

## Appendix 15.1

### **Key Assessment Assumption and Limitation of Assessment Methodologies**

### Key Assessment Assumptions and Limitation of Assessment Methodologies

Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD			
			EIA Study Brief Reference	Relevant Document		
<b>Air Quality Impact</b>						
<b>Construction Phase</b>						
<p>The air quality impact assessment for the Project follows Annex 4 and Annex 12 of the TM-EIAO. Dust emission will be the major air quality impact. Quantitative assessment was carried out by applying FDM model.</p>	<p>Based on current tentative construction programme, Year 2020 is identified as the assessment year for construction dust assessment. Both short-term and long-term impacts were assessed with conservative approach by assuming 100% active construction area for all work sites. Subject to the construction work at night-time and during Sunday or public holiday, construction working period of 26 days a month and 12 hours a day was assumed.</p> <p>The prediction of dust emissions is based on the typical values and emission factors obtained from United States Environmental Protection Agency (USEPA) Compilation of Air Pollution Emission Factors, AP-42, 5th Edition.</p>	<p>The construction programme is indicative and subject to contractors' actual operation. A conservative approach was adopted in the model run. The actual situation may be better than that of the model prediction.</p>	<p>Section 3 (i), (ii) and Section 5 of Appendix B</p>	<p>-</p>		
	<table border="1"> <tr> <td>Heavy construction activities including land clearance, site formation, ground excavation, construction of associated</td> <td><math>E = 2.69 \text{ Mg/hectare/month of activities}</math></td> </tr> </table>	Heavy construction activities including land clearance, site formation, ground excavation, construction of associated	$E = 2.69 \text{ Mg/hectare/month of activities}$			
Heavy construction activities including land clearance, site formation, ground excavation, construction of associated	$E = 2.69 \text{ Mg/hectare/month of activities}$					

Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD							
			EIA Brief Reference	Study Clause Relevant Document						
	<table border="1"> <tr> <td>facilities etc.</td> <td></td> </tr> <tr> <td>Stockpiles</td> <td> <math display="block">E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} (kg/megagram)</math> <p>k is particle size multiplier U is average wind speed M is material moisture content</p> </td> </tr> <tr> <td>Wind erosion</td> <td>E = 0.85 Mg/hectare/year</td> </tr> </table> <p>Watering once per hour on exposed worksites is proposed to achieve dust removal efficiency of 91.7% in accordance with the “Control of Open Fugitive Dust Sources” (USEPA AP-42).</p>	facilities etc.		Stockpiles	$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} (kg/megagram)$ <p>k is particle size multiplier U is average wind speed M is material moisture content</p>	Wind erosion	E = 0.85 Mg/hectare/year			
facilities etc.										
Stockpiles	$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} (kg/megagram)$ <p>k is particle size multiplier U is average wind speed M is material moisture content</p>									
Wind erosion	E = 0.85 Mg/hectare/year									
<b>Operational Phase</b>										
The air quality impact assessment for the Project follows Annex 4 and Annex 12 of the TM-EIAO. Vehicular emission impact was due to moving vehicles along open road and idling vehicles from Man Kam To Boundary Control Point.	Vehicular emissions from open road was based on modeling results of EMFAC, while idling vehicular emission are based on “Road Tunnels: Vehicle Emissions And Air Demand For Ventilation” (PIARC 2012). The cumulative air quality impact due to vehicular emission was predicted by Caline4 model. PATH 2020 adopted as background air quality concentration.	Background of PATH 2020 was adopted and may not reflect the background concentration in Year 2022 and 2030. The assessment may overestimate the operational air quality impact.	Sections 4 and 5 of Appendix B	-						
<b>Noise Impact</b>										
<b>Construction Phase</b>										
The noise impact assessment for the Project follows Annex 5 and Annex 13 of the TM-EIAO. In	Sound power level (SWL) of the Powered Mechanical Equipment (PME) was based in Table 3 of TM-GW, QPME system and BS5228-1:2009 adopted by EPD.	The prediction of construction noise impacts are based on TM-GW. The SWL of PME was based in TM-GW, QPME system and BS5228-1:2009. The actual	Section 2.2.1(c) and 2.3.1 of Appendix C	-						

Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD	
			EIA Brief Reference	Study Clause Relevant Document
accordance with the EIAO, the methodology outlined in the TM-GW was used for construction noise assessment.		situation may be better than that of the prediction.		
	It is assumed that all PME items required for a particular construction activity will be located at the notional source position of the work areas. The assessment was based on the cumulative SWL of PME likely to be used in each work areas, taking into account the construction period in the vicinity of the receiver location. To predict the construction noise impacts, PME were divided into groups required for individual construction activity. The objective is to identify the worst case scenario representing those items of PME that will be in use concurrently at any given time. The sound pressure level of individual construction activity was calculated, depending on the number of PME and distance from receivers. The noise levels at NSRs were then predicted by the sum of SWLs of all concurrent construction activities with their respective distance correction.	In carrying out the assessment, worst case assumptions have been assumed in order to provide conservative noise impact assessments such as locating all the PME at the notional source position.		-
	A positive 3dB(A) facade correction was added to the predicted noise levels in order to account for the facade effect at each NSR.			-
	100% utilization rate was assumed for all PMEs except concrete lorry mixer and dump truck in which on-time percentages were reasonably assumed by Engineer.			-
	No mitigation measures are required for the construction works carried out in columbarium area.			-
A -5 or -10 dB(A) screening correction was added to the predicted noise levels in order to account for the screening effect by natural terrain. -5 dB(A) was used for partial screening and -10 dB(A) was used for total screening between workfronts and NSRs.			-	

Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD	
			EIA Brief Reference	Study Clause Relevant Document
<b>Operational Phase (Road Traffic Noise)</b>				
<p>The noise impact assessment for the Project follows Annex 5 and Annex 13 of the TM-EIAO.</p> <p>Traffic noise was predicted using the methodology provided in the UK Department of Transport calculation of Road Traffic Noise (CRTN) 1988. The assessment was based on projected peak hour flows for the worst year within 15 years after commissioning of niche / proposed road networks.</p>	<p>The roads proposed under the Project are scheduled to open in 2022. Therefore, the traffic data for year 2037 was adopted for the assessment. 2 scenarios, with project on normal and festive days, are assessed.</p> <p>There are no existing noise screening structures and mitigation measures on Sha Ling Road and Lin Ma Hang Road.</p> <p>Mitigation measures proposed include the followings:</p> <ul style="list-style-type: none"> <li>• 2.5m high absorptive noise barriers along Sha Ling Road for existing NSRs</li> <li>• 3m high absorptive noise barriers along Project Road near Sha Ling Road for existing NSRs</li> <li>• 4m high absorptive noise barriers along Lin Ma Hang Road near San Uk Ling for existing NSRs</li> <li>• 3m high absorptive noise barriers along Lin Ma Hang Road near San Uk Ling for existing NSRs</li> <li>• 3m high absorptive noise barriers along temporary pullover space opposite San Uk Ling</li> <li>• 5m high absorptive noise barriers near Muk Wu Nga Yiu for planned NSRs</li> <li>• Low noise surfacing materials in one section of Lin Ma Hang road near San Uk Ling for existing NSRs</li> <li>• Low noise surfacing materials in one section of Lin Ma Hang road near Muk Wu Nga Yiu for planned NSRs</li> </ul>	<p>Traffic noise levels were predicted based on free flow condition. Traffic congestion and hence reduced traffic speed were not taken into account in the noise model. Quantitative uncertainties in the assessment of impacts should be considered when drawing conclusions from the assessment.</p> <p>In carrying out the assessment, realistic worst case assumptions have been made in order to provide a conservative assessment of noise impacts. For the assessment of road traffic noise impact, peak hourly traffic flows from the worst case traffic impact assessment were adopted.</p>	Section 3.2.1 (c), 3.2.2 (a) and 3.3.1 (b) of Appendix C	-
<b>Water Quality Impact</b>				
Assessment of water quality impact in both construction and operational phase refers the methodology in Annex	-	-	Section 3.4.4	-

Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD	
			EIA Brief Reference	Study Clause Relevant Document
14 of the TM-EIAO.				
<b>Waste Management Implication</b>				
<p>The waste assessment for the Project follows</p> <ul style="list-style-type: none"> <li>• TM-EIAO Annex 7 and Annex 15</li> <li>• Waste Disposal Ordinance (Cap. 354);</li> <li>• Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);</li> <li>• Land (Miscellaneous Provisions) Ordinance (Cap. 28);</li> <li>• Public Health and Municipal Services Ordinance (Cap. 132) - Public Cleansing and Prevention of Nuisances Regulation; and</li> <li>• Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N).</li> </ul>	<p>Waste generated in the construction phases are determined based on the design of the project and are advised by the engineer.</p> <p>Waste generated in the operational phase is determined based on population parameters and land use of the proposed project.</p>	-	Section 3.4.5.1, 3.4.5.2	-
<b>Land Contamination Impact</b>				
The land contamination assessment for the Project	Assumptions made in the assessment are based on latest site boundaries, as well as current and historical land	Based on the findings in desktop study and site survey, one potentially contaminated	Section 3.4.5.3, 3.4.5.4	-

Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD	
			EIA Brief Reference	Study Clause Relevant Document
<p>follows</p> <ul style="list-style-type: none"> <li>Annex 19 of the Technical Memorandum on Environmental Impact Assessment Process (TM-EIA), Guidelines for Assessment of Impact On Sites of Cultural Heritage and Other Impacts (Section 3 : Potential Contaminated Land Issues), EPD, 1997;</li> <li>Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management, EPD, 2007;</li> <li>Guidance Notes for Contaminated Land Assessment and Remediation, EPD, 2007;</li> <li>Practice Guide for Investigation and Remediation of Contaminated Land, EPD, 2011</li> </ul>	uses.	<p>site (SRC-1) within the Area has been identified. According to the latest land resumption programme as advised by Engineer, only the western portion of SRC-1 with an area of approximate 1,200m<sup>2</sup> inside private lot would require land resumption for the road widening work at Sha Ling Road and utilities construction works nearby. For the portion of the site (~620m<sup>2</sup>) which falls within government lot (to the southeast of SRC-1), only paved ground was observed and neither concrete &amp; asphalt production nor open storage activities were observed during the site survey. In addition, review of historical aerial photos (since Year 1973) also revealed no sign of land contamination. As such, SI is considered not required for this strip of land and the necessity of SI should focus on the western portion of SRC-1 once the land is resumed and free for access.</p> <p>Since approximate 92 % of the site (~7,700m<sup>2</sup>) is located within a private land lot and it is currently under operation, it is recommended that re-appraisal should be carried out by the Project Proponent (PP) once the works area for the Project is confirmed and site access is available (e.g. after land resumption), in order to identify any hot spots for SI within the southeast and western portions of SRC-1. Should the</p>		

Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD	
			EIA Brief Reference	Study Clause Relevant Document
		findings of the re-appraisal identify signs of land contamination potential, the PP would need to prepare a Contamination Assessment Plan (CAP) presenting the findings of the re-appraisal and strategy of the recommended SI, if required, and submit to EPD for review and approval.		
<b>Impact on Cultural Heritage</b>				
<b>Construction Phase (Built Heritage)</b>				
The impact assessment on built heritage follows Annexes 10 and 19 of the TM-EIAO.	-	-	Section 3.4.9	-
<b>Construction Phase (Archaeology)</b>				
The impact assessment on archaeology follows Annexes 10 and 19 of the TM-EIAO.	-	-	Section 3.4.9	-
<b>Operational Phase (Built Heritage)</b>				
The impact assessment on built heritage follows Annexes 10 and 19 of the TM-EIAO.	-	-	Section 3.4.9	-
<b>Operational Phase (Archaeology)</b>				
The impact assessment on archaeology follows Annexes 10 and 19 of the TM-EIAO.	-	-	Section 3.4.9	-
<b>Ecological Impact</b>				
The ecological impact assessment follows Annexes 8 and 16 of the	Assumptions made in the assessment are based on latest layout.	Assessment of ecological baseline is based on habitat, flora and fauna surveys and literature review. Surveys were taken of	Section 3.4.6	-



Assessment Methodologies	Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD	
			EIA Brief Reference	Study Clause Relevant Document
TM-EIAO.		representative locations and transect routes in and near the vicinity of the assessment area. Baseline descriptions are therefore unlikely to be entirely comprehensive, though they are considered sufficiently representative to allow subsequent assessments to be made.		
<b>Fisheries Impact</b>				
The fisheries impact assessment follows Annexes 9 and 17 of the TM-EIAO.	Assumptions made in the assessment are based on latest layout.	Assessment of fisheries baseline is based on field surveys and literature review. Assessment as to whether fish ponds are active, inactive or abandoned are sometimes difficult, and differences between ponds managed at low intensity and those inactive may not be apparent.	Section 3.4.7	-
<b>Landscape and Visual Impact</b>				
<b>Operational Phase</b>				
The landscape and visual impact assessment follows Annexes 10 and 18 of the TM-EIAO.	The project shall minimize the impact on the existing landscape resources (LRs) and landscape character areas (LCAs) of the development, and it shall maximize the landscape mitigation measure including compensatory planting and new tree planting. The future management / maintenance agent of the proposed new trees after establishment period in accordance to DEVB TC(W) No.7/2015 – Tree Preservation and DEVB TC(W) No.6/2015 - Maintenance of Vegetation and Hard Landscape Features.	Individual tree impact as a result of the proposed developments is subject to further review at detailed design phase of the project in accordance with Development Bureau Technical Circular (Works) (DEVB TCW) No. 07/2015 – Tree Preservation.	Section 3.4.8	-
	The selected seven vantage points looking from key VSRs at the east, south and west directions to the Sandy Ridge and associated infrastructure and utilities works , as well as the Lin Ma Hang road widening section for the demonstration of change of visual amenity as a result of the proposed developments.		Section 3.4.8	-