Appendix 13B
Key Assessment Assumptions and Limitation of Assessment Methodologies

Appendix 13B: Key Assessment Assumptions and Limitations of Assessment Methodologies

Air Quality Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
Construction Phase					
The air quality impact assessment for the Project was conducted following Annex 4 and Annex 12 of the EIAO-TM and requirements from the EIA Study Brief (ESB-317/2019). Quantitative assessment was carried out by applying EMFACHK, AERMOD and CALINE4 models.	The quantitative assessment was conducted based on the Project design and construction details available at the time of the EIA Study. Emissions from Project • Emission factors of TSP, RSP and FSP were assumed according to the Compilation of Air Pollutant Emission Factors, USEPA AP-42, 5th Edition, January 1995. • The dust removal efficiency of watering once per hour is assumed as 91.7% based on USEPA AP-42. • The dust removal efficiency of dust filter is assumed as 80%. • Dust dispersion was predicted using AERMOD model, in line with EPD's Guidelines on Choice of Models and Model Parameters. • For worst case scenario, it has set to assume all construction activities which will be conducted in 24 hours. For actual blasting works, it will be conducted anytime within 7am to 7pm (Monday to Saturday). Vehicular Emission within the quantitative assessment Area • CALINE4 was used to assess the vehicular emission impact. AERMOD was used to assess the cumulative emission impact from vehicular emission and other emission sources.	The construction Programme are indicative and subject to contractors' actual operation. Adopted background concentration at year 2020 may overestimate air quality in the project commencement year of 2027. Other Dust Emission Sources within the Quantitative Assessment Area may be higher due to the presence of concurrent projects.	Clause 5 of Appendix B	Construction Phase Air Quality Impact Assessment Methodology	N/A

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
	• Particulate emissions from open road was determined using the EMFAC-HK model (version 4.2). • Traffic flow and vehicular compositions endorsed by Transport Department were adopted. • Portal Emissions from Lion Rock Tunnel • Portal emissions were modelled with reference to the approach in "Permanent International Association of Road Congress Report (PIARC 1991)" using AERMOD model. Other Dust Emission Sources within the Quantitative Assessment Area • AERMOD was used to assess the emission impact from Fu Shan Crematorium and Diamond Hill Crematorium. • Emissions parameters from the crematorium included in AERMOD are determined by site visits results and extracted from the SP License Registry. • As contractor of the Project shall ensure no overlapping of works area with HyD's "Pedestrian Link near Chuk Yuen North Estate", emission from the HyD's project is not included in the AERMOD. • As the HyD's Improvement of Lion Rock Tunnel has most emission emitted from the Shatin portal, emission from the HyD's project is not included in the AERMOD. Background Contributions • PATH background concentration at year 2020 was adopted • PATH-2016's output of RSP concentrations was adjusted based on EPD's Guidelines on				

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	Choice of Models and Model Parameters. • PATH-2016's output of hourly TSP concentrations was assumed to be same as RSP.				
Operation Phase					
The air quality impact assessment for the Project was conducted following Annex 4 and Annex 12 of the EIAO-TM and requirements from the EIA Study Brief (ESB-317/2019). Qualitative assessment was carried out to predict the air quality impact during operation.	As the DHSRs and DHPS are mainly for the storage and pumping of fresh water and salt water, no air pollutant emission source (including odour) is expected during the operation of the Project.	N/A	Clause 5 of Appendix B	N/A	N/A

Noise Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
Construction Phase					
The noise impact assessment for the Project was conducted following Annex 5 and Annex 13 of the EIAO-TM, the requirement in the EIA Study Brief (ESB-317/2019) and Technical Memorandum on Noise from Construction Works other than Percussive Piling (GW-TM) under the Noise Control Ordinance. Quantitative assessment was conducted to predict the construction noise impact.	Construction noise impact was predicted based on standard acoustic principles. Sound Power Levels (SWLs) of powered mechanical equipment (PME) were taken from Table 3 of the GW-TM, EPD's Sound power levels of other commonly used PME, Quality Powered Mechanical Equipment (QPME) available at EPD's website, and other similar studies or from measurements taken at other sites in Hong Kong. PME were assumed to be located at the notional source of the works sites. The various construction activities are not expected to be carried out concurrently. The types and numbers of PME and the percentage on time of each type of PME used in the calculation were confirmed to be reasonable and practical by the design engineer. Noise reductions by movable noise barriers are assumed to be 5dB(A) for movable PME and 10dB(A) for static PME. A 20 dB(A) reduction is assumed for works inside the caverns with noise enclosure. As the noise assessment for this concurrent project "Pedestrian Link near Chuk Yuen North Estate" is not available in publicity, the EIA report of a similar project "Elevated Pedestrian Corridor in Yuen Long Town connecting with Long Ping Station" (AEIAR-200/2016) and "Tseung Kwan O - Lam Tin Tunnel and Associated Works" (AEIAR-173/2013) has been referenced and the maximum SWL of a construction activity has been used for cumulative impact	The construction programme and plant inventory under this Project were indicative and subject to contractors' actual operation. The plant inventory using in the concurrent projects "Pedestrian Link near Chuk Yuen North Estate – Design and Construction" and "- CE 48/2018 (HY) – Improvement of Lion Rock Tunnel" are subject to contractors' actual operation.	Clause 2 of Appendix C	Working Paper on Noise Impact Assessment Assumptions	N/A

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
	assessment as conservative approach.				
Operation Phase					
The noise impact assessment for the Project was conducted following Annex 5 and Annex 13 of the EIAO-TM, the requirement in the EIA Study Brief (ESB-317/2019) and Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM). Quantitative assessment was conducted to predict the fixed noise impact during operation phase.	The ancillary building layout and specifications of the fixed plant are not yet available at the time of preparing the EIA report. The maximum permissible sound power levels of fixed plant (max. SWLs) are determined for future detailed engineering design to ensure compliance with the relevant noise criteria.	The SWL of the fixed noise sources may vary depending on the operators' activities. Location of planned fixed noise sources and their associated maximum SWLs may be varied in the detailed design stage.	Clause 3 of Appendix C	Working Paper on Noise Impact Assessment Assumptions	N/A

Water Quality Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
Construction Phase					
The water quality impact assessment for the Project was conducted following Annex 6 and Annex 14 of the EIAO-TM and the requirement in the EIA Study Brief (ESB-317/2019). Qualitative assessment was conducted for the water quality impact during the construction phase.	The construction method of the Project is based on the engineering assessment and proposed Project design.	N/A	Clause 3.4.6; Appendix D	N/A	N/A
Operation Phase					
The water quality impact assessment for the Project was conducted following Annex 6 and Annex 14 of the EIAO-TM and the requirement in the EIA Study Brief (ESB-317/2019). Qualitative assessment was conducted for the water quality impact during the operation phase.	The operation of the Project is based on the engineering assessment and proposed Project design.	N/A	Clause 3.4.6; Appendix D	N/A	N/A

Waste Management Implications

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
Construction Phase					
The waste management implication assessment for the Project was conducted following Annexes 7 and 15 of the EIAO-TM and the requirements in the EIA Study Brief (ESB-317/2019).	Waste quantities to be generated from the Project were estimated based on the engineering assessment and Project design.	N/A	Clause 3.4.6; Appendix E	N/A	N/A
Operation Phase					
The waste management implication assessment for the Project was conducted following Annexes 7 and 15 of the EIAO-TM and the requirements in the EIA Study Brief (ESB-317/2019).	Waste quantities to be generated from the Project were estimated based on the Project design.	N/A	Clause 3.4.6; Appendix E	N/A	N/A

Land Contamination

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
The land contamination assessment for the Project was conducted following Annexes 19 of the EIAO-TM and the requirements in the EIA Study Brief (ESB-317/2019).	The assessment was undertaken based on historical land use, government records and site reconnaissance at the time of the EIA Study.	N/A	Clause 3.4.7; Appendix F	N/A	N/A

Ecological Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
Annex 8 and 16 of the EIAO-TM for the criteria, general approach and methodology for assessment of ecological impacts; EIAO Guidance Note No. 6/2010, 7/2010 and 10/2010 for general guidelines and methodology for conducting ecological assessment and ecological baseline survey.	The ecological assessment and evaluation were undertaken based on results of literature review and ecological field surveys.	N/A	Clause 3.4.8; Appendix G.	-	N/A

Landscape and Visual Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
The landscape and visual impact assessment have been prepared in accordance with Annexes 10 and 18 of the TM and EIAO Guidance Note No. 8/2010 on "Preparation of Landscape and Visual Impact Assessment under the Environmental Impact Assessment Ordinance" for evaluating and assessing combined landscape and visual impacts of the Project and associated works.	A key assessment assumption is that the engineering and architectural works for the access tunnel and cavern comprise the source of landscape and visual impacts and that the proposed landscape and visual mitigation plan could alleviate the landscape and visual impacts. Funding, implementation, management and maintenance of the landscape and visual mitigation proposals will be satisfactorily resolved according to the principles in DEVB TC(W) No. 6/2015.	Tree data was collected using a combination of the following methods in respect to site accessibility restrictions: • Topographical survey and preliminary individual tree survey were carried out at the potential area(s) for construction of the tunnel portal and ancillary building; • Aerial photographs and group tree survey followed by onsite verification at representative locations were carried out at the potential area(s) for slope stabilisation, temporary storage and proposed access road, because the accessibility of these locations have been restricted; and • Group tree survey followed by onsite verification at representative locations were carried out at the potential area(s) for construction of the water main laying works.	Clause 3.4.9; Appendix H	-	N/A

Hazard to Life

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumptions	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-317/2019) Clause Reference	Relevant Documentation	
As the Project will not involve any overnight storage of explosives, no quantitative risk assessment was conducted.	N/A	N/A	Clause 3.4.10; Appendix I	-	N/A