U-Tapao International Airport Expansion Project

Ban Chang District, Rayong Province

Noise Compensation Management Framework

Royal Thai Navy

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WEB SITE: https://www.eeco.or.th/en/filedownload/3206/file-noise-compensation-management-framework-of-the-construction-of-the-2nd-runway-and-taxiway

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A. Background

The U-Tapao Airport Runway 2 and Taxiway Development (or "the Project") is proposed to be financed by the Asian Infrastructure Investment Bank (AIIB). Thus, the Environmental and Social Policy (ESP) of AIIB¹, including the Environment and Social Standards (ESSs) and the Environmental and Social Exclusion List applies to the Project, alongside relevant Thai regulations.

The Project involves large-scale construction activities and is expected to cause significant adverse noise-related environmental and social impacts and is assigned Category A. Accordingly, an Environmental and Health Impact Assessment (EHIA), Noise Compensation Management Framework (NCMF) and this Stakeholder Engagement Framework (SEF) are prepared to mitigate these impacts and are disclosed.

This Noise Compensation Management Framework ("NCMF") lays out the actions and steps that will be taken for implementing the Compensation process during the implementation of the Runway 2 and Taxiways at the U-Tapao airport ("RWY2") in accordance with the EHIA. The EHIA study forecasts buildings and structures likely to be affected by aircraft noise in 2048.

Laws relating to compensation or remedies for those affected by the Project activities include the ESP, Environmental Quality Promotion and Conservation Act B.E. 2535. (This Act sets forth the control and mitigation measures for environmental problems, environmental management system to pass the environmental quality control principles) and the Government Procurement and Supplies Management Act B.E. 2560 involves the purchase of land, buildings, warehouses, structures, and other properties.

B. Entitlement Matrix

According to the EHIA, it is forecasted that there will be number of households and buildings that will be exposed to significant noise impact as follows:

Table 1 Summary of buildings in the areas forecasted to be exposed to noise impact

	NEF 30-40	NEF ≥ 40	Total
Additional impacted areas (compare with 2019 baseline)	46.78 sq.km.	13.81 sq.km.	60.59 sq.km.

¹ https://www.aiib.org/en/policies-strategies/ download/environment-framework/AIIB-Revised-Environmental-and-Social-Framework-ESF-May-2021-final.pdf

Maximum no. of households and buildings	2,466 buildings	93 buildings	2,559 buildings
No. of places sensitive to noise (school, temple, hospital etc.)	17 places	5 places	22 places

Based on the impact of aircraft noise from the forecasting 2048, the sensitive areas and communities in the NEF $^2 \ge 40$ and NEF 30 $_-40$ contours are listed below.

Table 2 List of affected communities in NEF \geq 40 and NEF 30 $_{-}$ 40

Noise Contour	Affected Households	
NEF ≥40	 5 sensitive places 1) 2 schools: Song La Early Childhood Development Center 3 and Wat Sa Kaeo School 2) 2 religious places: Wat Sa Kaeo and Admiral Phrachao Boromwongtheo Krom Luang Chumphon Khet Udomsak Monument (Anti Aircraft Artillery Battalion) 3) 1 hospital: Ban Sa Kaeo Health Promotion Hospital 93 buildings in the community 	
NEF 30 - 40	 17 sensitive places 1) 6 schools: Pattanavechsueksa School, Pattanavech Technological College, Wat Somburanaram School (Temrat Anuson), Samnak Thon Subdistrict Municipality Early Childhood Development Centerin Wat Somburanaram School, Ban Samnak Thon Early Childhood Development Center and Wat Samnak Thon School) 2) 9 religious places: Admiral Phrachao Boromwongtheo Krom Luang Chumphon Khet Udomsak Monument, Naval Aviation Museum, King Taksin the Great Monument (1st Anti-Aircraft Division), Somdet Ong Prathom (1st Anti-Aircraft Division), Admiral Phrachao Boromwongtheo Krom Luang Chumphon Khet Udomsak Monument (1 st Anti-Aircraft Division), Phra Phuttha Nawikapiban Hall (Anti Aircraft Artillery Battalion, Phra Siam Thevathirat Shrine (

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² NEF (Noise Exposure Forecast) contours are calculated using the peak capacity of the airport's ultimate phase development.

- Anti Aircraft Artillery Battalion), Wat Somburanaram, and Wat Samnak Thon.
- 3) 2 hospitals: Ban Khlong Bang Phai Subdistrict Helath Promotion Hospital and Ban Khao Khrok Subdistrict Helath Promotion Hospital
- 2,466 households in the community area of Samnak Thon Subdistrict (2,358 households) and Phlu Ta Luang (68 households) and Huai Yai Subdistrict (40 households).

Households or buildings in the NEF \geq 40 will be negotiated for purchase to minimize the noise impact. Households or buildings in the NEF 30 – 40 will get the compensation cost for renovating their buildings to minimize the noise impact. This measure will result in relocation and compensation of properties.

Summary of households that will be impacted by NEF contours is illustrated in the figure below.

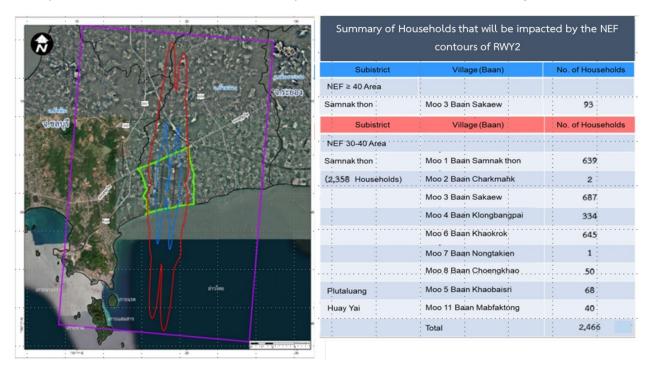


Figure 1 NEF Contours of the airport's ultimate phase development

The study results presented herein are only the forecast noise contour. When the EHIA report is approved by NEB, the Project will conduct a survey, create a database, and make a Compensation Plan for those affected by noise before operating the second runway. When the Project starts the operation, it will be able to monitor noise from the permanent noise monitoring stations, which must be installed before the Project operation.

B1. Compensation Condition

The compensation for people affected by noise from the construction of the second runway and taxiway of U-tapao International Airport is based on the noise contour for the year 2048. The buildings to be compensated must be constructed before the date the EHIA Report is approved by NEB. EEC must publish the construction details of the Project to the public in advance.

- The Project surveys and creates a database and compensation plan for those affected by noise caused by the Project development. The survey team shall complete the survey and determine the compensation value before operating the second runway.
- Make a compensation plan and monitor the progress of the compensation according to the plan. Assess the implementation every year. Allocate enough budget for the compensation plan and communication plan.
- Assess the compensation results and make a progress summary, communication, and problems arisen from the compensation measures.
- Formulate the measures to monitor and assess the results of implementing the noise impact mitigation measures in NEF 30-40 area within 12 months to reduce repeated complaints from not renovating the buildings according to the compensation objectives.
- Assign staff to survey and inspect degradation of equipment installed for longer than 5 years. If the problem is found to be the quality of material degrading faster than normal use, staff should be able to advise the repair and maintenance and consider adding financial support at the discretion of the Working Group considering the Environmental Impact Assessment and Quality of Life Improvement Fund to prevent the impact of noise and complaints after the compensation.

B2. Compensation Criteria

Compensation Criteria for NEF ≥ 40

- EEC shall negotiate to buy land and properties constructed before the date the EHIA
 Report is approved by NEB. If the landowner does not wish to sell, EEC must support the
 renovation cost to reduce noise impact. The landowner receiving the compensation money
 is responsible for all the renovation activities.
- EEC must support the renovation cost for places that need quiet in particular, such as schools, hospitals, and religious places. To be eligible for the compensation, the properties must be constructed before the date the EHIA Report is approved by NEB.

Compensation Criteria for NEF 30 - 40

 EEC must support the renovation cost to reduce noise impact. The landowner receiving the compensation money is responsible for all the renovation activities. To be eligible for

- the compensation, the properties must be constructed before the date the EHIA Report is approved by NEB.
- EEC must support the renovation cost for places that need quiet in particular, such as schools, hospitals, and religious places. To be eligible for the compensation, the properties must be constructed before the date the EHIA Report is approved by NEB.

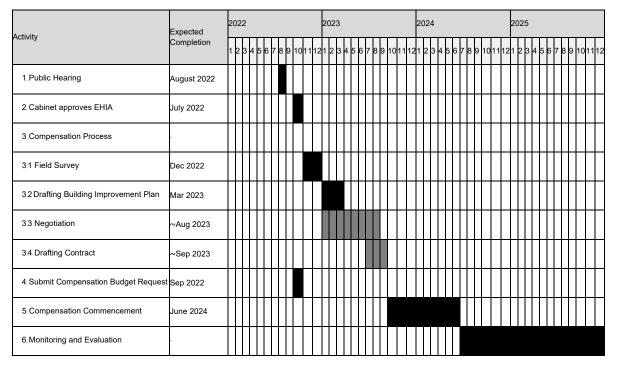
The compensation process will start after the Cabinet approves the EHIA.

C. Timeline

According to the EHIA, the compensation process and the detailed compensation plan will be prepared after the Cabinet's approval. The tentative timeline for the implementation of the compensation is provided in the table and the Gantt chart below.

Steps	Timeline
Cabinet approves EHIA	October 2022
Field Survey	December 2022
Drafting Building Improvement Plan	March 2023
Negotiation	August 2023
Drafting Purchase Contract	September 2023
Submit Compensation Budget Request	September 2022
Compensation Commencement	June 2024

Table 3 Compensation Plan Timeline



= Tentative

D. Framework for Evaluating Noise Impact and Compensation Measures in the Compensation Plan

The Consultant which will be hired to prepare the Compensation Plan will follow the following steps and approach.

Survey and develop detailed map of affected land and assets

- Survey all land plots along NEF ≥40 and NEF 30-40
- Develop land use maps along different NEF contours

Approach to assess land and asset value

- Identify assets that will be impacted by noise based on types of assets and their suitable use along the NEF
- Survey land titles based on official records
- Compile the data based on Asset Valuation Standards issued by the Valuers Association of Thailand

Methodology to assess asset value

- The valuation of the assets will be based on internationally accepted methodology and guidelines issued by the Valuers Association of Thailand and Thai Valuers Association
- The methodology for assets valuation will be based on three internationally accepted methods as follows:
 - 1) Cost Approach
 - 2) Market Approach
 - 3) Income Approach

In addition, there are two additional approaches which are based on the three main approaches with some modifications:

- 4) Hypothetical Development Method or Residual Method
- 5) Computer-Assisted Mass Appraisal
- For general assets, cost or market approach will be used. However, in the case of highvalue assets or complicated case, the valuation method may be the combination of the three main methods or additional method. The appraiser will then determine a suitable value based on different methods or used weighted average of different methods.

Compensation Method

- The compensation method will be determined based on considerations on level of noise impact and types of assets. The compensation can take the forms of land purchase, compensation for built assets, compensation based on agreed price, for example, agreed land value or appropriate value, building value based on size, building materials based on official published prices, value of trees, value of fruits, and other damage costs, for example, damage costs from relocation, mental damage, license for new construction, moving costs, utilities installation costs.
- Compensation method will be based on the following considerations:

- 1) Noise intensity level
- 2) Types of assets divided into residential, commercial and other service establishments. The compensation can be divided into three groups land purchase, prevention, and reducing noise level by renovating the building. If after renovation and the households are still affected, compensation on the differences can be made. Any renovation to reduce noise level will be assessed by licensed engineers.
- 3) Land management through land use to generate revenue by considering types of business which may need land around the airport to operate to reduce compensation burden of the government.

Determining assessment area

The boundary for compensation will be based on NEF according to the following considerations:

NEF ≥40 Area

- 1) Survey of land, buildings and asset valuation to support compensation negotiation
 - Site survey (location, land plot size, details of building such as type of building, no. of floors, building area)
 - Develop detailed map
 - Compensation measures including land purchase and compensation for buildings
 - Land value will be assessed based on market price or other appropriate methods by comparing land price outside of NEF area with similar surroundings and utilities
 - Building value will be determined based on type and building material using reference prices from official sources
 - Value of tress and other damages perennial plants with commercial value will be valued based on official prices and trees market. In addition, other damages will be calculated such as damage costs from relocation, mental damage, license for new construction, moving costs, utilities installation costs.
- 2) In case the owner not willing to sell, the costs of renovation shall be assessed and communicate to affected households
 - Engineer and architect will survey details of each building to estimate list of materials needed to renovate the buildings and estimate costs or renovation to reduce noise impact. Inside the building, reinforced insulation will be carried out to prevent noise impact for parts of building such as ceiling, ceiling board, wall, doors, windows
- 3) Propose negotiation method based on 1) and 2). The budget for renovation will be paid to owners to carry out the renovation themselves.

NEF 30-40

- 1) Survey of land, buildings to support compensation negotiation
- 2) Compensation method will be based on method previously used. Compensation will consider reduced value of land, renovation costs from noise impact
 - Land value will be assessed based on market price or other appropriate methods by comparing land price outside of NEF area with similar surroundings and utilities
 - Building value will be determined based on type and building material using reference prices from official sources

- Value of trees and other damages perennial plants with commercial value will be valued based on official prices and trees market. In addition, other damages will be calculated such as damage costs from relocation, mental damage, license for new construction, moving costs, utilities installation costs.
- Engineer and architect will survey details of each building to estimate list of materials needed to renovate the buildings and estimate costs or renovation to reduce noise impact. Inside the building, reinforced insulation will be carried out to prevent noise impact for parts of building such as ceiling, ceiling board, wall, doors, windows
- Measures to renovate the buildings such as structural reinforcement, ceiling and window reinforcement, partition of rooms, installing air condition, planting trees as barrier for residential areas
- 3) Propose negotiation method based on 1) and 2). The budget for renovation will be paid to owners to carry out the renovation themselves.
 - 4) Develop Action Plan for compensation for affected households. Results from the above approaches will be adopted to develop an action plan for compensation of affected households. The action plan will enable the efficient and acceptable process of compensation.

Institutional Arrangement

The institutional arrangement will be set up to support the implementation of compensation in a transparent, fair and efficient manner. To resolve any potential issues, complaints and conflict with affected people, the following approach to institutional arrangement will be considered:

- 1) Setting up Coordination Centre to mitigate impacts from the airport to redress grievances related to compensation and other impacts
 - To function as centre to receive complaints, problems and impacts from the airport from affected persons
 - Evaluation of complaints to propose to Committee with authority to resolve problems, redress grievances
 - To monitor and check status of grievances received
 - Provide information and communicate with affected persons who lodged the complaints or to the public on matters related to compensation
 - The center should comprise of key staff such as Director of the Coordination Centre, Coordinators, Environmental and Social Specialist, Call Centre, Public Relations
- 2) Setting up Tripartite Committee
 - The Committee will include affected persons, airport management team, government agencies, local authorities
 - The Committee will consider the complaints received and made decisions on how to resolve the issues including monitoring the outcome of the solution and report the results to the Ministry of Transport
 - The time required to respond to submitted complaint should be set to ensure that complaints received will be handled timely and efficiently to reduce any potential conflicts.

3) Outsourcing

The management of impacts from noise and other activities can also be done through outsourcing to experts in the area under the supervision of the Tripartite Committee.

E. TOR for Compensation Consultant

EECO has prepared the draft terms of reference to hire a consultant to start working on the compensation process in compliance with the regulations. The draft scope of work for the consultant is provided below:

- Develop list of land titles and properties for communities in the noise contour line based on ownership, utilization and residential as the basis for property and land titles assessment
- b) Assess compensation value for each land plot for negotiation (land purchase, compensation for built assets, refurbishment of existing assets)
- c) Negotiation with land/property owners and propose negotiation results to EECO, prepare land purchase agreement or agreement to refurbish buildings/properties to the affected communities
- d) Prepare required supplementary documents for the negotiation (land purchase or refurbishment of buildings/properties) for communities on NEF ≥40
- e) Prepare documents required for implementation of the compensation measures
- f) Prepare financial agreement for the purchase of land/buildings
- g) Prepare financial agreement for the refurbishment of buildings/properties

Please note that tasks a_1-b_1 and tasks c_1-g_1 will be carried out by different consultants.

Based on the consultant's work, budgeting and implementation of compensation will be considered and approved by the Compensation Committee to be set up.

F. Monitoring and Evaluation

EECO will assess the compensation results and make a progress summary report of the compensation, communication, and problem arisen from the compensation measures.

There will be total of 11 noise monitoring stations (4 temporary and 7 permanent) to monitor actual noise level, as well as measures to respond to complaints and real-world data.

Noise Monitoring During Construction Phase

Environmental monitoring measures for Noise		
Monitoring method(s)	monitor L _{eq} 24 for 7 days consecutively	
Implementation area(s)	 Monitor at sensitive areas near the Project as shown in Figure 2 including 2 stations below. RTN Early Childhood Nursery 6 , Naval Aviation Division Eastern - Nong Muang Community 	
Indicator(s)	1-hr noise average (L _{eq} 1 hr)	
	• 24-hr noise average (L _{eq} 24 hr)	

	•	Day-and-night noise average (L _{dn})
	•	Maximum noise (L _{max})
	•	Noise at 90th percentile (L ₉₀)
	•	Annoyance noise
Responsible party:	•	RTN and EEC
Frequency	•	Once a month during the construction phase

Noise Monitoring During Operation Phase

1) General background sound			
Monitoring method(s)	 Monitor and record general background sound. Collect and summarize the results from all general sound 		
	 monitoring stations. Report the monitoring results at all stations and disclose to the public, such as on the website, and communicate with the public about the access to the information. 		
Implementation area(s)	 The general sound monitoring stations are shown in Figure 2 including 4 stations below. Ban Khlong Bang Phai Subdistrict Health Promotion Hospital Elderly Life Quality Development Center of Samnak Thon Subdistrict Administrative Organization Ban Khao Khrok Subdistrict Health Promotion Hospital Wat Samnak Thon School 		
Indicator(s)	 L_{eq} 1 hr L_{eq} 24 hr L_{dn} L_{max} L₉₀ Annoyance noise 		
Responsible party	EEC		
Frequency	Monitor 24hrs/day for 7 consecutive days, 2 times/year throughout the lifetime of the Project. The report of monitoring results shall be submitted to the environmental impact monitoring committee. The Report on the implementation of environmental impact mitigation measures shall be submitted to the agency granting authorization/permission every 6 months.		
2) Noise from source			
Monitoring method(s)	 Monitor noise from aircraft at the runway using an automatic noise monitoring device 24 hours continuously to monitor the noise during take-off and landing. Record, collect, and summarize the results of the 7 noise monitoring stations, and identify the sources that might 		
	 cause an impact. Set up a system to monitor aircraft noise linked with the flight database. 		

Report the real time results at all stations and disclose to the public eg on the website and communicate with the public about the access to the information. Prepare a work procedure to record and summarize the implementation in the log sheet. Implementation area.s> Permanent noise monitoring stations are shown in Figure 2 including 7 stations below. Southwest of the first runway. Southwest of the first runway. Southwest of the first runway. Southeast of the second runway. Fastern - Nong Muang Community Public Health Center			
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	 L_{max} L₉₀
	Aircraft noise level in the community area (L _{dn})
Responsible party	• EEC
Frequency	When there is a complaint
4) Noise from actual flight	situation
Monitoring method(s)	Make a summary of noise contour in the NEF or Ldn units every year.
	 Assess noise impact in the NEF or Ldn units using the mathematical model based on the actual flight data based on the Automatic Dependent Surveillance Broadcast (ADSB) linked with the noise monitoring station system. If there are areas affected by noise in addition to those compensated, the new affected areas shall be surveyed
	and compensated as soon as possible.
	 Record, collect, and summarize the noise monitoring results from all permanent stations and indicate the source that might cause an impact.
Implementation area(s)	The area with noise impact
Indicator(s)	-
Responsible party	• EEC
Frequency	Once a year throughout the lifetime of the Project

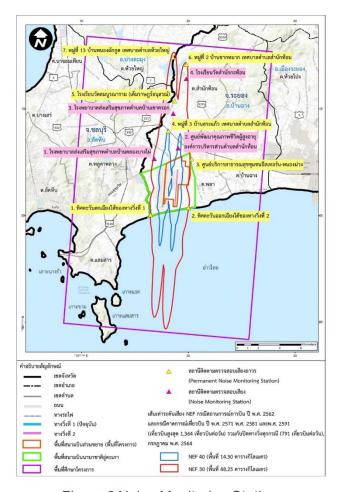


Figure 2 Noise Monitoring Stations

EECO and RTN will continually monitor noise impact and implement measures to mitigate impact from noise. Report on complaints received and how they have been redressed will be submitted annually. The report will include statistics of complaints received, how they have been resolved/addressed, including analysis of impact and how they will be mitigated. In addition, EECO will need to organize meeting with responsible agencies to plan, implement and monitor noise impact of the airport at least once a year. Hence, the mitigation measures can be continually adjusted (for example if there is a need to install more permanent noise monitoring stations) without having to wait for the 2-year review.

G. Complaints Management

The Project shall create the complaint channels for noise impact from the construction of the Project at the CSC/EEC site office or U-tapao International Airport to receive the problems and impact and accelerate the solutions.

Pre-EHIA Approval Phase

In the pre-EHIA approval phase, any complaints or grievances of the affected persons can be submitted to the project owners, EECO and RTN. The complaint can be submitted to the Secretary General of EECO. The Community and Vicinity Engagement Office under the

Strategic Area and Community Development Department in EECO is responsible for handling the complaints, conduct outreach program to provide information about the project to increase the public understanding of the project, and address concerns raised by communities.

According to the EHIA, EECO will establish a Working Group on Compensation immediately after the Project is approved by the Cabinet. The Working Group will be responsible to assess compensation amount, conducting survey and compensate the affected persons before the Runway 2 opens for operation.

Compensation Plan will be prepared, and the progress report of the Plan will be prepared for monitoring and evaluation annually. The budget for compensation shall be adequately appropriated including public relations and communication plan. The progress of compensation will be regularly report and evaluated to determine problems and barriers to the implementation of the compensation.

Construction Phase

As one of the action plans in the EHIA, an EIA Monitoring Committee will be set up to monitor the impact and seek participation from the community to assist with the monitoring within 12 months after the Project is approved by the Cabinet. The EIA Monitoring Committee will ensure that the environmental impact mitigation and monitoring measures are followed.

The EIA Monitoring Committee must consist of representatives from 3 parties: the public, government agencies, and the Project Owners. The ratio of the public representative, excluding the public agencies, shall be more than 2/3 of the entire EIA Committee. More details are described below.

- 1) Representatives of the public are selected from the subdistricts in the study area presented in the EHIA Report at the suitable proportion. Also, they can be procured, nominated, or any other means from the communities surrounding the Project sorted by local administrative areas and by subdistricts.
 - Representatives of the public who are community leaders e.g. community leaders in the subdistrict in the EHIA Report in Rayong and Chon Buri
 - Representatives of local people in the EHIA Report in Rayong and Chon Buri, covering people affected by the noise contours.
 - Representatives from NGOs in Rayong and Chon Buri (if any)
- 2) Representatives from relevant agencies at the central and provincial level, including ONEP, OTP, PCD, Rayong and Chon Buri Offices of Public Works and Town Planning, Rayong and Chon Buri Offices of Natural Resources and Environment, Rayong and Chon Buri Offices of Public Health, and other administrative agencies in Rayong and Chon Buri (at provincial, district, and local administration level.)
- 3) Representative from the Project Owners (RTN and EEC)

The EIA Monitoring Committee comprising representatives from 3 parties will hold a meeting to vote a chairperson, a vice chairperson, and a secretary. After the vote, the EIA Monitoring Committee will appoint them by the resolution of the meeting. The EIA Monitoring Committee who are representatives of the public should be selected as described below.

- 1) Local agencies allow the public to vote a representative from their subdistrict administration.
- 2) Local agencies present the vote results to the public and give additional comments within 15 days after the voting day.
- 3) Names of representatives are submitted to the Project or the EIA Monitoring Committee

Additional comments or objections are at discretion of the EIA Monitoring Committee. Decisions of the EIA Monitoring Committee are final.

RTN and EEC will instruct the contractor to follow the measures.

The EIA Monitoring Committee will be the main body to interact with local communities and any additional mechanism may create overlaps with the planned process. We would suggest to utilize the EIA Monitoring Committee as the main platform to engage with the local communities during the Project.

During construction stage, the complaints channel will be put in place at the project construction office or at the U-tapao International Airport to receive complaints. If there is any complaints on noise impact during the construction phase, the project owners will measure the noise level and resolve the complaints.

Operation Phase

During the Operation Phase, according to the EHIA, the Environmental Impact Mitigation Coordination Center of Utapao International Airport is mainly responsible for complaint management. The Center will assess, analyze, investigate, and explain the complaint to the public about noise and/or other problems caused by the airport operation. There will be an electronic database that will locate and link the coordinates around U-tapao International Airport. The data must at least consist of the following details.

- Name of the person or agency filing the complaint
- House number
- Building
- The number of residents
- Statistics of complaints
- Estimated NEF area
- Monitored NEF area (if any)
- Land use
- Other relevant information

There are complaint channels opening around the clock. If there is a complaint from the community about noise impact from the operation of U-tapao International Airport, EEC will use the noise level from the permanent noise monitoring stations which is connected to the flight database or the measuring results by a mobile unit that works 24 hrs/day for 7 consecutive days. The Project will consider monitoring in the NEF or L_{dn} units in the area. There will be a committee to assess the impact from the Project. If the impact is proven real, EEC will compensate according to the determined measures.

The Environmental Impact Mitigation Coordination Center of U-tapao International Airport will be located in U-tapao International Airport every day during office hours (08.00-17.00 hrs.)

The Project has a plan to receive complaints and the procedures to do so at different stages as shown in the figures below. A separate mechanism for complaints related to noise impact is also shown.

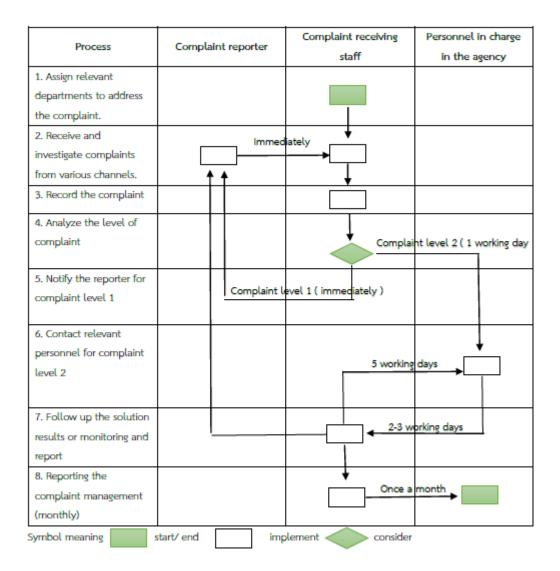


Figure 4.7-1 Complaint procedures for environmental impact mitigation

Figure 3 Complaint procedures for environmental impact mitigation

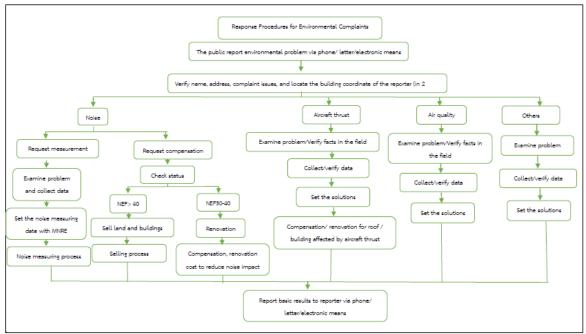


Figure 4.7-2 Complaint procedures for environmental issues of U-tapao International Airport

Figure 4 Complaint procedures for environmental issues of U-tapao International Airport

H. AIIB's Policy on the Project-affected People's Mechanism

AIIB's Policy on the Project-affected People's Mechanism (PPM) applies to this Project. The Bank has established the PPM to provide an opportunity for the independent and impartial review of submissions from PAP who believe they have been or are likely to be adversely affected by the AIIB's failure to implement its ESP in situations when their concerns cannot be addressed satisfactorily through the Project-level GRM or the AIIB's management processes. More information about the PPM can be found through visiting: Policy on the Project-affected People's Mechanism.