-DP8	Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design	<u>In areas identified in the EIA Landscape Mitigation Plans and as agreed with</u>	Prior to Construction, Construction Phase &	ETWB TCW 3/2006 and 2/2004

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		<p>principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.</p> <p>The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 &amp; E27 also).</p> <p>Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i>, <i>Bischofia javanica</i>, <i>Castanopsis fissa</i>, <i>Celtis sinensis</i>, <i>Cinnamomum burmannii</i>, <i>Cinnamomum camphora</i>, <i>Xanthoxylum avicennae</i>, <i>Hibiscus tiliaceus</i>, <i>Liquidambar formosana</i>, <i>Sapium discolor</i>, <i>Schefflera heptaphylla</i> and <i>Ilex rotunda</i>. In addition some understory vegetation may be planted including shrubs such as <i>Atalantia buxifolia</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma malabathricum</i>, <i>Melastoma dodecandrum</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i>.</p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</p>		Consultant/ Contractor/ Maintenance Authority	<u>AFCD</u>	Maintenance in Operation Phase	
S.12.C9 MM9	LV9-DP8	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.C9 MM10	LV10-DP8	Green Roof – Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information	Reduce exposure to untreated concrete surfaces and particularly mitigate	Government / Detailed Design	<u>On service reservoirs</u>	Prior to Construction, Construction	CIBSE HK Branch, Technical Guidelines for Green Roof

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		regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable.	visual impact to VSRs at high levels. Provide greening.	Consultant/ Contractor		Phase & Maintenance in Operation Phase	Systems in Hong Kong (2011); ArchSD/Urbs Study on Green Roof Application in HK (2007)
S.12.C9 MM11	LV11-DP8	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	<u>Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.C9 MM14.3	LV12-DP8	Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc.  For example, a stretch of the Ma Wat River Channel in the south of FLN NDA will have to be diverted for the construction of the Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Detailed Design Consultant/ Contractor	<u>Channelized watercourse, particularly the Ma Wat River Channel Diversion</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design
<b>Landscape and Visual (Construction)</b>							
S.12.C9 MM16	LV13-DP8	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible	To screen undesirable views of the works site.	Contractor	<u>Throughout NDAs</u>	Construction Phase	

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		with the surrounding environment and where possible, non-reflective, recessive colours be used.  Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).					
S.12. C9 MM17	LV14-DP8	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Contractor	<i>Throughout NDAs</i>	Construction and Operation Phases	
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.9	E1-DP8	Use opaque, non-transparent, non-reflective noise barriers for all developments associated with the Project.	Minimize mortality impacts on birds.	Detailed Design Consultant/ Contractor/ Maintenance Authority	Throughout.	Detailed design, construction and Operation phases.	TM-EIAO.
<b>DP9- Fanling Bypass Western Section (New Road)</b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.9	N1-DP9	Provide noise barrier before operation of the proposed project and locations of barriers are stated as following: <ul style="list-style-type: none"><li>• FLN-NB11: Approx. 45m long, 3m high NB;</li><li>• FLN-NB12: Approx. 160m long, 5m high NB;</li></ul> FLN-NB13: Approx. 205m long, 5m high NB	Control operational airborne noise due to road traffic	Contractor / Project Proponent	<i>Refer to Figure 4.9b</i>	Prior to operation of the Project	Annex 5, TM-EIAO
<i>Water Quality Impacts (Operational Phase)</i>							
S5.7	W1-DP9	<u>Road runoff</u>  In order to ensure the sand/silt traps removal efficiencies, the	Control water quality impact	Project Proponent / Detailed	All road works	Detailed design stage, Operation	WPCO, EIAO, TM-EIAO

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		<p>following measures should be implemented:</p> <ul style="list-style-type: none"> <li>Vehicle dust, tyre scraps and oils might be washed away from the road surface / open areas to the nearby water courses by surface runoff or road surface cleaning.</li> <li>Subject to detailed design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period rainstorm. Proper drainage systems with silt traps and oil interceptors should be installed</li> </ul>		Design Consultant, Operator		phase	
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.D9	LV1-DP9	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor	<u>Throughout NDAs,</u>	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.D9 MM1	LV2-DP9	<p>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.</p>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor/	<u>Throughout NDAs, particularly for reservoirs</u>	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.D9	LV3-DP9	Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept	Improve visual amenity of the new buildings, NDAs in	Detailed Design	<u>Throughout NDAs</u>	Prior to Construction	Hong Kong Planning Standards and

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MM2		<p>to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.</p> <p>All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design, including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.</p> <p>Construction time frame should also be considered and designs seek to keep it to a practical minimum.</p>	<p>general and integrate as best possible into the surrounding landscape</p>	<p>Consultant</p>			<p>Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines</p> <p>CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) and ArchSD/Urbis Study on Green Roof Application in HK (2007).</p> <p>Dev. Bureau, Greening, Landscaping &amp; Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)</p> <p>Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)</p>
S.12.D9 MM4	LV4-DP9	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p>	<p>Protect and Preserve Trees</p>	<p>Government / Detailed Design Consultant/ Contractor</p>	<p><u>Onsite</u></p>	<p>Prior to Construction and Construction Phase</p>	<p>ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006</p>

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		A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.					
S.12.D9 MM5	LV5-DP9	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u> where possible. <u>Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004  HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.D9 MM6	LV6-DP9	<p>Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <p>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</p>	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope;  GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
S.12.D9 MM7	LV7-DP9	Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/	<u>Onsite</u> where possible. <u>Otherwise consider offsite</u>	Prior to Construction, Construction Phase &	ETWB TCW 3/2006 and 2/2004

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		<p>during the Tree Removal Application process under ETWBTC 3/2006.</p> <p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <p>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i> are suggested..</p>		Contractor	<u>locations</u>	Maintenance in Operation Phase	
S.12.D9 MM8	LV8-DP9	<p>Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.</p> <p>The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 &amp; E27 also).</p> <p>Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i>, <i>Bischofia javanica</i>, <i>Castanopsis fissa</i>, <i>Celtis sinensis</i>, <i>Cinnamomum burmannii</i>, <i>Cinnamomum camphora</i>, <i>Xanthoxylum avicennae</i>, <i>Hibiscus tiliaceus</i>, <i>Liquidambar formosana</i>, <i>Sapium discolor</i>, <i>Schefflera heptaphylla</i> and <i>Ilex rotunda</i>. In addition some understory vegetation may be planted including shrubs such as <i>Atalantia buxifolia</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma malabathricum</i>, <i>Melastoma dodecandrum</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i>.</p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not</p>	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	<u>In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.					
S.12.D9 MM9	LV9-DP9	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.D9 MM11	LV10-DP9	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	<u>Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.D9 MM12	LV11-DP9	Road Greening –For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers – see MM9 Vertical Greening) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be considered for the soft landscaping of viaducts, taking into account the preference to minimize the overall viaduct bulk and integrate architectural forms and textural finishes which improve aesthetics.  For at grade roads, planting should be considered 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, is considered part of Screen Planting)	To soften the hard, straight edges and provide greening along roads.	Government / Detailed Design Consultant/ Contractor	<u>On viaducts or along roads.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers;  Development Bureau TCW No. 2/2012 – Allocation of Space for Quality Greening on Roads;  HQ/GN/15 - Guidelines for Greening Works along Highways
<b>Landscape and Visual (Construction)</b>							

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S.12.D9 MM16	LV12-DP9	Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.  Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).	To screen undesirable views of the works site.	Contractor	<i>Throughout NDAs</i>	Construction Phase	
S.12.D9 MM17	LV13-DP9	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Contractor	<i>Throughout NDAs</i>	Construction and Operation Phases	
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.9	E1-DP9	Use opaque, non-transparent, non-reflective noise barriers.  Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Detailed Design Consultant/ Contractor/ Maintenance Authority	Throughout.	Detailed design, construction and Operation phases.	TM-EIAO.
<b>Ecology (Prior to Construction Phase)</b>							
S.13.9	E2-DP9	Site clearance at the current egretry location at Man Kam To Road to be undertaken outside the ardeid breeding season (1 <sup>st</sup> March to 31 <sup>st</sup> July). Current egretry location should be checked by a qualified ecologist prior to commencement of any works activity within 50m of the egretry.	Minimize disturbance and mortality on breeding ardeids.	Project Proponent/ Detailed Design Consultant/ Contractor.	Man Kam To Road egretry site.	Prior to site clearance.	TM-EIAO.
S. 13.9	E3-DP9	Compensatory egretry habitat provision.	Compensate for loss of Man Kam To Road egretry.	Project Proponent/ Detailed Design	FLN, RODP-13 zone A1-7.	Detailed design phase	Establishment of bamboo clump of species, size and numbers suitable for

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				Consultant.			nesting ardeids.
S.13.9	E4-DP9	Habitat Creation & Management Plan (HCMP) for Long Valley Nature Park (LVNP).	Compensate for wetland loss arising from the project and protection of Long Valley from adverse ecological impacts including provision of additional habitat for large waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.	Project Proponent/ Detailed Design Consultant (LVNP HCMP).	Long Valley, KTN area C1-9.	Detailed design phase.	No net loss in wetland function: design requirements and mitigation targets for habitats and species to be detailed in LVNP HCMP.
<b>Ecology (Construction Phase)</b>							
S. 13.9	E5-DP9	Compensatory egret habitat provision.	Compensate for loss of Man Kam To Road egret.	Project Proponent / Contractor	FLN area A1-7.	Construction phase	Establishment of bamboo clump of species, size and numbers suitable for nesting ardeids; if no occupation initially, utilize decoys (models, vocalisations) to encourage occupation.
S.13.9	E6-DP9	Creation of Long Valley Nature Park and creation and enhancement of wetland and woodland areas and buffer planting within Long Valley Nature Park.	Compensate for wetland loss arising from the project.	Project Proponent / Contractor (LVNP Detailed Habitat Creation & Management Plan).	Long Valley, KTN area C1-9.	Construction phase.	TM-EIAO; no net loss in wetland function: design requirements and mitigation targets for habitats and species to be detailed in LVNP Detailed Habitat Creation & Management Plan.
S.13.9	E7-DP9	Erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna. Measures to minimize flight-	Contractor.	Interface between areas/habitats of ecological importance and works areas (all of	Construction phase.	TM-EIAO.

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			line impacts to birds, especially breeding ardeids.		north side of Bypass works area).		
<b>Ecology (Operational Phase)</b>							
S. 13.9	E8-DP9	Compensatory egret habitat provision.	Compensate for loss of Man Kam To Road egret.	Project Proponent / Contractor/ Maintenance Authority	FLN area A1-7.	Operation phase.	Maintenance of bamboo clump of species, size and number suitable for nesting ardeids; if no occupation initially, utilize decoys (models, vocalisations) to encourage occupation.
S.13.9	E9-DP9	Operation, management and maintenance of Long Valley Nature Park.	Compensate for wetland loss arising from the project and protection of Long Valley from adverse impact including provision of additional habitat for large waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels.	Project Proponent / Contractor AFCD	Long Valley KTN area.	Operation phase.	No net loss in wetland function: design requirements and mitigation targets for habitats and species to be detailed in LVNP Detailed Management Plan.
<b>Cultural Heritage (Pre-construction Phase)</b>							
S11.6.1	CH1-DP9	<u>Undertaking Induction Training</u> Induction training should be provided to the construction Contractor before the commencement of the excavation works in Site 10. An induction will be conducted as part of the environmental health and safety induction programme to all site staff before they are deployed on site. The induction will include an introduction on the historical development of the Site, the possible archaeological remains that may be encountered during ground excavation works as well as the reporting procedures in case suspected archaeological remains are identified. A set of the presentation material (in the form of power point presentation) with content details will be prepared by an archaeologist and	To preserve the archaeological resources as far as possible	Project Proponent/ Contractor/ Qualified Archaeologist	Site 10	Before the commencement of the excavation works and before site staff are deployed on site	

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		submitted to AMO for reference and record purpose. The first induction briefing will be video recorded and it will be used as induction briefing material for new site staff.					
S11.6.2	CH2-DP9	<p><u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u></p> <p>Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendents of these features will be carried out by the Project Proponent.</p>	To preserve the directly impacted sites by record prior to their removal / relocation	Contractor /Project Proponent	FL11 and FL33	Prior to Removal / Relocation of features before commencement of construction works	EIAO-TM
<b>DP10- Fanling Bypass Eastern Section (New Road)</b>							
<i>Noise Impacts (Operational Phase)</i>							
S4.9	N1-DP10	<p>Provide noise barrier before operation of the proposed project and locations of barriers are stated as following:</p> <ul style="list-style-type: none"> <li>• FLN-NB21: Approx. 345m long, 3m high NB;</li> <li>• FLN-NB22: Approx. 150m long, 5m high NB;</li> <li>• FLN-NB23: Approx. 165m long CNB;</li> <li>• FLN-NB24: Approx. 310m long CNB;</li> <li>• FLN-NB25: Approx. 130m long CNB;</li> <li>• FLN-NB26: Approx. 50m long , 5m high NB;</li> <li>• FLN-NB27: Approx. 45m long, 5m high NB;</li> <li>• FLN-NB28: Approx. 160m long, 5m high NB;</li> <li>• FLN-NB29: Approx. 130m long CNB;</li> <li>• FLN-NB30: Approx. 280m long CNB</li> </ul>	Control operational airborne noise due to road traffic	Contractor	Refer to Figure 4.9b	Prior to operation of the Project	Annex 5, TM-EIAO
<b>Water Quality Impacts (Operational Phase)</b>							

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S5.7	W1-DP10	<p><u>Road runoff</u></p> <p>In order to ensure the sand/silt traps removal efficiencies, the following measures should be implemented:</p> <ul style="list-style-type: none"> <li>Vehicle dust, tyre scraps and oils might be washed away from the road surface / open areas to the nearby water courses by surface runoff or road surface cleaning.</li> <li>Subject to detailed design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period rainstorm. Proper drainage systems with silt traps and oil interceptors should be installed</li> </ul>	Control water quality impact	Project Proponent / Detailed Design Consultant, Maintenance Authority	All road works	Detailed design phase, Operation phase.	WPCO, EIAO, TM-EIAO
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.D9	LV1-DP10	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor	<u>Throughout NDAs.</u>	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.D9 MM1	LV2-DP10	<p>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.</p>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor	<u>Throughout NDAs, particularly for reservoirs</u>	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes

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S.12.D9 MM4	LV3-DP10	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.D9 MM5	LV4-DP10	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.D9 MM6	LV5-DP10	Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and</p>	Government / Detailed Design Consultant/ Contractor	<u>Onsite</u>	Prior to Construction, Construction Phase & Maintenance in Operation	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical

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		In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	character. To ensure man-made slopes are as visually amenable as possible.			Phase	Guidelines on Landscape Treatment for Slopes
S.12.D9 MM7	LV6-DP10	Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.  Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.  Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i> , <i>Diospyros vaccinioides</i> , <i>Gardenia jasminoides</i> , <i>Ixora chinensis</i> , <i>Ligustrum sinense</i> , <i>Litsea rotundifolia</i> , <i>Melastoma dodecandrum</i> , <i>Atalantia buxifolia</i> , <i>Rhodomyrtus tomentosa</i> , <i>Rhaphiolepis indica</i> , and <i>Rhododendron simsii</i> are suggested..	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	<u>Onsite where possible. Otherwise consider offsite locations</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.D9 MM8	LV7-DP10	Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.  The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 & E27 also).  Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i> , <i>Bischofia javanica</i> , <i>Castanopsis fissa</i> , <i>Celtis sinensis</i> , <i>Cinnamomum burmannii</i> , <i>Cinnamomum camphora</i> , <i>Xanthoxylum avicennae</i> , <i>Hibiscus tiliaceus</i> , <i>Liquidambar formosana</i> , <i>Sapium discolor</i> , <i>Schefflera heptaphylla</i> and <i>Ilex rotunda</i> . In addition some understory	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	<u>In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<p><i>vegetation may be planted including shrubs such as Atalantia buxifolia, Diospyros vaccinioides, Gardenia jasminoides, Ixora chinensis, Ligustrum sinense, Litsea rotundifolia, Melastoma malabathricum, Melastoma dodecandrum, Rhodomyrtus tomentosa, Rhapsiolepis indica, and Rhododendron simsii.</i></p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</p>					
S.12.D9 MM9	LV8-DP10	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	<u>On appropriate structures</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.D9 MM11	LV9-DP10	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	<u>Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.D9 MM12	LV10-DP10	Road Greening –For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers – see MM9 Vertical Greening) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be considered for the soft landscaping of viaducts, taking into account the preference to minimize the overall viaduct bulk and integrate	To soften the hard, straight edges and provide greening along roads.	Government / Detailed Design Consultant/ Contractor	<u>On viaducts or along roads.</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers; Development Bureau TCW No. 2/2012 – Allocation of Space

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		<p>architectural forms and textural finishes which improve aesthetics.</p> <p>For at grade roads, planting should be considered 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, is considered part of Screen Planting)</p>					for Quality Greening on Roads; HQ/GN/15 - Guidelines for Greening Works along Highways
S.12.D9 MM14.3	LV11- DP10	<p>Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc.</p> <p>For example, a stretch of the Ma Wat River Channel in the south of FLN NDA will have to be diverted for the construction of the Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.</p>	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Detailed Design Consultant/ Contractor	<u>Channelized watercourse, particularly the Ma Wat River Channel Diversion</u>	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design
<b>Landscape and Visual (Construction)</b>							
S.12.D9 MM16	LV12- DP10	<p>Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.</p> <p>Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).</p>	To screen undesirable views of the works site.	Contractor	<u>Throughout NDAs</u>	Construction Phase	
S.12.D9	LV13- DP10	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the	To minimize glare impact to adjacent VSRs	Government / Contractor	<u>Throughout NDAs</u>	Construction and Operation	

## Project Implementation Schedule

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MM17		Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.				Phases	
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.8	E1-DP10	Use opaque, non-transparent, non-reflective noise barriers.  Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Detailed Design Consultant/  Contractor  Maintenance Authority.	Throughout.	Detailed design, construction and Operation phases.	TM-EIAO.
<b>Ecology (Prior to Construction Phase)</b>							
S13.9	E2-DP10	Detailed design of Siu Hang San Tsuen Stream to have 10m wide vegetated buffer in Open Space zone D1-3, Fanling Bypass to cross stream on viaduct, all stream (including upstream sections not impacted by the Project) to have permanent buffer of 10m on either side stream.	Minimize impacts on Siu Hang San Tsuen Stream and stream fauna.	PlanD/ Project Proponent/  Detailed Design Consultant.	FLN area D1-3.	Detailed design phase.	Layout Plan.
<b>Ecology (Construction Phase)</b>							
S13.9	E3-DP10	Lower reaches of Siu Hang San Tsuen Stream to have 10m wide vegetated buffer in Open Space Zone D1-3 and Fanling Bypass to cross stream on viaduct.	Minimize impacts on Siu Hang San Tsuen Stream and stream fauna.	Contractor.	FLN area D1-3.	Construction phase.	TM-EIAO; ETWBTCW 5/2005.
S.13.9	E4-DP10	Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.  Measures to minimize flight-line impacts to birds, especially breeding ardeids.	Contractor.	Interface between areas/habitats of ecological importance and works areas (all of the north side of the Bypass works areas west of interchange with Sha Tau Kok Road).	Construction phase.	TM-EIAO.

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<b>Ecology (Operational Phase)</b>							
S13.9	E5-DP10	Lower reaches of Siu Hang San Tsuen Stream to have 10m wide vegetated buffer in Open Space zone D1-3. Any channelization works to upstream section not recommended.	Minimize impacts on Siu Hang San Tsuen Stream and stream fauna.	PlanD / Government Maintenance Authority.	FLN area D1-3.	Operation phase.	TM-EIAO.
<b>Cultural Heritage (Pre-construction Phase)</b>							
S11.6.2	CH1-DP10	<u>Undertaking baseline condition survey and baseline vibration impact assessment</u> In case any potential vibration impact on any nearby built heritage features are identified during the pre-construction stage of the Project, prior to commencement of construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or a qualified structural engineer to define the vibration limit (a vibration limit at 15mm/s could be adopted for historic buildings) and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase so as to ensure the construction performance meets with the vibration standard stated in the EIA report.	To minimize the vibration impacts during pre-construction stage on any identified potential vibration impacted built heritage features	Project Proponent/ Contractor	HFL05, FL02, FL04, FL24, FL27, FL31, and FL36.	Pre-construction stage before commencement of construction works	EIAO-TM
S11.6.2	CH2-DP10	<u>Conducting Photographic and Cartographic Records Prior to Removal/Relocation of Impacted Built Heritages</u> Prior to removal/relocation of the directly impacted historical buildings and cultural/historical landscape features, photographic and cartographic records should be conducted to preserve them by record. Liaison with and obtaining agreement from the descendents of these features will be carried out by the Project Proponent.	To preserve the directly impacted sites by record prior to their removal / relocation	Project Proponent/ Contractor	FL19	Prior to Removal / Relocation of features before commencement of construction works	EIAO-TM
S11.6.2	CH3-DP10	<u>Relocation of Built Heritages</u> Relocation of built heritages to a reasonable location nearby may be required.	To preserve the directly impacted sites by relocation	Project Proponent/ Contractor	FL19	After the photographic and cartographic records and before commencement	EIAO-TM

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						nt of construction works	
<b>Cultural Heritage (Construction Phase)</b>							
S11.6.2	CH4-DP10	<p><u>Conducting Construction Vibration Monitoring and Structural Strengthening Measures</u></p> <p>Construction vibration monitoring and structural strengthening measures should be conducted during Construction phase based on the assessment result of baseline condition survey and baseline vibration impact assessment, so as to ensure the construction performance meets with the vibration standard stated in the EIA report.</p>	To minimize the potential impacts during Construction phase on any identified potential vibration impacted built heritage features	Contractor	Identified potential vibration impacted built heritage features	Construction phase, with details specified in baseline condition survey and baseline vibration impact assessment,	EIAO-TM
<b>DP11- Shek Wu Hui Sewage Treatment Works - Further Expansion in FLN NDA</b>							
<b>Odour Impact (Operational Phase)</b>							
S 3.8	O1-DP11	<p>The detailed design should incorporate the following odour impact mitigation measures in order to minimize the nuisance on the nearby ASRs.</p> <ul style="list-style-type: none"> <li>All odour emission sources should be covered and the emission should be delivered to deodorization facility prior to discharge.</li> <li>The odour removal efficiency of the deodorization facility is 90%.</li> <li>Discharge point should be 10m above ground with 10m/s exit velocity.</li> </ul>	Control operational odour impact due to the operation of SHWSTW	Detailed Design Consultant	SWHSTW	Detailed design and operation phase of the Phase 2 Expansion of SWHSTW (ultimate scenario)	EIAO, TM-EIAO
<b>Noise Impacts (Operational Phase)</b>							
S4.8	N1-DP11	<ul style="list-style-type: none"> <li>Provision of noise mitigation measures including silencers, acoustic louvers and acoustic enclosures if necessary;</li> <li>The maximum allowable sound power level shall not exceed</li> </ul>	Control operational airborne noise due to the operation of fixed plant	Contractor	All plant rooms where practicable	Prior to operation of the Project	Noise Control Ordinance and its TM, TM-EIAO

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		83 dB(A).					
<i>Water Quality Impacts (Operational Phase)</i>							
S5.7	W1-DP11	<p><u>Emergency discharge</u></p> <p>Emergency discharge may be required due to the failure of on-site STW. In order to prevent and minimize the impact due to the emergency discharge, the following precautionary measures shall be included in the STW design:</p> <ul style="list-style-type: none"> <li>To facilitate maintenance and repairing of equipment, standby unit should be provided;</li> <li>Dual power supply, or back-up power, should be provided, perfectly in the format of ring main or automatic-operated emergency generator with sufficient capacity to cope with the demand loading of the essential plant equipment;</li> <li>Telemetry system should be provided to the closet manned plant for unmanned facilities, such that swift actions could be taken in case of malfunction of unmanned facilities; and</li> </ul> <p>To prevent the discharge of floating solids, manually cleaned screens should be provided at the overflow bypass.</p>	Control water quality impact	Operator	SWHSTW	Operation phase	WPCO, EIAO, TM-EIAO
<i>Landscape and Visual (Prior to Construction, Detailed Design, Construction and Operational Phases)</i>							
S.12.C9 MM4	LV1-DP11	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <p>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.</p>		Detailed Design Consultant/ Contractor/	Throughout NDAs,	Prior to Construction, Construction & for all planting, this should be installed as soon as the areas become available, to achieve early establishment	
S.12.C9 MM1	LV2-DP11	Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes,	Reduce topographical changes and minimize land	Government / Detailed Design	Throughout NDAs, particularly for	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on

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		as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	resumption	Consultant/ Contractor/	reservoirs		Landscape Treatment on Slopes
S.12.C9 MM4	LV3-DP11	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.C9 MM5	LV4-DP11	<p>Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be</p>	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	Onsite where possible. consider locations where offsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit

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		transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.					
S.12.C9 MM6	LV5-DP11	<p>Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <p>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</p>	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	<p>GEO publication (1999) – Use of Vegetation as Surface Protection on Slope;</p> <p>GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes</p>
S.12.C9 MM7	LV6-DP11	<p>Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.</p> <p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <p>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i> are suggested..</p>	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.C9 MM8	LV7-DP11	Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance	In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<p>in the northern FLN NDA.</p> <p>The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 &amp; E27 also).</p> <p>Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i>, <i>Bischofia javanica</i>, <i>Castanopsis fissa</i>, <i>Celtis sinensis</i>, <i>Cinnamomum burmannii</i>, <i>Cinnamomum camphora</i>, <i>Xanthoxylum avicennae</i>, <i>Hibiscus tiliaceus</i>, <i>Liquidambar formosana</i>, <i>Sapium discolor</i>, <i>Schefflera heptaphylla</i> and <i>Ilex rotunda</i>. In addition some understory vegetation may be planted including shrubs such as <i>Atalantia buxifolia</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma malabathricum</i>, <i>Melastoma dodecandrum</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i>.</p> <p>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</p>		Authority			
S.12.C9 MM9	LV8-DP11	Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).	Soften hard surfaces and facilities	Government / Detailed Design Consultant/ Contractor	On appropriate structures	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 11/2004 – Cyber Manual for Greening
S.12.C9 MM10	LV9-DP11	Green Roof – Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable.	Reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels. Provide greening.	Government / Detailed Design Consultant/ Contractor	On appropriate buildings	Prior to Construction, Construction Phase & Maintenance in Operation	CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011); ArchSD/Urban Study

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						Phase	on Green Roof Application in HK (2007)
S.12.C9 MM11	LV10- DP11	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
S.12.C9 MM14.3	LV11- DP11	<p>Enhancement Planting along Embankment - For channelized watercourses, if these are modified, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate mitigation measures included ensuring the new watercourses match the existing as far as possible. Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion). All measures must also ensure any necessary maintenance work can be carried out and that the channel meets all its requirements for water flow, etc.</p> <p>For example, a stretch of the Ma Wat River Channel in the south of FLN NDA will have to be diverted for the construction of the Fanling Bypass Eastern Section. This measure will be particularly relevant in this area.</p>	Minimize the necessity of watercourse modification, protect watercourses where possible and enhance channelized watercourses	Government / Detailed Design Consultant/ Contractor	Channelized watercourse, particularly the Ma Wat River Channel Diversion	Prior to Construction, Construction Phase & Maintenance in Operation Phase	Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design
<b>Landscape and Visual (Construction)</b>							
S.12.C9 MM16	LV12- DP11	<p>Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.</p> <p>Any works areas near the ecological sensitive areas should erect</p>	To screen undesirable views of the works site.	Contractor	Throughout NDAs	Construction Phase	

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		2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).					
S.12.C9 MM17	LV13- DP11	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.  Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	To minimize glare impact to adjacent VSRs	Government / Contractor	Throughout NDAs	Construction and Operation Phases	
<b>Ecology (Detailed Design, Construction and Operational Phases)</b>							
S13.9	E1-DP11	Use opaque, non-transparent, non-reflective noise barriers.  Unnecessary lighting should be avoided.	Minimize mortality impacts on birds.	Detailed Design Consultant/ Contractor/ Maintenance Authority.	Throughout.	Detailed design, Construction and Operation phases.	TM-EIAO.
<b>Ecology (Construction Phase)</b>							
S.13.9	E2-DP11	Design and erection of 2m high solid dull green site barrier fence between active works areas and all areas/habitats of ecological importance.	Minimize dust, disturbance, mortality and other adverse ecological impacts on habitats, flora and fauna.  Measures to minimize flight-line impacts to birds, especially breeding ardeids.	Contractor.	Interface between areas/habitats of ecological importance and works areas (all sides of all works areas).	Construction phase.	TM-EIAO.
<b>DP12-Reprovision of temporary wholesale market in FLN NDA</b>							
<b>Landscape and Visual (Detailed Design, Prior to Construction, Construction and Operational Phases)</b>							
S.12.D9	LV1-DP12	General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.  With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for		Detailed Design Consultant/ Contractor	Throughout NDAs,	Prior to Construction, Construction & for all planting, this should be installed as	

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		re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.				soon as the areas become available, to achieve early establishment	
S.12.D9 MM1	LV2-DP12	Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor	Throughout NDA's, particularly for reservoirs	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.D9 MM2	LV3-DP12	Detailed Design (Visual) –The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components, including all roadwork, buildings and noise barriers. In addition, the design of structures should consider green roofs were feasible, following stated guidelines.  All Noise barriers, particularly noise barriers but also any barriers proposed for ecological impact mitigation, should be kept to a practical minimum, and be of such a designed as to integrate as well as possible into the surrounding visual context and be as low as practical to minimize blocking views. Noise barrier design,	Improve visual amenity of the new buildings, NDA's in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant	Throughout NDA's	Prior to Construction	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines  CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) and ArchSD/Urbis Study on Green Roof Application in HK (2007).  Dev. Bureau, Greening, Landscaping & Tree Management Section,

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		including vertical, cantilever or curved, and noise enclosures including semi-enclosure and full enclosure, at grade and/ or elevated, should follow the guidelines stated.  Construction time frame should also be considered and designs seek to keep it to a practical minimum.					Guidelines on Greening of Noise Barriers (Apr12)  Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012)
S.12.D9 MM4	LV4-DP12	Tree Protection & Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.  A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.D9 MM5	LV5-DP12	Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.  A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.  For trees associated with highways e.g. roadside planting along	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/ Contractor	Onsite where possible. consider locations where offsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004  HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit

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		highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.					
S.12.D9 MM6	LV6-DP12	<p>Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <p>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</p>	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
S.12.D9 MM7	LV7-DP12	<p>Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.</p> <p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <p>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i> are suggested..</p>	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.D9 MM11	LV8-DP12	Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant	Government / Detailed Design Consultant/ Contractor	Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.	Prior to Construction, Construction Phase & Maintenance in Operation	ETWBTC 3/2006

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			pedestrian environment			Phase	
<b>Landscape and Visual (Construction)</b>							
S.12.D9 MM16	LV9-DP12	<p>Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.</p> <p>Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).</p>	To screen undesirable views of the works site.	Contractor	Throughout NDAs	Construction Phase	
S.12.D9 MM17	LV10-DP12	<p>Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase.</p> <p>Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.</p>	To minimize glare impact to adjacent VSRs	Government / Contractor	Throughout NDAs	Construction and Operation Phases	
<b>DP13- New Sewage Pumping Stations (SPS) in FLN NDA</b>							
<b>Noise Impacts (Operational Phase)</b>							
S4.8	N1-DP13	<ul style="list-style-type: none"> <li>Provision of noise mitigation measures including silencers, acoustic louvers and acoustic enclosures if necessary;</li> <li>The maximum allowable sound power level for FLN A1-6, FLN B1-4, FLN B2-3 and FLN C2-3 shall not exceed 86, 88, 93 and 98 dB(A) respectively.</li> </ul>	Control operational airborne noise due to the operation of fixed plant	Contractor	All plant rooms where practicable	Prior operation of the Project	Noise Control Ordinance and its TM, TM-EIAO
<b>Landscape and Visual (Prior to Construction, Detailed Design, Construction and Operational Phases)</b>							
S.12.C9 MM1	LV1-DP13	<p>General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.</p> <ul style="list-style-type: none"> <li>With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored</li> </ul>		Detailed Design Consultant/ Contractor	Throughout NDAs,	Prior to Construction, Construction & for all planting, this should be installed as	

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		for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites.				soon as the areas become available, to achieve early establishment	
S.12.C9 MM1	LV2-DP13	<ul style="list-style-type: none"> <li>Minimum Topographical Change –To minimize landscape and visual impacts, the footprint and elevation of such elements should be optimized to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimize landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.</li> </ul>	Reduce topographical changes and minimize land resumption	Government / Detailed Design Consultant/ Contractor	Throughout particularly reservoirs NDAs, for	Prior to Construction	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
S.12.C9 MM4	LV3-DP13	<p>Tree Protection &amp; Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <ul style="list-style-type: none"> <li>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</li> </ul>	Protect and Preserve Trees	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction and Construction Phase	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
S.12.C9 MM5	LV4-DP13	Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting	Transplant Trees where suitable for transplantation	Government / Detailed Design Consultant/	Onsite where possible. Otherwise offsite	Prior to Construction, Construction Phase &	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13

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		<p>Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <ul style="list-style-type: none"> <li>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</li> </ul>		Contractor	locations	Maintenance in Operation Phase	Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
S.12.C9 MM6	LV5-DP13	<p>Slope Landscaping – Site formation should be reduced as far as possible. Seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow.</p> <ul style="list-style-type: none"> <li>In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.</li> </ul>	<p>To avoid substantial slope cutting and fill slopes.</p> <p>To prevent erosion and subsequent loss of landscape resources and character.</p> <p>To ensure man-made slopes are as visually amenable as possible.</p>	Government / Detailed Design Consultant/ Contractor	Onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	<p>GEO publication (1999) – Use of Vegetation as Surface Protection on Slope;</p> <p>GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes</p>
S.12.C9 MM7	LV6-DP13	<p>Compensatory Planting – Compensatory tree planting for felled trees shall be provided 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 Removal Application process under ETWBTC 3/2006.</p> <p>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.</p> <ul style="list-style-type: none"> <li>Compensatory planting for shrubs should be considered in suitable locations. Native species such as <i>Melastoma malabathricum</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma dodecandrum</i>, <i>Atalantia buxifolia</i>, <i>Rhodomyrtus</i></li> </ul>	Compensate for trees and shrubs lost due to the Project.	Government / Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004

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		<i>tomentosa</i> , <i>Rhaphiolepis indica</i> , and <i>Rhododendron simsii</i> are suggested..					
S.12.C9 MM8	LV7-DP13	<p>Woodland Compensatory Planting –Specific Woodland compensatory planting is proposed for any areas of quality woodland that are unavoidably affected by the Project. The location and design of the woodland compensatory planting will principally be within habitats of lower value such as upland grassland. The proposed locations are identified, for example, on the foothills of Tai Shek Mo, and on the higher ground of Fung Kong Shan in KTN NDA; along Fanling Bypass; and a small area in the northern FLN NDA.</p> <p>The intention of the compensatory woodland will be to recreate areas of quality woodland, not necessarily to compensate for loss of trees on a like for like basis (See E18 &amp; E27 also).</p> <p>Native tree species are suggested for planting in the appropriate locations, including <i>Ailanthus fordii</i>, <i>Bischofia javanica</i>, <i>Castanopsis fissa</i>, <i>Celtis sinensis</i>, <i>Cinnamomum burmannii</i>, <i>Cinnamomum camphora</i>, <i>Xanthoxylum avicennae</i>, <i>Hibiscus tiliaceus</i>, <i>Liquidambar formosana</i>, <i>Sapium discolor</i>, <i>Schefflera heptaphylla</i> and <i>Ilex rotunda</i>. In addition some understory vegetation may be planted including shrubs such as <i>Atalantia buxifolia</i>, <i>Diospyros vaccinioides</i>, <i>Gardenia jasminoides</i>, <i>Ixora chinensis</i>, <i>Ligustrum sinense</i>, <i>Litsea rotundifolia</i>, <i>Melastoma malabathricum</i>, <i>Melastoma dodecandrum</i>, <i>Rhodomyrtus tomentosa</i>, <i>Rhaphiolepis indica</i>, and <i>Rhododendron simsii</i>.</p> <ul style="list-style-type: none"> <li>The area allocated for compensatory woodland planting allows in part for the fact that it will take some time for the compensatory planting to achieve the landscape and ecological function and value of the area to be lost. In addition, it allows for the fact that not all of the areas identified for planting will prove to be plantable, by virtue of topography and ground conditions and, especially, because though the areas identified are largely grassland it is inevitable that these areas will already support some patches of trees and shrubs which would be inappropriate for further planting.</li> </ul>	Reprovide areas of woodland to compensate for those areas of quality woodland lost.	Project Proponent/ Detailed Design Consultant/ Contractor/ Maintenance Authority	In areas identified in the EIA Landscape Mitigation Plans and as agreed with AFCD	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
S.12.C9 MM9	LV8-DP13	<ul style="list-style-type: none"> <li>Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. viaduct piers, noise barriers).</li> </ul>	Soften hard surfaces and facilities	Government / Detailed Design	On appropriate structures	Prior to Construction, Construction	ETWB TCW No. 11/2004 – Cyber

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				Consultant/ Contractor		Phase & Maintenance in Operation Phase	Manual for Greening
S.12.C9 MM10	LV9-DP13	<ul style="list-style-type: none"> <li>Green Roof – Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable.</li> </ul>	Reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels. Provide greening.	Government / Detailed Design Consultant/ Contractor	On appropriate buildings	Prior to Construction, Construction Phase & Maintenance in Operation Phase	CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011); ArchSD/Urbis Study on Green Roof Application in HK (2007)
S.12.C9 MM11	LV10-DP13	<p>Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.</p> <ul style="list-style-type: none"> <li></li> </ul>	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Detailed Design Consultant/ Contractor	Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA structures.	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWBTC 3/2006
<b>Landscape and Visual (Construction)</b>							
S.12.C9 MM16	LV11-DP13	<p>Screen Hoarding –Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.</p> <ul style="list-style-type: none"> <li>Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report).</li> </ul>	To screen undesirable views of the works site.	Contractor	Throughout NDAs	Construction Phase	
S.12.C9	LV12-DP13	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the	To minimize glare impact to adjacent VSRs	Government / Contractor	Throughout NDAs	Construction and Operation	

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MM17		Construction phase. <ul style="list-style-type: none"> <li>• Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.</li> </ul>				Phases	