APPENDIX 12.2

Summary of Environmental Impacts

Appendix 12.2 Summary of Environmental Impacts

	Construction Phase	Operational Phase
Air Quality Impact	Air Quality Impact	
Relevant Standards and Criteria	 500m from the boundary of the Project site Hong Kong Air Quality Objectives Air Pollution Control (Amendment) Ordinance 2013 (APCO) (Cap 311) Environmental Impact Assessment Ordinance (EIAO) (Cap 499), Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Annex 4 and Annex 12 Air Pollution Control (Construction Dust) Regulation (Cap 311R) Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation 	Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Annex 4 and Annex 12
Identification of Environmental Impacts	Dust emission from site formation, erection of retaining walls and construction of proposed new niches and the ancillary facilities	Emissions from the joss paper burner
Representative Sensitive Receivers	 Scattered Village Houses Lai Chi Yuen Tsuen Scattered Village Houses Ngau Koo Wan Hill Court (Refer to Figure 4.1) 	Same as construction phase
Results of Impact Predictions	• In view of the minor and small scale of the construction works, dust emission from the construction of the Project would be insignificant. With the implementation of dust suppression measure stipulated under the <i>Air Pollution (Construction Dust) Regulation</i> and good site practice, no adverse air quality impact would be anticipated.	Considering the infrequent use of the joss paper burner and with the flue gas treatment system incorporated and the implementation of the good operational practices and administrative measures, adverse air quality impact arising from the joss paper burning would not be anticipated.
Recommended Mitigation Measures	Sufficient dust suppression measures as stipulated under the Air Pollution Control (Construction Dust) Regulation and good site practices should be properly implemented in order to minimize the construction dust generated.	 Joss paper burner should adopt the Best Available Technology (BAT) to minimize emissions. Good operational practices and administrative measures as well as good maintenance practices as stipulated in EPD's Guideline on Air Pollution Control for Joss Paper Burning at Chinese Temples,

	Construction Phase	Operational Phase
		Crematoria and Similar Places should be strictly followed in order to ensure proper operation of the joss paper burner.
Cumulative Impacts	 Since there is no other construction activity identified within 500m of the Project at the time of this EIA preparation, cumulative air quality impact from other construction activity is not expected during construction phase. 	There was no major industrial emission identified within 500m of the Project at the time of this EIA preparation. No cumulative air quality impact from industrial emission would therefore be expected.
Residual Impact	No residual impact would be anticipated.	No residual impact would be anticipated.
Noise Impact		
Relevant Standards and Criteria	 300m area from the boundary of the Project site Noise Control Ordinance (NCO) Technical Memoranda (TMs) under the NCO Annexes 5 and 13 of the EIAO-TM Construction noise criteria during non-restricted hours: Leq (30 minutes) 75 dB(A) at the façades of dwellings Leq (30 minutes) 70 dB(A) at the façade of schools (65 dB(A) during examinations) 	 300m area from the boundary of the Project site Noise Control Ordinance (NCO) Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM), daytime criteria: Leq (30 minutes) 41 dB(A) at the façades of N1 & N3 Leq (30 minutes) 44 dB(A) at the façade of N2 Annexes 5 and 13 of the EIAO-TM
Identification of Environmental Impacts	Construction noise from use of PME for various construction activities	Fixed plant noise from two water pumps and a joss paper burner
Representative Sensitive Receivers	 Scattered Village Houses Lai Chi Yuen Tsuen Scattered Village Houses (Refer to Figure 4.1) 	Same as construction phase
Results of Impact Predictions	 The predicted construction noise levels at the representative NSRs would be in the range of 58 to 75 dB(A), complying with the noise criteria in the absence of mitigation measures. 	No adverse operational noise impact would be expected arising from the water pumps and proposed joss paper burner if they are designed to not exceed the total Max. SWL of 94 dB(A).
Recommended Mitigation Measures	Good site practice should be implemented.	Since the predicted noise levels at all representative NSRs would comply with the noise criteria, no mitigation measure for the operation of the Project is required.
Cumulative Impacts	Based on current available information, no concurrent projects have been identified within 300m of the project boundary. Hence, cumulative construction noise impact due to the construction works of the Project and other concurrent projects was not expected.	Since there is no fixed noise source in the existing Lai Chi Yuen Cemetery, cumulative noise impact arising from the operation of the existing cemetery and the Project would not be expected.

	Construction Phase	Operational Phase
Residual Impact	No residual impact would be anticipated.	No residual impact would be anticipated.
Hazard to Human L	.ife	
Relevant Standards and Criteria	Annex 4 of EIAO TM	Annex 4 of EIAO TM
Identification of Environmental Impacts	Overall risk of Silvermine Bay Water Treatment Works may increase due to the presence of construction workers in the proposed project site	Overall risk of Silvermine Bay Water Treatment Works may increase due to the increase of visitors to Lai Chi Yuen Cemetery.
Representative Sensitive Receivers	Construction workers for the proposed project	Visitors to the Lai Chi Yuen Cemetery
Results of Impact Predictions	 The individual risk is compliant with Annex 4 of EIAO TM The societal risk is within the As Low As Reasonably Practicable Region 	 The individual risk is compliant with Annex 4 of EIAO TM The societal risk is within the As Low As Reasonably Practicable Region
Recommended Mitigation Measures	 Sufficient number of face masks should be purchased so that the construction workers can be protected during accidental chlorine release The number of workers on site during construction stage should be kept within the level as assessed in this report. FEHD/ArchSD/the responsible personnel of the construction site should keep effective communication with Police or relevant authorities to ensure a proper evacuation/emergency response in case of a gas release incident. FEHD/ArchSD/the responsible personnel of the construction site should ensure all workers on site to be familiar with the route to escape. Diagram showing the escape routes to a safe place should be posted in the site notice boards and at the entrance/exit of site. Specific means of providing a rapid and direct warning (e.g. Siren and Flashing Light) to construction workers in the event of chlorine gas release in the SMBWTW should be determined and made known to the construction workers. The construction site officer should establish a communication channel with the SMBWTW operation personnel during construction 	FEHD should keep effective communication with Police or relevant authorities to ensure a proper emergency response in case of a gas release incident.

	Construction Phase	Operational Phase
	stage. Upon receiving the notice of an external gas leak at the SMBWTW, the construction site officer should direct the workers to evacuate by following the instructions of Police or relevant authorities as appropriate. Induction Training should be provided to any staff before working on site. The responsible officer of the construction site should ensure all construction staff are familiar with the evacuation routes and /or location of the protective gears (if available).	
Cumulative Impacts	No cumulative impact would be expected.	No cumulative impact would be expected.
Residual Impact	No residual impact would be anticipated.	No residual impact would be anticipated.
Water Quality Imp	pact	
Relevant Standards and Criteria	 500m from the boundary of the Project site Annexes 6 and 14 of the EIAO-TM Water Quality Objectives (WQO) for Southern Water Control Zone Technical Memorandum on Effluent Discharge Standard The Practice Note (PN) for Professional Persons on Construction Site Drainage (ProPECC PN 1/94) 	 500m from the boundary of the Project site Annexes 6 and 14 of the EIAO-TM Water Quality Objectives (WQO) for Southern Water Control Zone Technical Memorandum on Effluent Discharge Standard
Identification of Environmental Impacts	 Construction site runoff Wastewater generated from general construction activities Accidental spillage of chemicals Sewage effluent produced by on-site workforce 	 Sewage generated from staff and visitors Site runoff (e.g. storm drainage)
Representative Sensitive Receivers	Stream courses (Refer to Figure 6.1)	Same as construction phase
Results of Impact Predictions	With the implementation of appropriate measures to control run-off and drainage from the construction site, disturbance of water bodies would be avoided and deterioration in water quality would be minimal. Thus, unacceptable impacts on the water quality are not expected, provided that the relevant mitigation measures as specified in the ProPECC PN 1/94 "Construction Site Drainage" are properly implemented.	It is expected that the amount of sewage to be generated by the visitors and staff and site effluent as well as runoff of the new niches would be limited in view of the small scale of the Project. With adoption of proper control measures, no adverse water quality impact is anticipated.

	Construction Phase	Operational Phase
	 Wastewater from general construction activities may accidentally enter the local storm system and inland waters, causing pollution. Adoption of the guidelines and good site practices for handling and disposal of construction discharges would minimize the potential impacts. Waste oil may infiltrate into the surface soil layer, or run-off into the nearby water environment, increasing hydrocarbon levels. Domestic sewage generated from the workforce during the construction phase would be forbidden to be directly discharge into public drainage systems or adjacent waterbodies. 	
Recommended Mitigation Measures	 Practices outlined in ProPECC PN 1/94 Construction Site Drainage should be implemented. Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis. The Waste Disposal Ordinance (Cap 354) (WDO) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes. Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges. Disposal of chemical wastes should be carried out in compliance with the WDO. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the WDO details the requirements to deal with chemical wastes. It is recommended to provide sufficient portable toilets in the works areas. Contractual desludging service should be deployed to clean the portable toilets on a regular basis. 	Sanitary facilities such as portable toilets should be provided for the visitors and staff. Sewage generated from the sanitary facilities should be collected and disposed of to a sewage treatment works for proper treatment by contractual desludging service employed by FEHD for handling sewage from the existing sanitary facilities. Best Management Practices should be implemented to reduce storm water and non-point source pollution.
Cumulative Impacts	No cumulative impact would be expected.	No cumulative impact would be expected.

	Construction Phase	Operational Phase
Residual Impact	No residual impact would be anticipated.	No residual impact would be anticipated.
Waste Manageme	nt Implication	
Relevant Standards and Criteria	 Areas within the boundary of the Project sites Annexes 7 and 15 of the EIAO-TM Waste Disposal Ordinance (Cap.354) Waste Disposal Ordinance (Chemical Waste) (General) (Cap.354C) Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap.354N) Land (Miscellaneous Provisions) Ordinance (Cap.28) Public Health and Municipal Services Ordinance (Cap.132BK) – Public Cleansing and Prevention of Nuisances Regulation 	Public Cleansing and Prevention of Nuisances Regulation
Identification of Environmental Impacts	 Construction and demolition (C&D) materials General refuse Chemical waste 	 Ash and other non-combustible residues would be generated from the burning of joss paper. General refuse would be generated by visitors and staff during daily operation of the new niches.
Representative Sensitive Receivers	Not applicable	Not applicable
Results of Impact Predictions	 The volume of C&D materials is estimated to be approximately 450 m³ of inert materials (i.e. public fill) and approximately 50 m³ of non-inert materials (i.e. C&D wastes). There is no sediment present requiring marine disposal. Quantity of chemical wastes would be small. Insignificant amount of general refuse would be generated by the construction workers. 	Given the small amount of waste requiring disposal of and with the appropriate waste management practice implemented, no adverse environmental impacts are anticipated.
Recommended Mitigation Measures	 Implement good site practices and waste reduction measures Excavated materials comprising fill materials should be reused onsite as backfilling materials or for landscaping as far as practicable to avoid disposal off-site. Properly store, sort and reuse or dispose of C&D materials and general refuse on-site 	 The ash and non-combustible residues generated from the joss paper burning should be collected and stored in a properly covered refuse containers. It is recommended to place clearly labeled recycling bins at convenient locations within the area of new niches or Lai Chi Yuen Cemetery. The recyclable waste materials should then be collected by reliable waste recycling agents on a regular basis.

	Construction Phase	Operational Phase
	Follow the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes and Waste Disposal (Chemical Waste) (General) Regulation when collecting, handling, storing, transporting	The general refuse (other than those segregated recyclable wastes) should be separated from any chemical wastes and stored in covered refuse containers. FEHD should remove general refuse from the site on daily basis to minimize odour, pest and litter impacts.
Cumulative Impacts	No cumulative impact would be anticipated.	No cumulative impact would be anticipated.
Residual Impact	No residual impact would be anticipated.	No residual impact would be anticipated.
Ecological Impact	t e	
Relevant Standards and Criteria	 500m from the boundary of the Project site The Country Parks Ordinance (Cap. 208) The Forests and Countryside Ordinance (Cap. 96) The Wild Animals Protection Ordinance (Cap. 170) The Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586) The amended Town Planning Ordinance (Cap. 131) Chapter 10 of the Hong Kong Planning Standards and Guidelines (HKPSG) Annexes 8 and 16 of the EIAO TM EIAO Guidance Note No. 6/2010 EIAO Guidance Note No. 7/2012 List of Wild Animals under State Protection details Category I and Category II protected animal species under Mainland Chinese Legislation The International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species ETWB TC (Works) No. 7/2015 	Same as construction phase
Identification of Environmental Impacts	 Direct permanent habitat loss Affect flora with conservation importance Disturbance to wildlife due to construction works and increased human activities would be anticipated. 	 Increased human activities / disturbance associated with the operation of the project would disturb surrounding habitats and associated wildlife. As the surrounding areas have already been subjected to considerable human disturbance due to the presence of graves and crematoria, the disturbance to wildlife is considered insignificant.

	Construction Phase	Operational Phase
		Burning of joss paper by visitors would potentially lead to hill fire if uncontrolled.
Representative Sensitive Receivers	Habitats and flora and fauna of conservation importance identified within the Study Area	Same as construction phase
Results of Impact Predictions	 Direct permanent loss of 0.0192 ha of natural woodland Direct permanent loss of 0.004 ha of plantation woodland A young tree of <i>Aquilaria sinensis</i> (with conservation importance) would be affected by the Project. Disturbance to wildlife due to construction works and increased human activities 	Disturbance to wildlife due to increased human activities
Recommended Mitigation Measures	 In order to avoid woodland of higher ecological value and minimize the loss of woodland / plantation, the currently proposed option has confined the new niches to be built within the existing Lai Chi Yuen Cemetery and only minimal area (about 7.5m²) outside the cemetery boundary is required for the proposed barrier-free site access, which is indispensable for the development. Habitat loss could be minimized in the first instance by retaining existing vegetation wherever possible, particularly mature and semi-mature trees present within the works areas. Any trees retained should be adequately protected during the construction phase to promote their health and longevity. Areas which would be temporarily affected by construction activities should be reinstated after completing the construction works. Hoarding or fencing should be erected around the works areas during the construction phase to restrict access to natural habitats adjacent to works areas by site workers to reduce human disturbance. Provision of compensatory tree planting as described in Section 9.9. An individual of Aquilaria sinensis located within the project site would be subject to direct impacts. As such, prior to the commencement of the construction works, a vegetation survey should be conducted by a qualified ecologist / botanist within the project site boundary to: 	 Adequate litter bins, a joss paper burner of proper function and fire-fighting gears should be provided. Regular patrol should be conducted at the open niche area during the Ching Ming Festival and Chung Yeung Festival to ensure no uncontrolled burning occurs. Regular patrol shall be conducted at the open niche area during the Ching Ming Festival and Chung Yeung Festival to ensure no uncontrolled burning occurs.

Construction Phase	Operational Phase
 Ascertain the presence of, as well as update the conditions, number and locations of the flora species of conservation importance identified. Determine the number and location of the affected individual of flora species of conservation importance and evaluate the suitability and / or practicality of the transplantation. A Transplantation Proposal should be prepared by a qualified ecologist / botanist with detailed findings of the vegetation survey (i.e. number and locations of the affected individuals, assessment of the suitability and / or practicality of the transplantation) and locations of receptor site(s), transplantation methodology, implementation programme of transplantation, post-transplantation monitoring and maintenance programme. The proposal should be submitted to and approved by AFCD prior to commencement of any works (including ground investigation). The approved transplantation works should be carried out before the commencement of any site clearance works and should be supervised by a qualified botanist / horticulturist / Certified Arborist with relevant experience in transplanting flora species of conservation importance. Construction dust should be suppressed to avoid and minimize the dust covering leaves of plants that would affect their photosynthesis, and thus their health and growth (refer to Section 3.5.1): Regular watering, to reduce dust emissions from exposed site surfaces and unpaved roads. Proper storage of construction materials. Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. Noise impact during construction phase should be avoided and 	Operational Phase
minimized to reduce the disturbance to the habitats adjacent to the works areas (refer to Section 4.7.1): - Machines and plant (e.g. trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	

Construction Phase	Operational Phase
 Machines and plants known to emit strong directional noise should, wherever possible, be orientated so that the noise is directed away from the nearby habitats. Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities. With reference to ETWB TCW No. 5/2005 on "Protection of natural streams/ rivers from adverse impacts arising from construction works" and good site practices (refer to Section 6.8), the following good site practices/water control measures should be adopted to minimize any pollution entering the watercourse nearby: General refuse and construction wastes should be collected and disposed of in a timely and appropriate manner. Drainage arrangements should include sediment traps to collect and control construction run-off. All works and storage area should be restricted to the site boundary. Covering of any exposed soil or other loose materials with tarpaulins to prevent erosion Exposed soil to be covered as quickly as possible following formation works, then seeded and covered with a biodegradable geotextile blanket for erosion control purposes. A temporary sewage treatment system or portable chemical toilets should be designed and installed to collect wastewater and prevent it from entering nearby habitats. The proposed works site inside or in the proximity of nearby habitats should be temporarily isolated, such as by placing of sandbags or silt curtains with a lead edge at the bottom and properly supported props, to prevent adverse impacts on these areas. Other protective measures should also be taken to ensure that no pollution or siltation occurs in the water gathering grounds of the works site. 	Operational Phase
 Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby habitats by rain. 	

	Construction Phase	Operational Phase
	 Contractors should adhere to a strict "clean site" policy, with all construction waste transported to predetermined sites for safe disposal. Under no circumstances should there be any disposal of waste oil or other materials on site. Vehicles and other plant should be carefully maintained and properly used to minimise the chance for accidental spillage. Prior to the commencement of any works, the appointed Contractor / Construction Manager should conduct a formal briefing to the workforce to reinforce the message that the works are being conducted within Lantau South Country Park adjacent to environmentally sensitive areas. Workers should also be informed about the locations of any identified rare/ protected plant species adjacent to the project site, concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling. The workforce should be reminded of the need for environmental diligence throughout the duration of works, and in particular to avoid littering, improper disposal of construction waste, avoid unnecessarily damage to vegetation or cause noise or visual disturbance during the works. 	
Cumulative Impacts	• There is no other project in the vicinity of current project. Thus, no cumulative impact would be anticipated.	No cumulative impact would be anticipated.
Residual Impact	No residual impact would be anticipated.	No residual impact would be anticipated.
Landscape and Vi	sual Impacts	
Relevant Standards and Criteria	 Annexes 10 and 18 of the EIAO TM EIAO Guidance Note 8/2010 Town Planning Ordinance (Cap 131) Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586) Hong Kong Planning Standards and Guidelines Chapters 4, 10 and 11 AFCD Nature Conservation Practice Note No.2 - Measurement of Diameter at Breast Height (DBH) 	Same as construction phase

	Construction Phase	Operational Phase
	 AFCD Nature Conservation Practice Note No.3 – The Use of Plant Names ETWB TCW No. 29/2004 - Registration of Old and Valuable Trees, and Guidelines for their Preservation ETWB TCW No. 8/2005 - Aesthetic Design of Ancillary Buildings in Engineering Projects DEVB TCW No. 2/2012 - Allocation of Space for Quality Greening on Roads DEVB TCW No. 3/2012 - Site Coverage of Greenery for Government Building Projects ETWB TCW No. 6/2015 - Maintenance of Vegetation and Hard Landscape Features DEVB TCW No. 7/2015 - Tree Preservation GEO Publication No. 1/2011 – Technical Guidelines on Landscape Treatment and Bio-Engineering for Man-Made Slopes and Retaining Wall Guidelines on Tree Transplanting (September 2014) issued by Greening, Landscape and Tree Management (GLTM) Section of DevB Guidelines on Tree Preservation during Development (April 2015) issued by GLTM Section of DevB Study on Landscape Value Mapping of Hong Kong 	
Identification of Environmental Impacts	 Construction of the elevated platform of around 225m² including structural columns and provision of niches and ancillary facilities Temporary Works for the in-situ concrete casting, temporary stockpiling etc. 	Operation of the proposed facilities
Representative Sensitive Receivers	Visitors to Lai Chi Yuen Cemetery	Same as construction phase
Results of Impact Predictions	 Approximately 225 m² of woodland vegetation in the Mui Wo Coastal Upland and Hillside Landscape Character Area (LCA) would be removed due to the construction of the elevated platform. The impact would be very small and localized. It would be barely noticeable within this LCA. The magnitude of change to this LCA is considered negligible. 	Operation of the proposed facilities It is predicted that there would be small magnitude of visual change on the visitors to the Cemetery

	Construction Phase	Operational Phase
	Approximately 30 nos. of existing trees on the slope would be felled, including Acacia confusa, Cratoxylum cochinchinense, Lophostemon confertus, Mallotus paniculatus, Rhus succedanea and Sapium discolor.	
Recommended Mitigation Measures	 Preservation of existing vegetation Compensatory tree planting Control of night-time lighting glare Erection of screen hoarding in visually unobtrusive colour Management of construction activities and facilities Reinstatement of temporarily disturbed landscape areas 	 Aesthetically pleasing design of aboveground structures Amenity tree and shrub planting Screen planting to soften the structural columns of the elevated platform
Cumulative Impacts	There is no other project in the vicinity of current project. Thus, no cumulative impact would be anticipated.	No cumulative impact would be anticipated.
Residual Impact	Under the proposed works, it is estimated approximately 30 trees would be felled for the works. The affected trees are growing on slopes, their survival rate are generally low after transplanting and therefore they are not recommended to be transplanted. With the implementation of preservation of existing vegetation around the proposed platform and reinstatement of temporarily disturbed landscape areas, it is predicted that there would still be moderate residual impact during construction phase.	During operation, 6 trees of native species of heavy standard size will be compensated at the elevated platform and 24 trees of native species of heavy standard size with native shrubs as understory layer will be compensated within the boundary of the existing cemetery. It is predicted that there would still be slight residual impact in day 1 and insubstantial residual impact in year 10 of operation when the compensatory tree planting proposed becomes mature.