

9. NOISE

9.1 Introduction

This **Section** provides an evaluation of the potential noise impacts associated with the construction and operation of the Project, including the associated works and marine activities.

9.2 Legislative Requirements and Evaluation Criteria

9.2.1 Construction Phase

The principal legislation relating to the control of construction noise due to the Project is the *EIAO*. The *EIAO-TM*, issued under the *EIAO*, provides guidelines and noise criteria for evaluating noise impacts. The assessment criteria are defined in *Annex 5* of the *EIAO-TM* with reference made to *Annex 13* of the *EIAO-TM* for the guidelines of noise assessment.

The *Noise Control Ordinance (NCO) (Cap. 400)* also provides statutory controls on general construction works during restricted hours (i.e. 1900 – 0700 hours Monday to Saturday and at any time on Sundays and public holidays). A number of Technical Memoranda (TMs) have been issued under the *NCO* to stipulate control approaches and criteria. The *Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM)*, which provides the guidelines for controlling the construction noise from the use of powered mechanical equipment (PME) at the construction work sites, details the procedures that should be adopted for the assessment of noise from construction work other than percussive piling, the issuing of Construction Noise Permits (CNP), and for determining whether or not any such CNP is being complied with.

9.2.1.1 General Construction Works during Non-Restricted Hours

Under the *EIAO*, potential noise impact arising from general construction works during non-restricted hours (i.e. 0700 to 1900 hours on any day not being a Sunday or public holiday) at noise sensitive uses that rely on opened windows for ventilation, should be assessed in accordance with the noise criteria specified in the *EIAO-TM*. The *EIAO-TM* noise standards are presented in **Table 9.1**.

Table 9.1 EIAO-TM Daytime Construction Noise Standards ($L_{eq(30min)}$ dB(A))

Uses	Noise Standards (dB(A))
Domestic Premises	75
Educational Institutions	70
Educational Institutions (during examination periods)	65

Notes:

- (a) The above standards apply to uses which rely on opened windows for ventilation.
- (b) The above standards shall be viewed as the maximum permissible noise levels assessed at 1 m from the external façade.

9.2.1.2 Construction Works during Restricted Hours

When assessing a CNP application for the use of PME during the restricted hours (i.e. 1900 to 0700 hours of the next day and any time on Sundays and public holidays), the Noise Control Authority will compare the Acceptable Noise Levels (ANLs), as promulgated in *GW-TM*, and the Corrected Noise Levels (CNLs) (i.e. after accounting for factors such as barrier effects and reflections) associated with the proposed PME operations. The ANLs are related to the noise sensitivity of the area in question and different Area Sensitivity Ratings (ASRs) have been established to reflect the background characteristics of different areas. The appropriate ASR for the noise sensitive receiver (NSR) is determined with reference to **Table 9.2**.

Table 9.2 Area Sensitivity Ratings (ASRs)

Types of Area Containing NSR	Degree to which NSR is affected by Influencing Factor (IF)		
	Not Affected	Indirectly Affected	Directly Affected
Rural area, including Country Parks or village type developments	A	B	B
Low density residential area consisting of low-rise or isolated high-rise developments	A	B	C
Urban area	B	C	C
Area other than those above	B	B	C

Notes:

The following definitions apply:

- (a) "Country Park" means an area that is designated as a country park pursuant to Section 14 of the *Country Parks Ordinance*;
- (b) "Directly affected" means that the NSR is at such a location that noise generated by the IF is readily noticeable at the NSR and is a dominant feature of the noise climate of the NSR;
- (c) "Indirectly affected" means that the NSR is at such a location that noise generated by the IF, whilst noticeable at the NSR, is not a dominant feature of the noise climate of the NSR;
- (d) "Not affected" means that the NSR is at such a location that noise generated by the IF is not noticeable at the NSR; and
- (e) "Urban area" means an area of high density, diverse development including a mixture of such elements as industrial activities, major trade or commercial activities and residential premises.

The relevant ANLs are shown in **Table 9.3**.

Table 9.3 Acceptable Noise Levels of General Construction Works

Time period	L _{Aeq 5min} (dB(A))		
	ASR "A"	ASR "B"	ASR "C"
All days during the evening (i.e. 1900-2300 hours) and general holidays (including Sundays) during the day and evening (i.e. 0700-2300 hours)	60	65	70
All days during the night-time (i.e. 2300-0700 hours of the next day)	45	50	55

The Noise Control Authority will consider a well-justified CNP application, for construction works within restricted hours as guided by the relevant TMs issued under the NCO. The Noise Control Authority will take into account the adjoining land uses and any previous complaints against construction activities at the site before making a decision. Nothing in this EIA Report shall bind the Noise Control Authority in making its decision. The Noise Control Authority may include any conditions in a CNP that it considers appropriate. Failure to comply with any such conditions may lead to cancellation of the CNP and prosecution action under the NCO.

9.2.2 Operation Phase

The *EIAO-TM* and the Technical Memorandum for the Assessment of Noise from Places Other than Domestic Premises, Public Places or Construction Sites (IND-TM) issued under the NCO specify the applicable ANLs for the operation of Project. The ANLs are dependent on the Area Sensitivity Rating (ASR) and the time of the day as presented in **Table 9.4**. Each NSR is assigned an ASR based on its predominant land use and the presence, if any, of Influencing Factors (IFs) such as nearby industrial areas, major roads or airports.

Table 9.4 Acceptable Noise Levels (ANLs) of Operational Noise

Time Period	L _{Aeq 30min} (dB(A))		
	ASR "A"	ASR "B"	ASR "C"
Daytime: 0700-1900 hrs & Evening: 1900-2300 hrs	60	65	70
Night-time: 2300-0700	50	55	60

Fixed plant noise is controlled under Section 13 of the *NCO* and the predictions will be undertaken in accordance with the *IND-TM*. The noise criteria for planning and design of planned fixed noise sources under Designated Projects are set out in the *EIAO-TM* as follows:

- the noise level at the facade of the nearest NSR is at least 5 dB(A) lower than the appropriate ANL (as shown in **Table 9.4**) as specified in the *IND-TM*; or
- the prevailing background noise level (for quiet areas with a noise level 5 dB(A) below the appropriate ANL).

9.3 Description of the Noise Environment

9.3.1 Assessment Area

In accordance with the requirements given in Section 3.4.9.2 and *Clauses 2.2.1(a)* and *3.2.1(a)* in *Appendix H* of the EIA Study Brief, the Assessment Area for the noise impact assessment should generally cover a distance of 300 m from the boundary of the Project and the works of the Project, and should be expanded to include NSRs at distances over 300 m from the Project which may be affected by the Project. The Assessment Area considered in the assessment is shown in **Figure 9.1**.

9.3.2 Baseline Conditions

The Project site is located about 100 m north of Sai Kung East Country Park. The Project is located in a relatively open sea area. Background noise at the Project site and the surrounding environment is dominated by the prevailing general background including sea waves.

9.3.3 Noise Sensitive Receivers

The statutory Outline Zoning Plans (OZP) and other relevant development plan available from Lands Department or Town Planning Board have been reviewed with regard to the Assessment Area. Relevant OZP in the vicinity of the Project includes the Approved Ko Lau Wan OZP No. S/NE-KLW/2. There is no existing OZP in the Assessment Area for the Project site. There is no committed and planned NSRs identified within the defined Assessment Area. The identified representative NSRs are listed in **Table 9.5** and shown in **Figure 9.1**. Photographs of the representative NSRs are shown in **Appendix 9A**.

Table 9.5 Identified Representative NSRs

NSR ID	Description	Use	Approximate Distance to nearest Project Site Boundary (m)
N1	Sai Kung East Country Park	Country Park	61 ^(a)
N2	Village House at Tap Mun	Existing Residential	1,450
N3	Village House at Ko Lau Wan	Existing Residential	1,120

Note:

- (a) The area of Sai Kung East Country Park within 300 m of the Project are not accessible by any hiking trail due to steep slope. The nearest accessible hiking trail is more than 300 m from the Project.

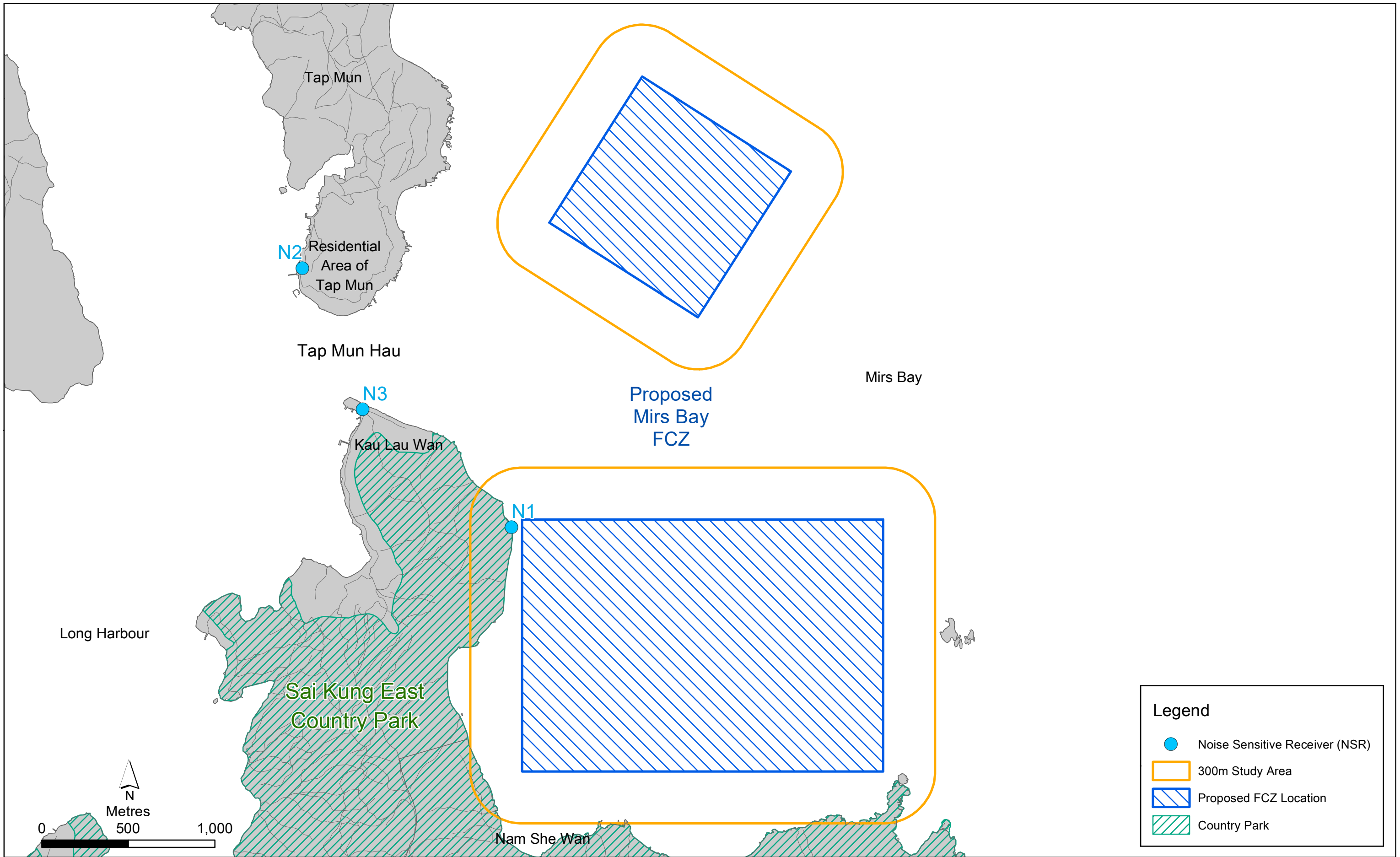


Figure 9.1

Locations of Noise Sensitive Receivers for Proposed Mirs Bay FCZ

9.4 Potential Sources of Impact

9.4.1 Construction Phases

As mentioned in **Section 2**, the construction of the Project would take a few weeks for the assembly and anchoring of each fish raft. No heavy PME is required and no noisy activities will take place during the construction phase. All construction works will be carried out during non-restricted hours only. The main components of the fish rafts and cages will be manufactured off-site. The construction of the Project site will mainly involve the following:

- Towing of existing fish rafts from other location(s) to the new FCZ using tug boat for a few trips a day and anchoring; and
- Assembly and anchoring of fish rafts by winch;

Small marine vessels such as sampans and speed boats could be present and used as supporting vessels during the construction. Anchoring of marine vessels could be required when positioning the fish raft. The installation of the fish raft mooring system would be conducted by attaching the anchor lines from the fish rafts to anchoring points on the seabed. No dredging works are required during the construction phase. Auxiliary facilities, such as storage and shelters for fish farmers may be installed on some of the fish rafts. Details of the construction plant inventory are presented in **Appendix 9B** and it will be subject to further design at later stage.

9.4.2 Operation Phase

Mariculture activities, such as management of fish raft / cages and fish stocks within the Project site will be undertaken during operation phase. Limited numbers of small power generators will be used on fish raft to support the daily mariculture activities. The transportation of fish stock, fish feed, fish raft equipment and workforce as well as occasional visitors will occur with the use of small marine vessels such as sampans and speed boats for a few trips a day. No maintenance dredging or sediment removal is anticipated during FCZ operation under the Project.

9.5 Evaluation of Impact

9.5.1 Construction Phases

As mentioned in **Section 9.4.1**, the construction of the Project would take a few weeks for the assembly and anchoring of each fish raft. No heavy PME is required and no noisy activities will take place during the construction phase. The main components of the fish rafts and cages will be manufactured off-site. The construction works are marine-based with limited air-borne noise impact, i.e. installation of the fish raft mooring system and anchoring on the seabed.

NSR N1 for Country Park is identified within the 300 m Assessment Area, however, specific noise limit for Country Parks is not available from relevant legislation and guidelines, including *EIAO-TM* and *GW-TM*. The area of Sai Kung East Country Park within 300m of the Project is not accessible by any hiking trail and the nearest accessible hiking trail is more than 300m away from the Project. Other NSRs N2 and N3 are located at more than 1.1 km away from the Project Site. In view of the small scale of the Project with limited numbers of PME required for the construction and noisy activities are not required, adverse noise impact during construction phase is not anticipated.

9.5.2 Operation Phase

As mentioned in **Table 9.5**, the area of Sai Kung East Country Park within 300 m of the Project are not accessible by any hiking trail due to steep slope. The nearest accessible hiking trail is more than 300 m from the Project. There is no specific operation phase noise criteria for Country Parks in the relevant guidelines and TMs. Other NSRs N2 and N3 are located at more than 1.1 km away from the Project Site. With small number of marine vessel trips / day for transportation, limited numbers of

small power generators and no noisy operational activities within the Project site, adverse noise impact due to operation of the Project is not anticipated.

9.6 Mitigation Measures and Residual Impacts

In view of no adverse noise impact is anticipated due to the construction and operation of the Project, mitigation measures are therefore not required for both construction and operation phases. Adverse residual impacts are not anticipated.

Although adverse construction noise impact is not expected, *Recommended Pollution Control Clauses for Construction Contracts* issued by EPD will be included in the Contract for future contractor(s) to follow. Good construction site practice and noise management could also be considered to reduce the noise impact from the construction activities as follows:

- Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction phase;
- Silencers or mufflers on construction equipment will be utilised and will be properly maintained during the construction phase;
- Mobile plant, if any, will be sited as far away from NSRs as possible;
- Machines and plant that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum;
- Plants known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and
- Other structures will be effectively utilised, wherever practicable, in screening noise from on-site construction activities.

9.7 Cumulative Impact

No existing or committed project is identified in the vicinity of the Project site. Cumulative impacts are therefore not expected during both construction and operation phases of the Project.

9.8 Environmental Monitoring and Audit

No adverse noise impacts are anticipated during construction and operation of the Project. No environmental monitoring and audit (EM&A) requirements related to noise are considered necessary during both construction and operation phases.

9.9 Conclusion

The area of Sai Kung East Country Park within 300 m from the Project site are not accessible by any hiking trail due to steep slope. The nearest accessible hiking trail is more than 300 m from the Project. No specific construction noise limit for Country Parks is available from the relevant legislation and guidelines including *EIAO-TM* and *GW-TM*. The nearest representative NSRs are located at more than 1.1 km from the Project site. In view of the small scale of the Project with limited numbers of marine vessel trips / day and noisy activities are not required, adverse noise impacts associated with the construction and operation of the Project are not anticipated. Mitigation measures are therefore not considered to be required.