



SAGANAK ENERJİ

**SAGANAK ENERJİ YATIRIM
URETİM VE TİCARET A.Ş.**

KANDIRA WIND POWER PLANT

NOISE MANAGEMENT PLAN

FEBRUARY 2021

 **encon**

REVISION HISTORY

Ver	Date of Issue	Issue Reason	Description of Change	Prepared by	Approved by
0	15.10.2020	First submission	-	CC	HC
1	30.12.2020	Incorporation of TKYB comments	Chapter 1 Section 2.2	OO	HC
2	18.02.2021	Incorporation of TKYB comments		CC	HC

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ABBREVIATIONS

AIIB	Asian Infrastructure Investment Bank
EHS	Environmental, Health, and Safety
ESAP	Environmental and Social Action Plan
ESF	Environmental and Social Framework
ESS	Environmental and Social Standards
GIIP	Good International Industry Practices
HSE-Q	Health, Safety, and Environment - Quality
IFC	International Finance Corporation
NSR	Noise Sensitive Receptor
OHS	Occupational Health and Safety
Plan or NMP	Noise Management Plan
Project	Kandira Wind Power Plant
PSs	Performance Standards
RAMEN	Regulation on Assessment and Management of Environmental Noise
Saganak Project Owner	or Saganak Enerji Yatirim Uretim ve Ticaret A.Ş.
SEP	Stakeholder Engagement Plan
WPP	Wind Power Plant

1. PURPOSE AND SCOPE

The Noise Management Plan (“the Plan” or “NMP”) has been developed in accordance with Saganak Enerji Yatırım Üretim ve Ticaret A.Ş (hereinafter referred to as “Saganak” or “the Project Owner”) policies, with the commitments undertaken by Saganak in the Environmental and Social Action Plan (ESAP) prepared for the Kandira Wind Power Plant (WPP) Project (“the Project”) and in accordance with Turkish regulatory framework, with International Finance Corporation (IFC) Performance Standards (PSs), and with IFC General and Sector Specific Environment, Health and Safety (EHS) Guidelines and Asian Infrastructure Investment Bank’s (AIIB) Environmental and Social Framework (ESF). Where no national regulation, IFC standard/guideline or AIIB standard applies, the Plan considers the adoption of Good International Industry Practices (GIIP).

1.1 Purpose

The general purpose of this NMP is to describe various measures to avoid possible adverse impacts related with the noise generating activities during the construction and operation of the Project. The plan aims to achieve these by incorporation of local legislation, requirements of IFC, AIIB and international best practice procedures.

1.2 Scope

This Plan provides necessary means and measures to achieve the goals of the Project. These assessments/measures are applicable to all Project personnel, contractors, subcontractors, visitors and the general public (including any governmental authority or similar site visitors) and covers both construction and operation phases of the Project.

This Plan will be updated when necessary. The scope of the Plan includes following aspects:

- Legislative requirements and standards
- Roles and responsibilities
- Provisions/measures regarding noise management
- Monitoring and reporting
- Training of personnel regarding NMP issues
- Review and update

2. LEGISLATIVE REQUIREMENTS AND STANDARDS

2.1 Turkish Legal Framework

Turkish Legislation that the Project will comply with are given below:

- Regulation on Assessment and Management of Environmental Noise (RAMEN)
- Regulation on the Protection of Workers from Risks Related to Noise
- Occupational Health and Safety Law No. 6331
- Regulation on Risk Assessment of Health and Safety
- Regulation on Principles and Procedures for Occupational Health and Safety Training of Employees
- Regulation on the Occupational Health and Safety Requirements for Construction Sites
- Regulation on the Use of Personal Protective Equipment at Workplaces
- Regulation on the Occupational Health and Safety Requirements for Temporary or Fixed-Term Employment
- Regulation on the Occupational Health and Safety in Construction Works
- Regulation on the Protection of Workers from Risks Related to Noise

The noise limits applicable to the Project as stipulated by national are presented in Table 1 for the construction phase and in Table 2 for the operation phase of the Project.

Table 1 Environmental Noise Limits for Construction Activities (RAMEN)

Type of Activity (Construction, Demolition and Repair)	L _{day} (dBA)
Building	70
Road	75
Other Sources	70

Table 2 Environmental Noise Limits for Industrial Plants (RAMEN)

Areas	L _{day} (dBA)	L _{evening} (dBA)	L _{night} (dBA)
Educational, cultural and health facilities as noise sensitive areas, and places densely populated with summer houses and camp grounds	60	55	50
Areas densely populated with residences among the areas containing commercial structures and noise sensitive structures all together	65	60	55
Areas with dense work places among the areas containing commercial structures and noise sensitive structures all together	68	63	58
Industrial Areas	70	65	60

2.2 International Standards and Guidelines

Applicable International Finance Institutions' (IFIs) standards and guideline requirements for the emergency preparedness and response management are provided in the following references:

- IFC PSs
- IFC General EHS Guidelines
- IFC General EHS Guidelines for Wind Energy
- IFC General EHS Guidelines for Electric Power Transmission and Distribution
- AIIB Environmental and Social Framework
- AIIB Environmental and Social Standards (particularly ESS1)

Noise limit levels are described under IFC's General EHS Guidelines: Environmental Noise. The noise limit values are based on World Health Organization Guidelines for Community Noise.

Noise levels defined by IFC are presented in Table 3. AİİB ESF does not define limit values for noise levels.

Table 3. Noise Level Guidelines of IFC

Receptor	One Hour L_{Aeq} (dBA)	
	Daytime 07:00 – 22:00	Nighttime 22:00 – 07:00
Residential, institutional, educational	55	45
Industrial, commercial	70	70

3. ROLES AND RESPONSIBILITIES

Managing Director

- Owner and confirmatory of this plan
- Ensures sufficient and qualified resources are allocated on an ongoing basis to achieve effective implementation of this Plan
- Controls and confirms the objectives related with this Plan.

Project Manager

- Develops, implements, circulates and maintains this Plan.
- Provides sufficient resources to implement the requirements of this Plan.

Construction/Operation Manager

- Complies fully with applicable requirements of this Plan.
- Reports to the Project Manager issues impacting on the implementation of this Plan.
- Ensures that the contractors are fulfilling their noise related contractual obligations and reports any nonconformity to Project Manager.

Administrative Affairs Manager

- Ensures that all employees are aware of, and appropriately trained on the implementation of this Plan.

HSE-Q Expert

- Contributes to the implementation of precautions related to noise management objectives.
- Checks whether this plan fits with the project standards and other agreements or not.
- Operator of this plan and controls the contractors' application.
- Provides technical support to contractors for the implementation of the Plan.
- Gives Plan-related training to employees.
- Performs routine inspections.
- Follows the site implementation of the Plan..
- Coordinates noise level measurement studies, when necessary.
- As required, reviews and updates the Plan.

Community Liaison Officer

- Logs grievances from members of the public with respect issues covered in the scope of this Plan.
- Coordinates communications with the community representatives as presented in this Plan.

Contractors

- Ensures compliance with the Project-specific noise management approach in accordance with the contractual requirements.
- Ensures sufficient and qualified resources are allocated on an ongoing basis to achieve effective implementation of this Plan.

- Ensures the effective implementation of this Plan by issuing its own procedures addressing, detailing and customizing specific actions, measures and monitoring activities under contractors' responsibility.
- Provides relevant monitoring data and monitoring reports to Saganak as required.
- Stipulates Saganak's policies and standards to any subcontractor for duly implementing requirements.

4. NOISE MANAGEMENT

4.1 Background Noise Levels

24-hour background noise level measurements were conducted at three sensitive receptors on 14th January 2021. Measurement results are presented in Table 4 and the related noise report is given in Annex-1. Noise levels stipulated in the national legislation and IFC General EHS Guideline were presented previously in Table 2 and Table 3, respectively.

Table 4 Background Noise Levels

Measurement Location	Coordinates		Distance to the Closest Turbine	Measurement Dates and Results (14.01.2021)
	X	Y		LeqA (dBA)
Hacımazlı Gençali	41.095656	30.036606	680 – T7	54.1
Hacımazlı	41.100639	30.049458	900 – T6	51.8
Bollu	41.109333	30.061761	800 – T6	56.0

4.2 Possible Sensitive Noise Receptors

Nearest buildings to the Project site would be considered as noise receptors. Such buildings and their distances to the nearest turbine are presented in Table 5, and among these, seven of them are selected as possible sensitive noise receptors of the Project. The coordinates of possible noise sensitive receptors (NSRs) are presented in Table 6. Following the table, these receptors are presented on a map given in Figure 1.

Table 5 Nearest noise receptors to the turbines

Settlements the nearest receptors located at	District the settlement is located at	Closest turbine to the receptor	The distance of the nearest receptor to the closest turbine (m)
Bağırçanlı (NSR-1)	Kandira	T1	1.817
Bollu (NSR-2)	Kandira	T6	765
Hacımazlı (NSR-3)	Kandira	T6	815
Safalı	Kandira	T6	3.295
Hacımazlı (NSR-4)	Kandira	T7	610
Antaplı (NSR-5)	Kandira	T9	1.075
Merkez Erikli	Kandira	T9	2.167
Antaplı (NSR-6)	Kandira	T10	870
Beylerbeyi (NSR-7)	Kandira	T10	1.851

Table 6 Possible noise sensitive receptors and their coordinates

Possible Noise Sensitive Receptors	UTMED50 ZONE35		GEOWGS84	
	X (North)	Y (East)	Longitude (N°)	Latitude (E°)
NSR-1	4557084.298	249369.417	41.124712	30.014127
NSR-2	4555067.279	253174.431	41.107732	30.060205
NSR-3	4554376.278	252237.425	41.101231	30.049339
NSR-4	4553821.278	251131.418	41.095900	30.036410
NSR-5	4552523.275	249491.408	41.083720	30.017437
NSR-6	4552705.277	248901.405	41.085175	30.010348
NSR-7	4552068.275	248078.399	41.079190	30.000823

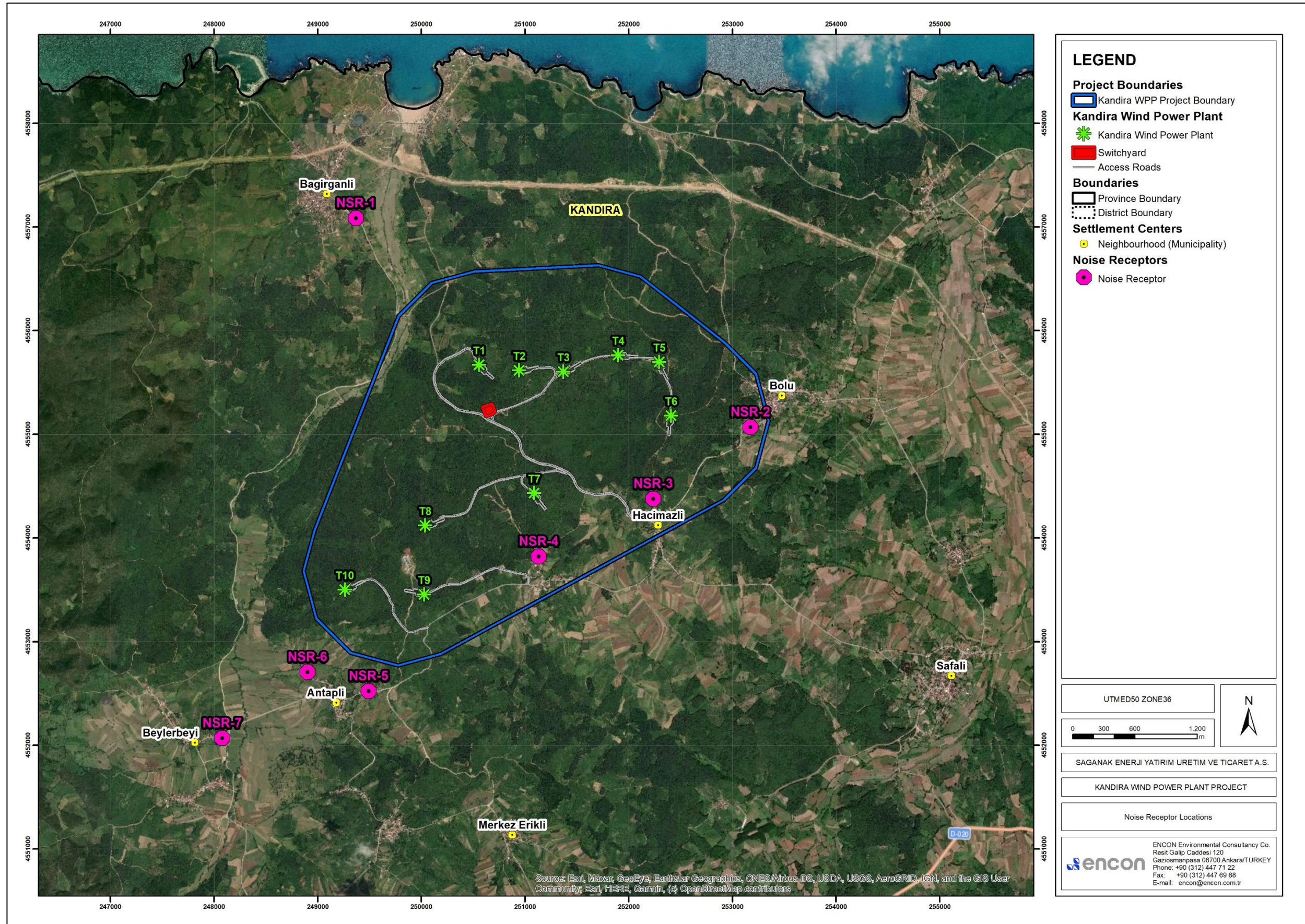


Figure 1 Locations of possible noise sensitive receptors

4.3 Land Preparation and Construction Phase

Transportation of materials, turbine components and other construction phase transportation requirements; construction machinery and equipment to be used for the construction of access roads, preparation of turbine foundations and other civil works will result in noise generation during the land preparation and construction phase of the Project, which may impact the noise sensitive receptors. A list of some of main noise generating equipment and vehicles to be used during construction phase is provided below:

- Bulldozers
- Excavators
- Road Graders
- Road roller
- JCB
- Trucks
- Trailer
- Pickup trucks
- Vans for staff

The following measures will be in place for control of construction phase noise:

- Noise sensitive receptors and Hacimazili and Bollu dwellers will be informed about the construction schedule and activities to be conducted, especially the schedule of abnormal load transportations, via the methods provided by the Stakeholder Engagement Plan (SEP). Information on Grievance Mechanism will also be provided through appropriate mediums.
- Activities at sites close to noise sensitive receptors will only be conducted during day time. In addition, high noise emitting activities will also be limited to daytime.
- Some activities such as delivery of large turbine components or erecting turbine components may require to be conducted outside of scheduled hours (e.g. due to traffic conditions, unfavourable meteorological conditions, etc.), in case halting such an activity is considered to be risky in terms of OHS or community health and safety. In such cases, closest receptors to the area these activities are conducted at will be informed of the schedule change.
- Speed limits will be implemented, covering both abnormal load transportation (i.e. turbine component transport) and other transportation requirements (i.e. construction materials and worker transport).
- Access to site will be provided by only the designated access roads.
- The access roads will be assessed in terms of stability, improved where required, checked routinely for deterioration of physical conditions and immediately be repaired in cases where damage is identified, in order to minimise related noise generation.
- All construction vehicles and materials will be periodically checked and maintained by competent experts.
- A noise monitoring program will be conducted to verify compliance with national regulatory requirements and Project Standards; in case any incompliance is identified, the source activity will be halted until further actions are taken.
- All related grievances will be recorded and responded to in a timely manner, as set by SEP. In case any incompliance is identified, the source activity will be halted until further actions are taken.

4.4 Operation Phase

During the operation phase, noise will mainly be generated by operation of the wind turbines. The following measures will be implemented to achieve compliance with Project Standards:

- Turbine operation will be optimised based on wind speeds, noise generation and monitoring results.

- Periodic maintenance of turbines will be conducted.
- Clearance of vegetation will be limited to ensure maximum screening of noise.
- In case of any grievances regarding noise, the noise source will be investigated and complaints will be resolved. This will include noise level monitoring at locations subject to grievances.

5. TRAINING

Saganak will provide the necessary funds and scheduling time to ensure effective noise management training is provided. This commitment will include paid work time for training and training in the language that the workers understand. Both management and employees will be involved in developing the program. To most effectively carry out their responsibilities, all personnel must understand (1) their role in the program, (2) the hazards and potential hazards that need to be prevented or controlled, and (3) the ways to protect themselves and others. Goals will be achieved by:

- Educating everyone on the natural and system consequences of their actions
- Educating all managers, supervisors, employees, contractors and visitors on their noise management system responsibilities
- Training all employees and contractors about the specific noise generating activities and their control measures

Training program will create awareness on noise generating activities among employees and provide insights on measures to abate noise, results of risk assessments and how to protect themselves from noise impacts.

6. MONITORING AND REPORTING

In the scope of this NMP, regular monitoring activities will be carried out in order to assess the level of implementation of the mitigation measures identified for the Project for both construction and operation phases.



This Plan does not define a periodic noise level monitoring campaign during the construction and operation phases of the Project. The noise level measurements will be performed by an accredited laboratory only in case of a grievance. In such case, the guidance of the grievance mechanism will be followed and swift action will be taken to conduct at least 24-hour noise level measurement campaign at the complainant's house/business/farm, etc. If the noise levels are measured as higher than the legislative and IFC limit values, Saganak will first identify the activity that creates this situation. Then, if the noise source is related with the Saganak's activity, necessary measures shall be defined and implemented by Saganak. Following the actions, Saganak will conduct the second noise level measurement study to verify that actions are sufficient to meet the legislative and international standards. The complainant will be informed according to the grievance mechanism at all stages of the process.

The EHS performance report that will be prepared by the HSE-Q Expert in a six-monthly basis will include a chapter dedicated for noise-related actions. In this report, HSE-Q Expert will provide the results of noise level measurement campaign including the summary of the whole process (e.g. grievance, corrective actions, verification measurement, etc.).

7. REVIEW AND UPDATE

Saganak's HSE-Q Expert determines the review and update needs of this Plan. In general, the Plan should be reviewed after noise-related community grievances and updated accordingly, if necessary. The Plan shall be reviewed and updated after changes in related legislative and international standards. The contractors' HSE-Q staff is responsible to put effort in the review and update process of the Plan.

ANNEX 1 – BACKGROUND NOISE LEVEL MEASUREMENT – NOISE REPORT

 ARTEK ENGINEERING ENVIRONMENTAL MEASUREMENT VE CONSULTANCY SERVICES. TİC. A.Ş. ENVIRONMENTAL LABORATORY NOISE REPORT İstasyon Mahallesi Yunus Emre Sokak No:10 /1 ilkadım / SAMSUN			SAM-DR 21- 003 01.21
Customer name/address	: Sağanak Energy Investment Transmission Trade Corporation/ Kocaeli Province Kandıra District Hacımazlı Bağıranlı, Antaplı, Within the Border of Sapalı District		
Order No.	: SAM110121.002.R00		
Name and identity of test item	: Noise Measurement		
Remarks	: Noise Measurement Report		
Date of Measurement	: 14.01.2021		
The date of receipt of test item	: -		
Date of Analysis	: -		
Number of pages of the Report	: 5 Page Report		
Seal	ARTEK MÜHENDİSLİK ÇEVRE ÖLÇÜM ve DANIŞMANLIK HİZMETLERİ TİC. A.Ş. SAMSUN ŞİŞESİ	Date	20.01.2021
Measurement and Reporting Responsibility Ali ALTUNDAL		Branch Laboratory Manager M.Sezin GÖKSEL	
<p><i>The reports without stamp and signature are considered to be invalid. The results in the report is belong only to the sample examined. Technical and legal responsibility in defining group and parameters intended of the procedures shall be on the person who takes sample and sampling. This report shall not be copied and duplicated partially without taking permission of our laboratory. This report is not used in official processes in respect of environment legislatures.</i></p>			
<p>Unsigned and unsealed reports are invalid. The results in the report are only for the sample examined. In the analyzed sample, the technical and legal responsibility in determining the procedures from taking the sample to its delivery to our laboratory and the groups and parameters to be examined belongs to the sampling area. This report cannot be partially copied or reproduced without the written permission of our laboratory. . This report cannot be used in official transactions regarding environmental legislation.</p>			
FORM NO:FR.510.02-01 RELEASE DATE: 01.09.2014		REV. NO: 0 REV. TAR.: -	

**ARTEK ENGINEERING ENVIRONMENTAL MEASUREMENT
VE CONSULTANCY SERVICES. TİC. A.Ş.
ENVIRONMENTAL LABORATORY**

NOISE REPORT

İstasyon Mahallesi Yunus Emre Sokak No:10 / 1
İlkadım / SAMSUN



SAM-DR 21-
003
01.21

Company Address Sağanak Energy Investment Transmission Trade Corporation
Report Number/Date SAM-DR 21-003 / 20.01.2021

1. GENERAL INFORMATION**Chart 1.1 Report Information**

Report Number / Date	SAM-DR 21-003 / 20.01.2021
Requesting	Sağanak Energy Investment Transmission Trade Corporation
Requester's Address	Kocaeli Province Kandıra District Hacımazlı Bağıranlı, Antaplı, Within the Border of Sapalı District

This report was prepared in 1 original copy and sent to the customer. This report is archived electronically by our Laboratory

Chart 1.2. The closest settlements;

Measurement Points	Measurement Coordinates	
	X	Y
HACIMAZLI GENÇALİ	41° 5'44.36"	30° 2'11.78"
HACIMAZLI	41° 6'2.30"	30° 2'58.05"
BOLLU	41° 6'33.60"	30° 3'42.34"

Background measurements were taken for 24 hours in front of sensitive residences located near the facility site.

24-hour background noise measurements were taken from Gençali, Hacımazlı and Bolu villages near the facility site.

2. INFORMATION ABOUT THE BUSINESS

Sağanak Energy Investment Transmission Trade Corporation / Kocaeli Province Kandıra District
Hacımazlı Bağıranlı, Antaplı, Within the Border of Sapalı District

2.1. DETERMINATION AND EVALUATION OF THE CURRENT NOISE LEVEL OUTSIDE THE SENSITIVE STRUCTURE WHICH IS NEAREST TO THE PLANT INSTALLATION BASED ON TS 9315 AND TS 9798 STANDARDS

There are villages around the area where the facility will be established. 24-hour background noise measurements were made at 3 locations of the 3 closest villages to the facility to be established.

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**ARTEK ENGINEERING ENVIRONMENTAL MEASUREMENT
VE CONSULTANCY SERVICES. TİC. A.Ş.
ENVIRONMENTAL LABORATORY**

NOISE REPORT

İstasyon Mahallesi Yunus Emre Sokak No:10 /1
İlkadım / SAMSUN



SAM-DR 21-
003
01.21

Company Address Sağanak Energy Investment Transmission Trade Corporation
Report Number/Date SAM-DR 21-003 / 20.01.2021

2.2. DISTANCE OF MEASURING POINTS TO THE PROJECT AREA

Chart 2.1 Distances between Measurement Points Near the Facility (m)

Measurement Points	HACIMAZLI GENÇALI	HACIMAZLI	BOLLU
HACIMAZLI GENÇALI	-	1170 m	2600 m
HACIMAZLI	1170 m	-	1400 m
BOLLU	2600 m	1400 m	-

Chart 2.2 Distances of Measurement Points to Project Area (m)

Measurement Points	Distances from the Turbines in the Project Area (m)
HACIMAZLI GENÇALI	680 – T7 Distance to Turbine
HACIMAZLI	900 – T6 Distance to Turbine
BOLLU	800 – T6 Distance to Turbine

“ The measurement points have been selected based on sensitive residences close to the project area.

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VE CONSULTANCY SERVICES. TİC. A.Ş.
ENVIRONMENTAL LABORATORY**

NOISE REPORT

İstasyon Mahallesi Yunus Emre Sokak No:10 /1
İlkadım / SAMSUN



SAM-DR 21-003
01.21

Company Address Sağanak Energy Investment Transmission Trade Corporation
Report Number/Date SAM-DR 21-003 / 20.01.2021

Chart 2.3 Measurement values in front of sensitive houses close to the facility;

Date	Residential area	L _{eqA} (dBA)	L _{peakC} (dBC)	LC _{max} (dBC)	Temperature (°C)	Moisture (%)	Air Velocity (m/s²)
14.01.2021	Hacımazlı Gençali	54,1	115,5	97,8	1,8	71,0	0,13
14.01.2021	Hacımazlı	51,8	119,9	95,4	2,3	69,9	0,17
14.01.2021	Bollu	56,0	116,1	98,1	1,9	69,6	0,09

LeqA: It is the noise value in dBA unit that gives the average value of sound energy or sound pressures continuing over a certain period of time.

Ppeak: C is the maximum value of the weighted instantaneous noise pressure.

LCmax: It is the highest value of noise varying with time at any time.

The measurement locations and values performed at the determined points are given in Chart 2.2. Measurements taken at a height of 1.5 meters

Chart 2.3: The measurement values given include the measurement results made within the scope of Kandıra Wind Power Plant Project.

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