

Appendix 12.1 Summary of Environmental Impacts

Appendix 12.1 Summary of Environmental Impacts

Table A12.1: Summary of Environmental Impacts

Assessment points	Results of Impact Prediction	Relevant Standards / Criteria	Extent of exceedances predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
Air Quality and Health Impacts						
ASRs within 500 m from the Kennedy Town CDA Project site boundary	<p><u>Dust</u></p> <p>With the average background TSP being derived from RSP levels in PATH 2015, the maximum mitigated cumulative hourly TSP concentration at all the ASRs for all scenarios is up to 326 µg/m³.</p> <p>With the average background RSP and FSP levels taken from PATH 2015, the Tier 1 mitigated cumulative 10th highest daily and annual average RSP concentrations at all the ASRs is up to 86 µg/m³ and 48 µg/m³, respectively. The cumulative Tier 1 unmitigated 10th highest daily and Tier 1 mitigated annual average FSP concentration at all the ASRs is up to 68 µg/m³ and 31.0 µg/m³, respectively.</p> <p><u>Health</u></p> <p>Predicted increased mortality and morbidity due to the project are considered as acceptable.</p> <p>Total incremental lifetime cancer risk due to the project is considered to be negligible.</p> <p>Cumulative maximum concentrations for all non-criteria pollutant from the project are less than their corresponding reference values.</p> <p>All Heavy Metals and Hydrocarbons are predicted to be below the relevant reference value.</p> <p>Therefore, it is anticipated that there would be no exceedance of the hourly TSP limit (500 µg/m³), the AQO for daily RSP (100 µg/m³), the daily FSP (75 µg/m³), the AQO for annual RSP (50 µg/m³), the AQO for annual FSP (35 µg/m³) or any of the HM and HC reference value at any of the ASRs throughout the entire Project period provided the recommended mitigation measures are in place.</p>	<p>Air Pollution Control Ordinance (APCO) (Cap. 311);</p> <p>Air Pollution Control (Construction Dust) Regulation;</p> <p>Environmental Impact Assessment Ordinance (EIAO) (Cap. 499.S16);</p> <p>Technical Memorandum on Environmental Impact Assessment Process issued under EIAO (EIAO-TM); relevant Guidance Notes under EIAO</p>	Not applicable	Not applicable	<p>Relevant requirements as stipulated in the Air Pollution Control (Construction Dust) Regulation and good practices for dust control</p> <p>Water spraying at active areas with a frequency of 4 times a day or once every 2.5 hours.</p> <p>Cement solidification and biopiling mitigation measures</p>	No residual impacts are anticipated with the mitigation measures in place.
Noise Impact						
NSRs within 300m from the KTCDA Project site boundary	<p>The noise impact of unmitigated construction activities from this project would cause exceedance of the relevant daytime construction noise criteria.</p> <p>Having exhausted practicable mitigation measures in the form of quieter plants, the use of movable barriers and insulating fabric, the construction noise levels at most of the representative NSRs are predicted to comply with the noise standards stipulated in the EIAO-TM. Residual construction noise impact was predicted at one representative NSR of educational use. However, this NSR has already been implemented with noise insulation works and therefore significant noise impact is not anticipated during the carrying out of the Project.</p>	<p>Noise Control Ordinance (NCO); EIAO; EIAO-TM; relevant Guidance Notes under EIAO;</p> <p>TM on Noise from Construction Work other than Percussive Piling (GW-TM);</p> <p>TM on Noise from Construction Work in Designated Areas (DA-TM)</p>	One NSR of educational subject to exceedance of the noise criteria by 1-4 dB(A) for 44 / 19 weeks for Reprovisioning Option A / B / respectively and by 1-5dB(A) for 13 weeks for Reprovisioning Option C during examination periods.	<p>Good site practice to limit noise emissions at source as follows:</p> <ul style="list-style-type: none"> Only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works Machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum Plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs Mobile plant should be sited as far away from NSRs as possible Material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities Scheduling of construction works outside school examination periods 	<ul style="list-style-type: none"> Selection of quieter plant Use of movable noise barrier Use of noise insulating fabric Scheduling of construction works outside school examination periods. 	Potential residual impact at the one educational NSR is assessed to be acceptable since the NSR has already implemented noise insulation work and therefore significant noise impact is not anticipated.

Assessment points	Results of Impact Prediction	Relevant Standards / Criteria	Extent of exceedances predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
Water Quality Impact						
500m from the Project site boundary Victoria Harbour (Phase Three) Water Control Zone	Adverse impact is not anticipated after implementation of good site practices and mitigation measures.	EIAO-TM Annex 6 & 14 WPCO Victoria Harbour (Phase Three) WCZ WQO TM-DSS WSD WQO ProPECC Note PN 1/94	No exceedance is predicted.	<ul style="list-style-type: none"> Implementation of guidelines set in ProPECC Note PN 1/94; Provision of chemical toilets for construction workforce; Treatment of wastewater per WPCO requirements prior to discharge. Treatment of chemical wastes in accordance to Waste Disposal (Chemical Waste) (General) Regulation and Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes 	N/A	No residual impact is anticipated.
Waste Management Implications						
Within the Project area	Wastes generated by the Project are likely to include C&D material from site clearance within the Project boundary, chemical waste from the maintenance of plant and equipment and from the decontamination process, as well as general refuse from the workforce.	Waste Disposal Ordinance (WDO); Waste Disposal (Chemical Waste) (General) Regulation; Waste Disposal (Charges for Disposal of Construction Waste) Regulation; Public Health and Municipal Services Ordinance	Not applicable	<p><u>Site Clearance</u></p> <p>Ways to minimise the generation of C&D material:</p> <ul style="list-style-type: none"> Carefully planned programme to avoid generation of additional C&D material Provision of good practice training and adoption of site management to minimise waste generation and cross contamination <p>Ways to maximise the reuse of C&D materials on site:</p> <ul style="list-style-type: none"> Use of steel or aluminium formworks and falseworks for temporary works Adoption of repetitive design to maximise the reuse of formwork for temporary works <p>Ways to maximise the use of recycled inert C&D materials:</p> <ul style="list-style-type: none"> Use of recycled inert C&D material or products with recycled aggregates for temporary or permanent works, such as concrete paving blocks, where appropriate. <p>Ways to maximise the recovery rate of materials:</p> <ul style="list-style-type: none"> Provision and utilisation of on-site sorting facilities as far as practicable to maximise the recovery of inert C&D material, which can then be delivered to the PFRFs for beneficial use by other projects Provision and utilising of on-site sorting facilities as far as practicable to maximise the recovery of recyclable materials (such as, steel), which can then be collected by recyclers for recycling. <p><u>Decontamination Phase</u></p> <p>Ways to minimise the generation of C&D material:</p> <ul style="list-style-type: none"> Adoption of most adequate decontamination method to maximise the treatment efficiency, thus quantity of contaminated soil can be minimised. <p>Ways to maximise the reuse of treated</p>	<p>Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> Sorting of demolition debris from site clearance to recover reusable/ recyclable portions (i.e. soil, broken concrete, metals etc.); Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the workforce; Any unused chemicals or those with remaining functional capacity shall be recycled; Proper storage and site practices to minimise the potential for damage or contamination of materials; Plan and stock materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; and Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. 	With the implementation of the recommend mitigation measures for the handling, transportation and disposal of the identified waste arising, residual impacts are not expected for land decontamination works.

Assessment points	Results of Impact Prediction	Relevant Standards / Criteria	Extent of exceedances predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
				inert C&D material on site: <ul style="list-style-type: none"> Maximise the use of treated inert C&D materials for backfilling after the completion of decontamination process. Ways to maximise the reuse of C&D material and/or rock on site: <ul style="list-style-type: none"> Use of steel or aluminium formworks and falseworks for temporary works. Adoption of repetitive design to allow the reuse of formwork for temporary works. Ways to maximise the recovery rate: <ul style="list-style-type: none"> Provision and utilisation of on-site sorting facilities as far as practicable to maximise the recovery of recyclable materials (such as, steel), which can then be collected by recyclers for recycling. The Contractor will be required under the Contract to minimise the generation and maximise the reuse of C&D material.		
Land Contamination Impact						
Land contamination sites with the Project area	The presence of contaminated materials was identified at almost every grid in the Kennedy Town CDA site and the extent was considered widespread both horizontally and vertically.	EIAO; EIAO-TM; Guidance Note for Contaminated Land Assessment and Remediation (Guidance Note); Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management (Guidance Manual); Practice Guide for Investigation and Remediation of Contaminated Land (Practice Guide)	Some contaminated materials had exceeded the relevant RBRGs at certain identified locations, however at most other locations the level of contamination was within these RBRG levels. Most parts of the Study Area are considered to contain low amounts of land contamination due to previous or current land uses. Any groundwater contamination identified was below the relevant RBRGs.	Land decontamination works have been proposed. The relevant RBRGs serve as the remediation targets for these works.	The following mitigation measures shall be followed during decontamination works: <ul style="list-style-type: none"> The loading, unloading, handling and storage of cement should be carried out in an enclosed environment; The loading, unloading, handling, transfer or storage of materials that may generate airborne dust emissions such as untreated soil and oversize materials sorted out from screening plant and stabilised soil stockpiled in designated area should be carried out in such a manner to prevent or minimise dust emissions. All practical measures, including but not limited to speed control for vehicles, should be taken to minimise dust emissions; Simultaneous operation of mixing facilities and other equipment shall be avoided as far as possible to minimise unnecessary generation of noise nuisance; Stockpile of untreated soil shall be covered as far as practicable; Treated oversize materials can be used as backfilling material for on-site backfilling. Sorted materials of size smaller than 5cm will be collected and transferred to the mixing plant for further decontamination; Stabilised soils can be broken down into suitable size for on-site backfilling purpose; Water used in pipe pile installation should as far as practicable be recirculated after sedimentation. Excess wastewater should go through silt removal facilities before discharge. Any groundwater present should be similarly treated and handled. The Contractor would be required to obtain a license from EPD under the WPCO for discharge to the public drainage system. Housekeeping should be maintained at all times at the mixing plant as well as among 	In terms of identified soil contamination, the proposed land decontamination methods would remove contaminated soils from the grid concerned by excavation, followed by decontamination and testing to meet the requisite RBRGs by the relevant method(s) stated in Section 7.7 and then on-site backfilling. After completion of soil decontamination, no residual impact in respect land contamination on future users of the Study Area is anticipated.

Assessment points	Results of Impact Prediction	Relevant Standards / Criteria	Extent of exceedances predicted	Impact Avoidance Measures Considered	Mitigation Measures Proposed	Residual Impacts after Mitigation
					other decontamination facilities; • Visual inspection and rinsing (if needed) of any contaminated soil adhered on the broken concrete slab surface are recommended; and • A clear separation between treated and untreated materials is recommended.	
Ecological Impact						
Study area covering all areas within the project site	Direct ecological impact on loss of developed area with low ecological value and indirect disturbance on common fauna species are considered to be insignificant. No potential adverse ecological impact is identified.	Wild Animals Protection Ordinance; Protection of Endangered Species of Animals and Plants Ordinance; EIAO; EIAO-TM; relevant Guidance Notes under EIAO;	Not applicable	Not applicable	No specific mitigation measures are required.	No potential adverse impacts are anticipated.
Fisheries Impact						
Victoria Harbour (Phase Three) Water Control Zone, with focus on offshore water of Kennedy Town	No marine works or potential adverse deterioration of marine water quality is predicted; therefore no potential adverse fisheries impact is identified.	EIAO; EIAO-TM; Fisheries Protection Ordinance; Marine Fish Culture Ordinance and Water Pollution Control Ordinance	Not applicable	Not applicable	No specific mitigation measures are required.	No potential adverse impacts are anticipated.
Landscape Impact						
LRs and LCAs within the Project site	To undertake the proposed decontamination works, all trees in Landscape Resources (LRs) within the Project site will need to be removed.	EIAO-TM Annexes 10 and 18; EIAO GN No. 8/2010; Town Planning Ordinance (Cap 131); ETWB TCW No. 2/2004; DevB TCW No. 10/2013; Hong Kong Planning Standards and Guidelines; Study on Landscape Value Mapping of Hong Kong	Not applicable	Tree retention and transplantation has been considered but found impractical as all identified trees are in direct contact with the decontamination works and not suitable for transplantation as they grow in contaminated soil.	CP1 - Landscape planting areas along the screen hoarding to soften the hard structure of the screen hoarding. OP1 - Compensatory tree planting with a minimum ratio of 1:1 in terms of quantity.	With the implementation of proposed mitigation measures, the anticipated landscape impacts are generally slight negative under Reprovisioning Option A, and moderate negative under Reprovisioning Options B and C during the carrying out of the Project. The overall residual landscape impact in year 10 following completion of the Project is considered to be insubstantial under Reprovisioning Option A and slight negative under Reprovisioning Options B and C.