

Appendix 15.1 Key Assessment Assumptions and Limitation of Assessment Methodologies

Key Assessment Assumptions and Limitations of Assessment Methodologies

Air Quality Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
Construction Phase					
<p>The air quality impact assessment for the Project was conducted following Annex 4 and Annex 12 of the EIAO-TM, and the requirement in the EIA Study Brief (ESB318/2019). Quantitative assessment was conducted to predict the construction dust impact.</p> <p>Quantitative assessment was conducted for cumulative construction dust impact using EMFAC-HK, AERMOD and CALINE4 models.</p>	<ul style="list-style-type: none"> Based on current tentative construction programme, Year 2024 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 proposed housing and school sites. Subject to the construction work at nighttime, construction working period of 12 hours a day was assumed. 	<p>The construction programme was indicative and subject to contractors' actual operation.</p>	<p>Clause 5(i) of Appendix B</p>	<p>Methodology Paper for EIA Study – Air Quality Impact Assessment</p>	<p>N/A</p>

	<ul style="list-style-type: none"> • The adopted emission factors for different dust generating activities are based on the 5th edition of Compilation of Air Pollution Emission Factors (AP-42) issued by United States Environmental Protection Agency (USEPA). • 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). • 3m site hoarding as was adopted for concurrent work sites 				
<p>Operation Phase</p>					

<p>The air quality impact assessment for the Project was conducted following Annex 4 and Annex 12 of the EIAO-TM, and the requirement in the EIA Study Brief (ESB318/2019). Quantitative assessment was conducted to predict the construction dust impact.</p> <p>Quantitative assessment was conducted for cumulative construction dust impact using EMFAC-HK, AERMOD and CALINE4 models.</p>	<ul style="list-style-type: none"> • Vehicular emissions from open road was based on modeling results of EMFAC. The cumulative air quality impact due to vehicular emission was predicted by Caline4 model. • There is no information provided for the proposed expansion of North District Hospital at this stage of the assessment. Emissions as existing chimneys were assumed as proposed chimney emissions for the planned expansion. 	<p>The actual locations and fuel consumption of the chimneys of the proposed North District Hospital expansion would vary from the actual design and operation.</p>	<p>Clause 5(i) of Appendix B</p>	<p>Methodology Paper for EIA Study – Air Quality Impact Assessment</p>	<p>N/A</p>
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Noise Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
Construction Phase					
<p>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 (ESB318/2019) 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 airborne noise impact; qualitative assessment was conducted to address the construction ground-borne noise impact.</p>	<ul style="list-style-type: none"> 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. 	<p>The construction programme and plant inventory were indicative and subject to contractors’ actual operation.</p>	<p>Clause 2 of Appendix C</p>	<p>Methodology Paper for EIA Study - Noise Impact Assessment</p>	<p>N/A</p>

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
	<ul style="list-style-type: none"> • SWL of Non-Explosive Chemical Expansion Agent (Soundless Chemical Demolition Agent) was assumed to be 90 dB(A). SWL of Silent Piling by Press-in Method was assumed to be 94 dB(A). • PME were assumed to be located at the notional source of the works sites. • Noise reduction by noise insulating fabric is assumed to be 10dB(A). • Noise reductions by movable noise barriers are assumed to be 5dB(A) for movable PME and 10dB(A) for static PME. • Noise reduction by noise enclosure is assumed to be 10dB(A). 				

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
	<ul style="list-style-type: none"> No planned vehicular/ railway tunnel for the development. No rock breaking/drilling works is envisaged during the construction phase of the Project. Pipe jacking system, mini Tunnel Bored Machine and grout pump will be located at the bottom of pit, the airborne noise impact associated with these PME's would be insignificant. 				

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			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
Operation Phase					
<p>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 (ESB318/2019) and Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM).</p> <p>Quantitative assessment was conducted to predict the road traffic, fixed and helicopter noise impacts during the operation phase; qualitative assessment was conducted to</p>	<p>Road Traffic Noise</p> <ul style="list-style-type: none"> Peak hourly traffic flow and vehicular compositions were produced using methodology endorsed by Transport Department. The Road Noise Module 2.7.2 of Noise Map Enterprise Edition, which adopts the methodology in the Calculation of Road Traffic Noise (CRTN) developed by the UK Department of Transport, was used to evaluate road traffic noise impact. 	<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.</p>	<p>Clause 3 of Appendix C</p>	<p>Methodology Paper for EIA Study - Noise Impact Assessment</p>	<p>N/A</p>

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
address the aircraft noise impact.	<p>Fixed Noise</p> <ul style="list-style-type: none"> Fixed noise impact was predicted based on standard acoustic principles. SWLs of existing fixed noise sources were obtained by on-site measurement of with reference to information provided by relevant party. Maximum allowable SWLs at the mechanical ventilation system of public transport interchanges were recommended based on the noise criteria of the nearest NSRs using the standard acoustic principles calculation. 	<p>The SWL of the existing 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.</p>	<p>Clause 4 of Appendix C</p>	<p>Methodology Paper for EIA Study - Noise Impact Assessment</p>	<p>N/A</p>

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
	<ul style="list-style-type: none"> The worst operation mode with 100% operation for all fixed noise sources is assumed. 				
	<p>Aircraft Noise</p> <ul style="list-style-type: none"> The PDA is located outside the NEF 25 Contour of the Hong Kong International Airport (HKIA) under the Three-Runway System (3RS) operation, The PDA is at sufficient distance from the operation of Shek Kong Airfield. 	<p>The NEF 25 contour was made reference to the approved EIA study for 3RS and the contours may vary depending on the future actual operation of 3RS.</p> <p>The NEF 25 contour is up-to-date information as confirmed by HKAA</p>	Clause 3.4.4.4	Methodology Paper for EIA Study - Noise Impact Assessment	N/A
	<p>Helicopter Noise</p> <ul style="list-style-type: none"> The PDA is at sufficient distance from the 	The buffer distances of helicopter may vary depending on the helicopter model.	Clause 5 of Appendix C	Methodology Paper for EIA Study - Noise Impact Assessment	N/A

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
	operation of Shek Kong Airfield. <ul style="list-style-type: none"> • Buffer distances for helicopter noise impact were estimated for compliance with the daytime criterion Lmax 85dB(A). 	Advice has been sought from GFS regarding the helicopter operation at WB16 and WB17.			

Water Quality Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
Construction Phase					
<p>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-318/2019).</p> <p>Qualitative assessment was conducted for the water quality impact during the construction phase.</p>	<p>The construction method of the Project is based on the engineering assessment and proposed Project design.</p>	N/A	N/A	N/A	N/A
Operation Phase					
<p>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-318/2019).</p>	<p>The proposed drainage and sewerage infrastructure works were based on the planned population size, engineering assessment and proposed Project design.</p>	N/A	N/A	N/A	N/A

Qualitative assessment was conducted for the water quality impact during the operation phase.					
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Sewerage and Sewage Treatment Implication

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
<p>The sewerage and sewage treatment implication was assessed with reference to the following guidelines:</p> <ul style="list-style-type: none"> Annex 14 of TM-EIAO EPD Report No. EPD/TP 1 /05 – Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning DSD Sewerage Manual Part 1 (Key Planning Issues and Gravity Collection System) 	<p>Assessment assumptions are listed in the methodology stated in Section 6 of this EIA report.</p>	N/A	<p>Clause 3.4.6 and Appendix E</p>	-	N/A

Waste Management Implications

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) 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-318/2019)	Waste quantities to be generated from the Project were estimated based on the engineering assessment and Project design	N/A	N/A	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-318/2019)	Waste quantities to be generated from the Project were estimated based on the planned population size and Project design.	N/A	N/A	N/A	N/A

Land Contamination

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
The land contamination assessment for the Project was conducted following Annex 19 of the EIAO-TM, requirements listed in the EIA Study Brief (ESB-319/2019), and Appendix G of the Study Brief.	The assessment was undertaken based on historical land uses, government records and site reconnaissance at the time of the EIA Study.	<ul style="list-style-type: none"> • Site access for site investigation was not available to confirm the contamination. • Potential change of land use between now and the land has been reverted to Government in Year 2023. • Upon the land has been reverted to Government, site re-appraisal and a supplementary CAP, covering the entire assessment area shall be submitted to EPD for approval, followed by site investigation works to confirm the land contamination and remediation required. 	N/A	N/A	N/A

Ecological and Fisheries Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
Ecological Impact					
The ecological impact assessment follows Annexes 8 and 16 of the TM-EIAO	-	Assessment of ecological baseline is based on ecological surveys and literature review. Surveys were taken of 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.	-	-	N/A
Fisheries Impact					
The fisheries impact assessment follows Annexes 9 and 17 of the TM-EIAO	-	Assessment of fisheries baseline is based on field visits and literature review. Baseline descriptions are therefore unlikely to be entirely comprehensive, though they are considered sufficiently representative to allow subsequent assessments to be made.	-	-	N/A

Landscape and Visual Impact

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
The landscape and visual impact assessment was 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” and “Charter on External Lighting” and “Guidelines on Industry Best Practices for External Lighting Installations” promulgated by the Environment Bureau for evaluating and assessing combined landscape and	Future management / maintenance of the proposed new trees will be handed over to the project proposer in accordance to Development Bureau Technical Circular (Works) (DevB TCW) No. 04/2020 – Tree Preservation.	<p>Proposed locations of buildings, footprints, orientation, forms, height, façade design and materials are tentatively at the time of preparing LVIA, which is subject to changes in the detail design phases.</p> <p>Impact to the existing trees due to the proposed development is subject to further review at design phase of the project in accordance with DEVB TCW No. 04/2020, ‘Tree Preservation’</p> <ul style="list-style-type: none"> • Since access of certain locations of VSRs has not been granted, especially those private properties, descriptions of views from these VSRs and 	Clause 3.4.11.2 of the EIA Study Brief No. ESB-318/2019,	-	-

<p>visual impacts of the Project and associated works.</p>		<p>predicted impacts have been extrapolated from visits to surrounding areas and topographical data and aided by illustrations.</p>			
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Impact of Cultural Heritage

Assessment Methodology	Key Assessment Assumptions	Limitations of Assessment Methodologies / Assumption	Prior Agreements with EPD / Other Authorities		Proposed Alternative Assessment Tools / Assumptions (if applicable)
			EIA Study Brief (ESB-318/2019) Clause Reference	Relevant Documentation	
Construction Phase					
<p>The Cultural Heritage Impact Assessment (CHIA) for the study was conducted following:</p> <ul style="list-style-type: none"> • A&M Ordinance (Cap. 53) • Annexes 10 and 19 of the EIAO-TM • Guidelines for CHIA • HKPSG 	<p>Undecided grading of Fanling Golf Course, Hong Kong Golf Club by Antiquities Advisory Board (AAB)</p> <p>No built heritage was located within the proposed development area, but visual impacts may arise on three graded historic buildings located outside. One grave (G-01) need relocation.</p> <p>The proposed development area has unconfirmed archaeological potential.</p>	<p>Unknown heritage significance of Fanling Golf Course, Hong Kong Golf Club.</p> <p>No design is known at this stage and thus impacts are assumed only.</p> <p>Desk-based review indicates extensive disturbance of original landform</p>	<p>S. 3.2.1 (xi)</p> <p>S. 3.4.12</p> <p>Appendix K</p>	<p>N/A</p>	<p>Decision of AAB</p> <p>Detailed built heritage impact assessment at final design stage</p> <p>Detailed archaeological impact assessment at final design stage</p>

		but this remains untested in the field.			
Operation Phase					
<p>The Cultural Heritage Impact Assessment (CHIA) for the study was conducted following:</p> <ul style="list-style-type: none"> • A&M Ordinance (Cap. 53) • Annexes 10 and 19 of the EIAO-TM • Guidelines for CHIA • HKPSG 	<p>No impacts on built heritage or archaeology are identified during the operation of the project. No mitigation will be required.</p>	N/A	<p>S. 3.2.1 (xi)</p> <p>S. 3.4.12</p> <p>Appendix K</p>	N/A	N/A

