ALARKO TARIM

Geothermal Resource Exploration Drilling and Greenhouse Project

ENVİRONMENTAL AND SOCIAL DUE DILIGENCE REPORT

(ESDD)

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ANKARA

ALARKO TARIM

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PROJECT NO: 24-011

ŞUBAT 2025

CLIENT:

NATA

İsmetpaşa Mah. İsmet Paşa Küme Evleri Nata
Tarım No: 268 Mahmudiye / Eskişehir

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TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

ABBREVIATIONS

Alsera	Alsera Geothermal Agriculture Food Industry and Trade Incorporated Company
AoI	Area of Influence
BOD	Biochemical Oxygen Demand
CIA	Cumulative Impact Assessment
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CoC	Code of Conduct
DSİ	State Hydraulic Works
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
EHS	Environment, Health, and Safety
EIA	Environmental Impact Assessment
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESKİ	Eskisehir Metropolitan Municipality Water and Sewerage Administration
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental and Social Standard
ETL	Energy Transmission Line
GHG	Greenhouse Gases
GIIP	Good International Industry Practices
GM	Grievance Mechanism
Gürlük	Gürlük Geothermal Energy Agriculture Greenhouse Food Industry and Trade Incorporated Company
IFC	International Finance Corporation
IFI	International Financial Institutions
IUCN	International Union for Conservation of Nature Red List Database
KBA	Key Biodiversity Area
MSDS	Material Safety Data Sheet
NCG	Non-Condensable Gases
OHS	Occupational Health & Safety
OP	Operational Policy
PID	Project Introduction Document
PM	Particulate Matter
PPE	Personal Protective Equipment
PS	Performance Standards
RoCWP	Regulation on Control of Water Pollution
SEP	Stakeholder Engagement Plan
TSKB	Industrial Development Bank of Turkey

VEC	Valued Environmental and Social Components
WB	World Bank
WBG	World Bank Group
WWTP	Waste Water Treatment Plant

1 EXECUTIVE SUMMARY

Alarko Tarım, under the roof of Alarko Holding, carries out production in greenhouse campuses of over 1000 decares in Afyon and Denizli. Alarko Tarım acquired Nata Tarım, which was operating in the region, to establish a new campus in Eskişehir. The share acquisition took place on 07.05.2024. The project components were initially planned to be gathered under the name Alsera, but this plan was changed, and it was decided to be gathered under Nata Tarım (Project Owner). The Project Owner carries out Geothermal Resource Exploration Drilling and Greenhouse cultivation activities in Eskişehir Province, Mahmudiye District, İsmetpaşa Neighbourhood and plans to establish a total net 850 decares of greenhouse production area. These 850 acres consist of Eskişehir-20, and Eskişehir-21 greenhouses and 775 acres of the investment will be a Greenfield greenhouse investment. Information on Eskişehir-20 and Eskişehir-21 greenhouse areas is presented below and summarised in **Table 3-1**.

Nata Tarım aims to bring these resources into the economy and increase agricultural productivity in the region through modern greenhouse activities and geothermal resource exploration and utilisation. The Project Owner plans to construct a new greenhouse of 40.8 acres in addition to the 76.4 acres currently under production. This area is named as Eskişehir-20 greenhouse.

There are 5 production wells and 1 reinjection well for the currently operating greenhouse area in the Nata Tarım campus. The existing infrastructure of Nata Tarım will be expanded with the Project infrastructure.

In addition, a new greenhouse will be built on 813 decares of land and the net greenhouse production area will be 734 decares. This greenhouse is named as Eskişehir-21 greenhouse. In the Eskişehir-21 greenhouse, production will be made using an area of approximately 813 decares (**Table 3-2**) with 3 greenhouse campuses. With these two greenhouse areas, the net production area will increase to 850 acres.

It is planned to drill 17 production and 9 reinjection wells to meet the energy needs of Eskişehir-21 Greenhouse areas. The characteristics of the geothermal wells will be determined by drilling tests; thus, the number and locations of the wells will be finalised according to the energy requirement.

For the implementation of the Project, potential financing is requested from the Industrial Development Bank of Turkey (TSKB) for the construction of an 850-acre greenhouse campus, wells to meet the energy needs of the campus, reinjection wells, cold water wells, heat centre construction, energy transmission line, packaging areas, administrative building construction and Alarko Tarım Academy construction and other project components related to these areas.

Therefore, the Project Owner commissioned 2U1K to prepare an Environmental and Social Due Diligence (ESDD) report, Stakeholder Engagement Plan (SEP) and Environmental and

Social Management Plan (ESMP) in line with national legal requirements, World Bank Operational Policies and TSKB Geothermal Development Project Environmental and Social Management Framework. The Project commenced in February 2024 under the name Alsera and was revised in December 2025 under the name Nata Tarım.

It is planned to grow mainly summer crops such as truss and pink tomatoes, peppers, cucumbers and seed crops in the greenhouses, and the crop varieties can be changed according to the needs.

Within the scope of the project, Gürlük Geothermal Energy Agriculture Greenhouse Food Industry and Trade Incorporated Company, and after the merger of the company, on 21.05.2024, Alsera Geothermal Agriculture Food Industry and Trade Incorporated Company (Validity date: 25/04/2026) and operating licence (Validity date: 24/06/2046). Nata Tarım has an operating licence with a validity date of 04/06/2043.

Within the scope of the project, Dünyaçed Engineering Consultancy and Environmental Consultancy Ind. Trade. Co. Ltd. Within the scope of Environmental Impact Assessment Regulation, Gürlük Geothermal Energy Agriculture Greenhouse Food Industry and Trade Inc. within the scope of Environmental Impact Assessment Regulation, and the decision of 'Environmental Impact Assessment is not required' was taken on 04.07.2024.

Currently, the land acquisition process has been completed and a total area of 2,390,259.96 m^2 has been purchased from 20 people. All land acquisition was made through voluntary purchase method, and 67 parcels were purchased in total. The lands were purchased from the owners and there are no previous tenants or users on the lands. If the need for land acquisition arises in the future, the project owner will adopt the voluntary purchase approach for these lands as well.

Currently, construction works have not started. The Project is in the planning and design phase. Drilling works and greenhouse construction works are planned to start in 2025 and be completed in 2026. The project work plan is given in **Figure 3-4** and presented in the annexes. Detailed work plans are being prepared.

A precise construction plan has not yet been developed, and 21 workers are expected to work in the first well drilling. After the first drilling, the well data will be evaluated and the work in other wells will start according to the data to be obtained from here. After the first well, it is aimed to drill 5 wells at the same time and 105 people are expected to work. During the greenhouse construction phase, it is expected that there will be approximately 750 employees at the highest period for the construction of 850 acres of net greenhouse campus. During the operation phase, it is foreseen that one person will work per acre and approximately 900 people are expected to be employed in the greenhouses. The project owner will prioritise local employment and women's employment during both construction and operation. The ratio of female employees is expected to be around 90% during the greenhouse operation period.

The closest settlement to the project is İsmetpaşa Neighbourhood, which is 1.5 km away. In addition, two stock farms located 200 metres and 700 metres from parcels 121, block 33, 34, 35, which are among the areas where land acquisition has been completed in the project, are included in the project impact area.

An ESMP has been prepared that includes mitigation measures to be taken to prevent or reduce the adverse environmental and social impacts of the Project to acceptable levels. In addition, the Project-specific SEP defines the Project owner's commitments and strategy for effective communication with stakeholders throughout the life of the Project. SEP will be updated with the Project development.

2 LEGAL AND INSTITUTIONAL FRAMEWORK

The scope of ESDD and the examination of the compliance with the relevant legislation and standards covers the followings:

- The national legislation for Environment, Health, and Safety (EHS) subjects as well as employee rights (or worker rights or labourer rights),
- IFC Performance Standards (2012),
- IFC Environment, Health, and Safety Guides, and
- World Bank Safeguard Policies (OPs).

2.1 National Legislation

The 'Environmental Law' approved in August 1983 is one of the main legislations related to the Project. Many regulations and decrees issued under the Environmental Law are directly or indirectly related to the Project.

A summary of national laws and regulations to mitigate potential environmental and social impacts that may arise from Project activities is presented in **Table 2-1**. Institutional opinions and letters are presented in Annex-C.

- Within the scope of the Project, Dünyaçed Engineering Consultancy and Environmental Consultancy Ind. Trade. Co. Ltd. prepared the Project Introduction Document (PID)1 on behalf of Gürlük Geothermal Energy Agriculture Greenhouse Food Industry and Trade Inc. and submitted it to the Governorship of Eskişehir on 28.03.2024. After the examination of the Governorate, the EIA process of the project started on 15.04.2024. On 10.07.2024, the Governorate decided that 'Environmental Impact Assessment is not required' for the Geothermal Resource Exploration Drilling and Greenhouse Activity Project at Site No. IR:2023-02 (ER:3339672) in accordance with Article 17 of the EIA Regulation.
- The geothermal resource exploration licence numbered 2024-14 is valid from 25/04/2023 to 25/04/2026 and the operating licence numbered 2024-15 and dated 24/06/2016 is valid until 24/06/2046. The exploration and operation licences were first granted to Gürlük Geothermal Energy Agriculture Greenhouse Food Ind. and Trd. Inc., and after the company merger, it revised on 21.05.2024 on behalf of Alsera Geothermal Agriculture Food Industry and Trade Inc.

[1] Geothermal Resource Exploration Drilling and Greenhouse Activity at Site No: IR:2023-02 (ER:3339672) https://eced.csb.gov.tr/jsp/ek1/50507

- The project has a resource exploration licence (validity date: 25/04/2026) and an operating licence (validity date: 24/06/2046). There is an operating licence (validity date: 04/06/2043) belonging to Nata Tarım.
- Within the scope of the project, necessary permits will be obtained in accordance with Articles 13 and 14 of the Soil Conservation and Land Use Law No. 5403.

Article 13:

"Absolute agricultural lands, special crop lands, planted agricultural lands and irrigated agricultural lands cannot be used for purposes other than agricultural production. However, provided that there is no alternative area and the Board approves.

g) (Appendix: 26/3/2008-5751/1 Art.) Geothermal-based technological greenhouse investments,

For this purpose, the Ministry may authorise the requests for the misuse of these lands, provided that soil conservation projects are complied with. The Ministry may delegate this authority to the governorships." [2]

Article 14

"Plains with high agricultural production potential, where soil loss and land degradation occur rapidly due to various reasons such as erosion, pollution, misuse or improper use, are determined as great plain protection areas by the decision of the President of the Republic by taking the opinion of the board or boards."

- Application was made in accordance with the Pasture Law No. 4342 and the institutional letter was received that the project area is outside the pasture areas.
- Permission will be obtained within the scope of the Law No. 3083 Agricultural Reform on Land Arrangement in Irrigation Areas.
- There is a groundwater well belonging to the Project Owner in the project area. Necessary permissions will be obtained from DSİ (State Hydraulic Works) 3rd Regional Directorate and/or Eskişehir Metropolitan Municipality General Directorate of Water and Sewerage Administration for the supply of water that will be needed within the scope of the Project.
- Permits will be obtained for the storage of wastewater in a double-compartment sealed septic tank and sending it to Eskişehir Metropolitan Municipality ESKİ General Directorate Wastewater Treatment Plant during the drilling works and a protocol will be made for the acceptance of wastewater.

[2] https://www.mevzuat.gov.tr/mevzuatmetin/1.5.5403.pdf

- Approximately 750 people are expected to work in the greenhouse construction. It is planned to install a package treatment plant during the construction period. During the construction period, the subcontractor responsible for the construction must obtain an environmental permit for the wastewater treatment plant.
- During the operation period, it is planned to construct WWTP. At this point, the topographical structure of the region poses difficulties. There is no receiving environment in the immediate vicinity to discharge under suitable conditions. Therefore, more than one option is considered. Among these options are the construction of WWTP and extension of the municipal sewerage system by the Project Owner. Another option is to find the receiving environment where the wastewater of İsmetpaşa Neighbourhood is discharged after WWTP or other suitable receiving environments in the vicinity. Another option is to use advanced treatment at the WWTP, to store the treated water appropriately for irrigation purposes in agriculture and to transfer the water to the areas in need in the region. The last project has not been finalised. If the establishment of a wastewater treatment plant for the operation period of the project is finalised, necessary permits should be obtained in accordance with the Regulation on Water Pollution Control. Project approval file should be prepared for WWTP, WWTP identification document and environmental permit should be obtained.
- Temporary activity certificate should be obtained before the operation period, and then environmental permit applications should be made and obtained.

Table 2-1. National legislation related to the project

Legislation	Date of Official Gazette	Issue of Official Gazette
Environmental Law	09.08.1983	18132
Regulation on Environmental Impact Assessment	29.07.2022	31907
Regulation on Environmental Permit and License	10.09.2014	29115
Regulation on Waste Management	02.04.2015	29314
Regulation on Control of Water Pollution	31.12.2024	25687
Regulation on Landfilling of Wastes	26.03.2010	27533
Regulation on the Management of Waste Oils	21.12.2019	30985
Regulation on Control of Waste Vegetable Oil	06.06.2015	29378
Regulation on Control of Packaging Waste	26.06.2021	31523
Medical Waste Control Regulation	25.01.2017	29959
Regulation on the Control of End-of-life Tires	25.11.2006	26357
Regulation on the Control of Waste Batteries and Accumulators	31.08.2024	25569
Zero Waste Regulation	12.07.2019	30829
Regulation on Pits to be Built in Places Where It is Not Possible to Build a Sewer System	09.03.1971	13783
Regulation on the Ambient Noise Emission Caused by Equipment Used Outdoors	30.12.2006	26392
Regulation on Control of Industrial Air Pollution	03.07.2009	27277
Regulation on Air Quality Assessment and Management	06.06.2008	26898
Regulation on the Control of Odour-Creating Emissions	19.07.2013	28712

Legislation	Date of Official Gazette	Issue of Official Gazette
Regulation on Control of Ambient Noise	30.11.2022	32029
Regulation on Control of Soil Pollution and Point Source Contaminated Lands	08.06.2010	27605
Regulation on the Control of Excavation Soil, Construction and Demolition Wastes	18.03.2004	25406
Occupational Health and Safety Law	20.06.2012	28339
Turkish Building Earthquake Regulations	18.03.2018	30364
Law on Right to Information	24.10.2003	25269
Regulation on Contractors and Sub-contractors	28.09.2008	27010
Law on the Use of the Right to Petition	10.11.1984	18571
Law on Protection of Personal Data	07.04.2016	29677
Regulation on the Protection, Utilisation and Planning of Agricultural Lands	03.07.2005	30265
Geothermal Resources and Natural Mineral Waters Law	13/06/2007	26551
Regulation on Occupational Health and Safety Services	29.12.2012	28512
Regulation on Protection of Employees from Noise-Related Risks	28.07.2013	28721
Law on the Groundwater	23.12.1960	10688

2.2 International Standards

TSKB expects borrowing organisations to ensure that their Projects comply with National EHS Legislation as well as good international practices, including World Bank (WB) Safeguard Policies, EHS Guidelines and best practice documents.

2.2.1 World Bank Policies

WB manages projects and activities with Conservation Policies to ensure that they are carried out in an environmentally, financially, and socially sound manner. Conservation Policies include Environmental Assessments and other policies that define the environmental and social negative impacts of projects as well as their mitigation and prevention. These policies are expanded in the “World Bank Operations Manual”, which also provides guidance on the Operational Policies (OP) and composition.

Environmental Assessment Policy (OP 4.01)

The purpose of this policy:

- To ensure that the projects proposed for bank financing are environmentally and socially valid and sustainable,
- Informing decision makers about the nature of environmental and social risks,
- To increase transparency and participation of decision makers in the decision-making process.

Under the WB O.P. 4.01, projects are classified under categories A, B or C according to the degree of their potential impact on the environment:

Category A projects: Projects with impacts that could potentially result in significant and diverse environmental and/or social impacts and problems in the future and that are not easily detected at the time of classification,

Category B projects: Projects who's environmental and/or social impacts are site-specific and/or have easily detectable and preventable impacts. Furthermore, Category B projects can be divided into two within its structure as B and B+ projects (this is a practical usage, this is not defined in OP 4.01 of WB Policy). Category B+ projects have relatively more impacts and mitigation measures comparing to Category B projects, yet the impacts and mitigation measures are not significant enough to be recognized as Category A projects. (GEOTHERMAL DEVELOPMENT PROJECT, 2021)

Category C projects: Projects with minimal or no environmental and social impacts.

FI projects: Financial intermediation activities.

Natural Habitats (OP 4.04)

- To conserve natural habitats and their biodiversity
- To avoid significant conversion/degradation of critical natural habitats
- To ensure the sustainability of services and products provided to human society by natural habitats.

Physical Cultural Resources (OP 4.11)

- To ensure the identification and protection of Physical Cultural Resources (PCR), including archaeological and historical sites, historic urban areas, sacred sites, graveyards, burial sites and unique natural values
- To ensure the compliance with national legislation regarding the protection of physical cultural property

Involuntary Resettlement (OP 4.12)

- To avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs,
- To assist displaced person in improving their former living standards; it encourages community participation in planning and implementing resettlement,
- To provide assistance to affected people, regardless of the legality of title of land.

2.2.2 International Agreements

Turkey is a signatory to many international agreements, including the:

- Stockholm Convention on Organic Pollutants.
- Convention on Long-range Trans-Boundary Air Pollution (CRLTAP).
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.
- Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal.
- Kyoto Protocol regarding to the United Nations Framework Convention on Climate Change.
- Montreal Protocol on Substances that Deplete the Ozone Layer.
- Convention on the Conservation of European Wildlife and Natural Habitats
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Vienna Convention for the Protection of the Ozone Layer.
- The Protocol on Environmental Protection to the Antarctic Treaty.

Paris Agreement

The Paris Agreement sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. It also aims to strengthen countries' ability to deal with the impacts of climate change and support them in their efforts.

The Paris Agreement is the first-ever universal, legally binding global climate change agreement, adopted at the Paris climate conference in December 2015. The EU and its Member States are among the close to 190 Parties to the Paris Agreement. The EU formally ratified the agreement on 5 October 2016, thus enabling its entry into force on 4 November 2016. For the agreement to enter into force, at least 55 countries representing at least 55% of global emissions had to deposit their instruments of ratification.

The Agreement entered into force in Turkey by being published in the Official Gazette dated 07.09.2021 and numbered 31621.

3 PROJECT DESCRIPTION

3.1 Project Location and Project Overview

Alarko Tarım produces in greenhouse campuses of over 1000 decares in Afyon and Denizli under the roof of Alarko Holding. In order to establish a new campus in Eskişehir, Alarko Tarım acquired Nata Tarım, which has a geothermal greenhouse campus within 193 acres of land located on parcels 131-1, 132-1 and 132-2. The share acquisition took place on 07.05.2024. The project components were initially planned to be gathered under the name Alsera, but this plan was changed, and it was decided to be gathered under Nata Tarım (Project Owner). The Project Owner carries out Geothermal Resource Exploration Drilling and Greenhouse Farming activities in Eskişehir Province, Mahmudiye District, İsmetpaşa Neighbourhood and plans to establish a total net 850 decares of greenhouse production area. These 850 acres consist of Eskişehir-20 and Eskişehir-21 greenhouses and 775 acres of the investment will be new (Greenfield) greenhouse investment. Information on Eskişehir-20 and Eskişehir-21 greenhouse areas is presented below and summarised in **Table 3-1.**

Nata Tarım aims to bring these resources into the economy and increase agricultural productivity in the region through modern greenhouse activities and geothermal resource exploration and utilisation. The Project Owner plans to construct a new greenhouse of 40.8 acres in addition to the 76.4 acres currently under production. This area is named as Eskisehir-20 greenhouse.

In addition, a new greenhouse will be constructed on 813 acres of land and the net greenhouse production area will be 734 acres. This greenhouse is named as Eskişehir-21. With these two greenhouse areas where hydroponic agriculture will be realised, the net production area will increase to 850 acres. For the realisation of the Project, the Project Proponent is requesting potential financing from the Industrial Development Bank of Turkey (TSKB) for the construction of a net 850 acres greenhouse campus, wells to meet the energy needs of the campus, reinjection wells, cold water wells, heat centre construction, packaging areas, administrative building construction and Alarko Tarım Academy construction and other project components related to these areas.

Therefore, the Project Owner commissioned 2U1K to prepare an Environmental and Social Due Diligence (ESDD) report, Stakeholder Engagement Plan (SEP) and Environmental and Social Management Plan (ESMP) in line with national legal requirements, World Bank Operational Policies and TSKB Geothermal Development Project, Environmental and Social Management Framework.

It is planned to start in 2025 and to be completed in 2026. The current greenhouse area of Nata Agriculture is 76.4 decares, 40.8 decares of new greenhouse area will be established. In Eskişehir-21 greenhouse, production will start by using an area of approximately 813 acres with 3 greenhouse campuses. **Table 3-2** summarises the area information for Eskişehir-21

and Eskişehir 20 and **Figure 3-3** the layout of Eskisehir-21. Although all greenhouse settlements will be established on the parcels (**Table 3-3**) for which land acquisition has been completed, the net and gross areas of greenhouses may change due to the ongoing project design phase.

Table 3-1. Gross and net areas of greenhouse campuses

	Eskişehir-20 Greenhouse		Eskişehir-21 Greenhouse	Total
Gross Area	120 acres		813 acres	933 acres
Net Production Area	Available	New (Greenfield)	New (Greenfield)	850 acres
	76.4 acres	40.8 acres	734 acres	

For the Project, which is still in the planning phase, 2U1K has carried out 4 site visits and prepared the Environmental and Social Management Plan as an annex to the ESDD, including the assessment results obtained during the site visits. The impacts and mitigation measures identified in the ESDD, and its annexes also cover the existing greenhouse area.

It is planned to grow mainly summer crops such as truss and pink tomatoes, peppers, cucumbers and seed crops in the greenhouses, and the crop varieties can be changed according to the needs. The project work flow diagram is given in **Figure 3-1**.

In addition to the greenhouses, the Administrative Building and Alarko Tarım Academy constructions are also within the scope of the Project.

In addition, it is planned to establish social facilities in the campus in the following stages. Among these social facilities, buildings that can provide social services such as training centre for employees, lodging, nursery for the children of employees, etc. are planned.

Figure 3-1. Workflow Diagram

It is planned to drill 17 production and 9 reinjection wells to meet the energy needs of the greenhouse areas. The characteristics of the geothermal wells will be determined by drilling tests; thus the number and locations of the wells will be finalised according to the energy requirement. In addition, meeting a portion of the energy requirement from Nata Tarım's 5 production and 1 reinjection wells in operation is considered in the designs. The tentative locations of the first wells are shown in **Figure 3-2**.

In case of positive results from the drilling works in the wells, geothermal based hydroponic greenhouse settlements will be established.

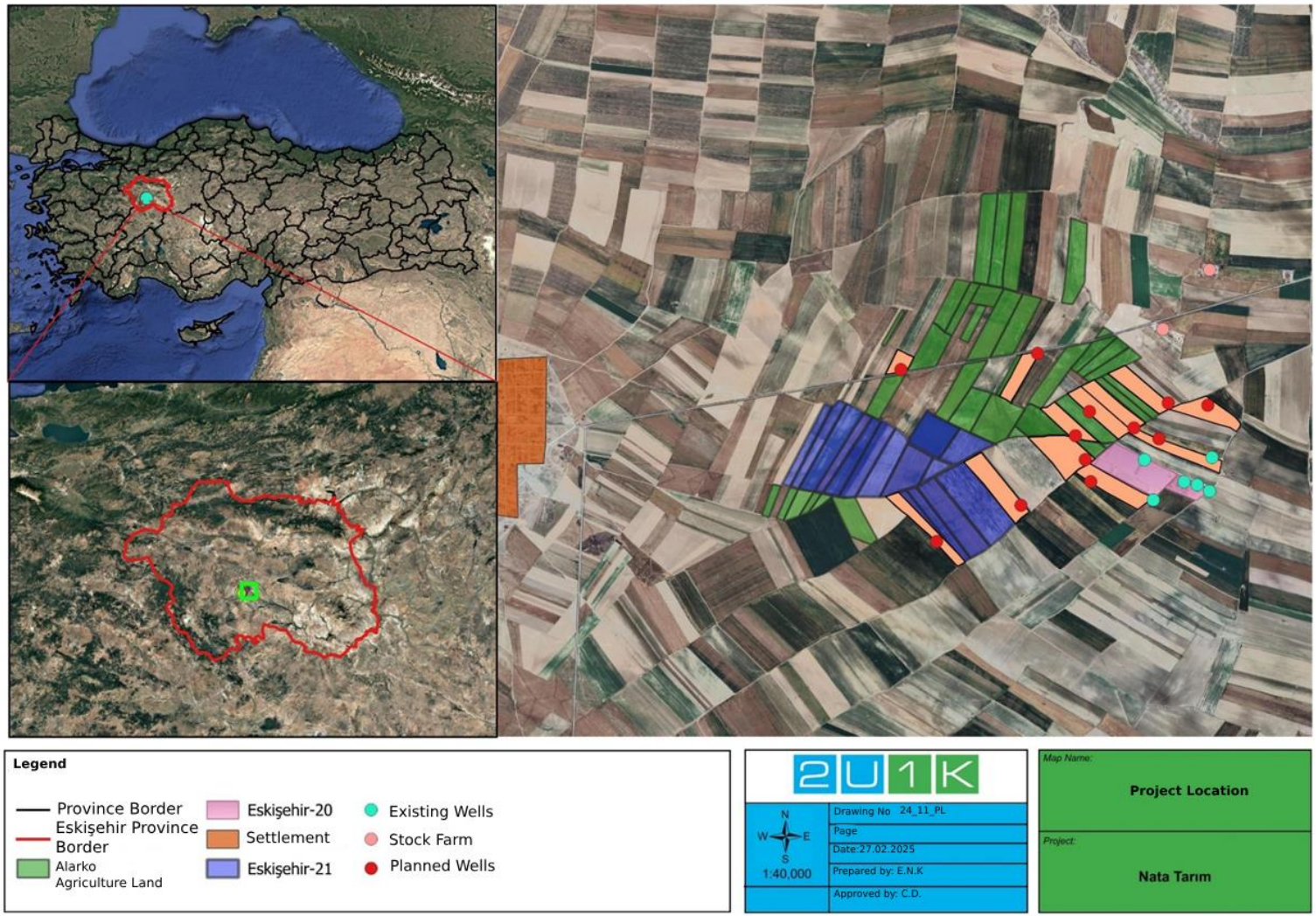


Figure 3-2. Greenhouse areas and location of wells

The geothermal resource exploration licence numbered 2024-14 obtained by the project owner is valid from 25/04/2023 to 25/04/2026 and the operating licence numbered 2024-15 and dated 24/06/2016 is valid until 24/06/2046. The exploration and operation licences were first granted to Gürlük Geothermal Energy Agriculture Greenhouse Food Industry and Trade Inc. (Gürlük), and after the company merger, on 21.05.2024, Alsera Geothermal Agriculture Food Industry and Trade Inc. and will be revised on behalf of Nata Tarım.

The exploration licence area is 1034.12 ha, and the operation licence area is 2225.65, and the operation licence area consists of two polygons. 1st Polygon is 1648.15 ha and 2nd Polygon is 577.50 ha.

Nata Tarım has a 10000-ha operation licence numbered IR:2022-08 (ER:3422598). The licence has a term from 04/06/2013 to 04/06/2043. Licence areas are given in **Figure 3-13**.

For the project, Dünyaçed Engineering Consultancy and Environmental Consultancy Ind. Trade. Co. Ltd. prepared the Project Introduction Document[3] on behalf of Gürlük and submitted it to the Governorship of Eskişehir on 28.03.2024. After the examination of the Governorate, the EIA process of the project started on 15.04.2024. On 04.07.2024, in accordance with Article 17 of the EIA Regulation, the Governorate decided that 'Environmental Impact Assessment is not required' for the Geothermal Resource Exploration Drilling and Greenhouse Activity Project at Site No: IR:2023-02 (ER:3339672). 43549071 220-02 'Environmental Impact Assessment is Not Required' decision with decision number E-2024139 is given in Annex-B as an attachment to the report.

Currently, the land acquisition process has been completed, and the ownership of the Project area belongs to Beybur Agriculture and Livestock Inc. It is planned to transfer the shares of Beybur Agriculture and Livestock Inc. to Nata Tarım at a later stage. According to the current data obtained from the project owner, a total area of 2,390,259.96 m^2 has been purchased from 20 people. The lands have been purchased from the owners and there are no formal or informal users in these areas. All land acquisition was made by voluntary purchase method, and 67 parcels were purchased in total. If there is a need for land acquisition in the later stages of the Project, a voluntary procurement approach will be adopted and the processes will be carried out in accordance with World Bank OP 4.12. The lands in the area where the project will be realised have the characteristics of fields.

[3] Geothermal Resource Exploration Drilling and Greenhouse Operation at Site No: IR:2023-02 (ER:3339672)

Table 3-2. Eskişehir-21 Greenhouse area information

		Production Area (m^2)	Technical Area (m^2)	Total Greenhouse Area (m^2)	Production Area (m^2)
Eskişehir-21	**Greenhouse -1**	**369.336**	19.766	14.674	403.776
	Greenhouse -2	**90.003**	6.480	4.509	100.992
	Greenhouse -3	**275.900**	20736	12.532	309.168
Total		**735.239**	46.982	31.715	**813.936**
Eskişehir-20	**20 C**	**38.520**	1.850	1.870	**42.240**

Figure 3-3. Eskişehir-21 greenhouse layout (Annex-M - Greenhouse Layout)

The parcels and conditions of the Project site, Eskişehir-20 and Eskişehir-21 greenhouse areas are summarised in the table below.

Table 3-3. Land Plot-Parcel Information

	Settlement	Plot, Parcel	Land Type	Ownership Prior to Land Acquisition
Parcels of land acquired for the project	Mahmudiye/İsmetpaşa	117 plot, 25, 31, 44, 45, 46, 78, 86, 88, 94, 95, 96, 54, 87 and 90 parcel	Field	Individual
		121 plot, 13, 20, 21, 22, 23, 24, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42 and 43 parcel		
		122 plot, 9, 10, 11, 12, 13, 14, 15, 16 and 17, 18 parcel		
		125 plot, 7, 9, 10, 13 and 15, 17 parcel		
		126 plot, 1, 2, 3 and 4 parcel		
		127 plot 1, 4,5 and 6 parcel		
		128 plot 23 parcel		
		130 plot 3 and 4 parcel		
		165 plot 1 parcel		
Lands where Eskişehir-21 Greenhouse will be established	Mahmudiye/İsmetpaşa	121 plot, 21 and 22 parcel	Field	Individual
		122 plot, 10, 11, 12, 13, 14, 15, 16, 17 and 18 parcel		
		126 plot, 1, 2, 3 and 4 parcel		
		127 plot 1 parcel		
Lands where Eskişehir-20 Greenhouse will be established	Mahmudiye/İsmetpaşa	131 plot 1 , 132 plot 1 and 2 parcels	Field	Individual
First determined Drilling Areas (Well coordinates may change after the studies to be carried out)	Mahmudiye/İsmetpaşa	126 plot 1 parcel (M6-25), 127 plot 1 parcel (M5-25), 117 plot 31 parcel (M1), 127 plot 4 parcel, 132 plot 2 parcel (M9), 121 plot 37 parcel (M5), 121 plot 28 parcel, 121 plot 28 parcel (M8), 130 plot 3 parcel (M3-25), 121 plot 40 parcel (M1-25), 121 plot 43 parcel (M2-25), 129 plot 3 parcel	Field	Individual

3.2 Project Components

The main components of the Project, which will utilise geothermal energy in hydroponic agriculture greenhouses, are listed below. The project is targeted to start in 2025 and to be completed in 2026. The project business plan is given in **Figure 3-4** and presented in the annexes. Detailed work plans are being prepared.

1. Geothermal production and reinjection wells
2. Heat conduction line
3. Greenhouse campus
4. Energy transmission line
5. Cold Water Wells
6. Administrative building, Academy building
7. Temporary Facilities

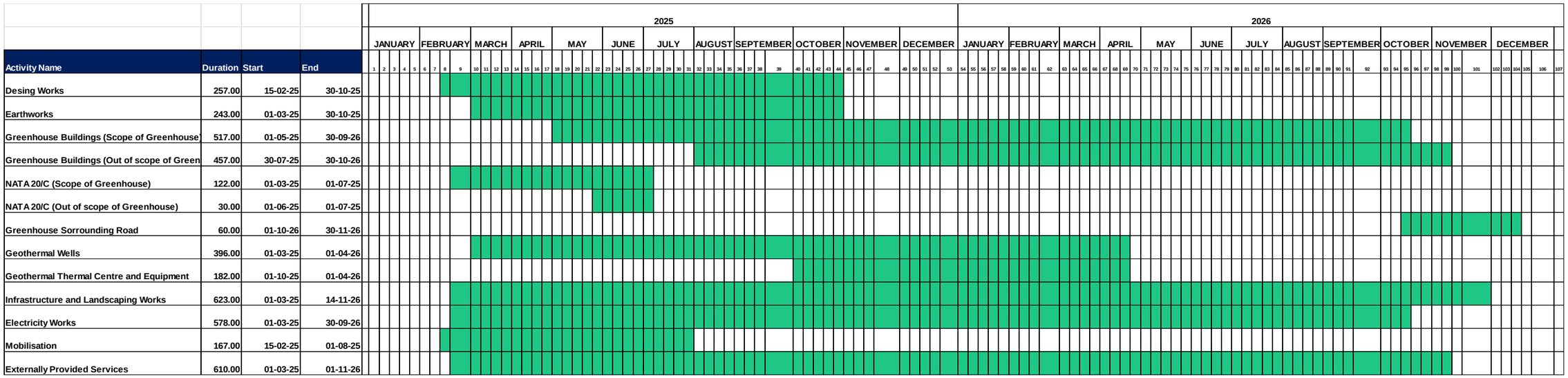


Figure 3-4. Project draft work plan

3.2.1 Geothermal Production and Reinjection Wells

Production wells need to be drilled to meet the energy needs of the hydroponic agriculture activities to be carried out within the scope of the project. According to the first determinations, 17 production wells will be able to meet the energy requirement. For 17 production wells, 9 reinjection wells are planned to be drilled.

Within the scope of the Project, Project Introduction Document was prepared in accordance with the national EIA legislation and 'Environmental Impact Assessment is Not Required' decision was taken on 04.07.2024. The wells included in the Project Introduction Document and their coordinates are presented in **Table 3-4**.

Table 3-4 List of well locations with EIA opinion

Well Coordinates (ED50_33_6)		
Wells	**Y**	**X**
S1	320601.948	4371362.060
S2	321465.143	4371699.199
S3	321873.957	4371279.061
S4	321777.956	4370885.058
S5	321365.954	4370336.054
S6	321879.957	4370723.057
S7	321877.957	4371046.059
S8	321678.956	4371077.059
S9	321644.636	4371214.133
S10	321009.951	4371162.059
S11	321321.953	4371013.058

Due to the changes made in the Project design, new wells have been drilled. Necessary studies will be carried out within the scope of the EIA Regulation for the wells that have not been previously evaluated within the scope of national regulations (not included in the scope of the 'Environmental Impact Assessment Not Required' decision) and Project activities will be carried out as a result of the decision.

After the well locations are finalised, detailed environmental and social assessments will be made in these areas and added to the ESDD.

New wells planned to be drilled and their coordinates are given in **Hata! Başvuru kaynağı bulunamadı.**.

Table 3-5 Coordinates of 9 wells planned for drilling

Well Coordinates (ED50_33_6)		
Wells	**Y**	**X**
M1	320591.15	4371365.65
M5	321778.13	4370885.74
M8	321878.00	4371048.86
M9	321875.67	4370569.33
M1-25	322180.82	4370930.03
M2-25	322420.12	4371095.21
M3-25	322351.66	4370850.93
M5-25_New	321393.76	4370418.52
M6-25_New	320808.61	4370184.04

The drilling works for the planned wells, which are planned to start in the first quarter of 2025, will be carried out by the subcontractor and each drilling area will be 40x40 m (1600 m^2) in size. The wells will be approximately 8.5-10 cm in diameter and 1000 ± 200 metres deep. There will be 50 m^2 vegetative storage area, 20 m^2 sludge pond and 100 m^2 clean water pond in each borehole area. The drill site layout is given in **Figure 3-5**.

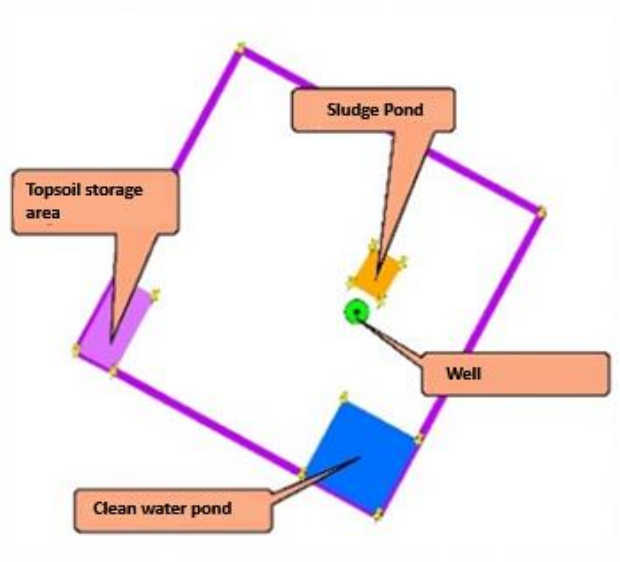


Figure 3-5. Layout plan of drilling areas

After the completion of the first well works, it will be planned to drill other wells according to the data to be obtained from the wells. After the first well, 5 wells will be drilled at the same time. Although the work in each borehole is expected to take approximately 2 months, it is aimed to complete the work in 12 of the initially planned wells (from the 17 production wells and 9 reinjection wells) within 6 months.

In the areas where drilling activities will be carried out, first the topsoil will be stripped, and the stripped soil will be stored in a suitable temporary storage area. Drilling sludge ponds will be created, and the land will be prepared in accordance with the boring machine. Impermeable ponds will be constructed for the drilling fluid to be used. Wastewater originating from drilling and well work will not be discharged into the receiving environment.

Drilling sludge is a heavy, viscous liquid mixture used in drilling operations to drill formations with water and to clean and cool the drill bit.[4] When the water in the drilling sludge pond decreases, the prepared bentonite and water mixture drilling fluid will be transferred from the leak-proof mixture tank kept on the concrete floor to the sludge pond. The waste generated during the works will be disposed of in accordance with the Waste Management Regulation and the Regulation on Regular Storage of Wastes.

If no geothermal resources are found in the well at the end of the drilling work, the drilling holes will be closed by concrete, the equipment will be dismantled, and the land will be rehabilitated with the scraped topsoil. If geothermal fluid is found, it will be circulated through a closed-circuit system and energy will be transferred to the greenhouse facilities. No additional chemicals will be used in the drilling sludge, the sludge will be left to dry after drilling and the relevant provisions of the Waste Management Regulation, and the Regulation on Regular Storage of Wastes will be applied for disposal. Drilling fluid and sludge will never be discharged directly into the receiving environment.

After the drilling work is completed, the temporarily stored vegetal soil will be spread on the field again to ensure that the land returns to its pre-drilling state.

If geothermal resources are found, well completion tests will be carried out. Test water (drilling fluid) will be collected in sealed areas. Afterwards, the well will be closed, and gas and water outflow will be prevented. Test waters will never be discharged to the receiving environment.

In addition, there are 5 production and 1 reinjection wells that provide energy to the existing greenhouse belonging to Nata Tarım. The coordinates of the wells are presented in the table below.

[4] Britannica, The Editors of Encyclopaedia. 'Drilling Mud'. Encyclopedia Britannica, 6 July 2017, https://www.britannica.com/technology/drilling-mud. Accessed: 16 July 2024.

Table 3-6 Coordinates of existing wells

Well Coordinates		
Wells	**Y**	**X**
MTA	322510	4370561
PİRAMİT	322242	4370718
NATA1	322684	4370493
NATA2	322601	4370537
NATA3	322706	4370723
NATA4	322297	4370441

Figure 3-6 shows the existing wells belonging to Nata Tarım, well locations (S1-S9) for which EIA opinion has been taken before and well locations (M1-M9) for which it was decided to be drilled in the latest design. For the wells "M1(S1), M5(S9), M8(S8), M5-25-New(S11)", an opinion was previously received within the scope of EIA regulation. As the well locations have been revised, necessary permits will be obtained within the scope of EIA Regulation for the wells outside the scope. All wells are located within the licence area of the Project Owner.

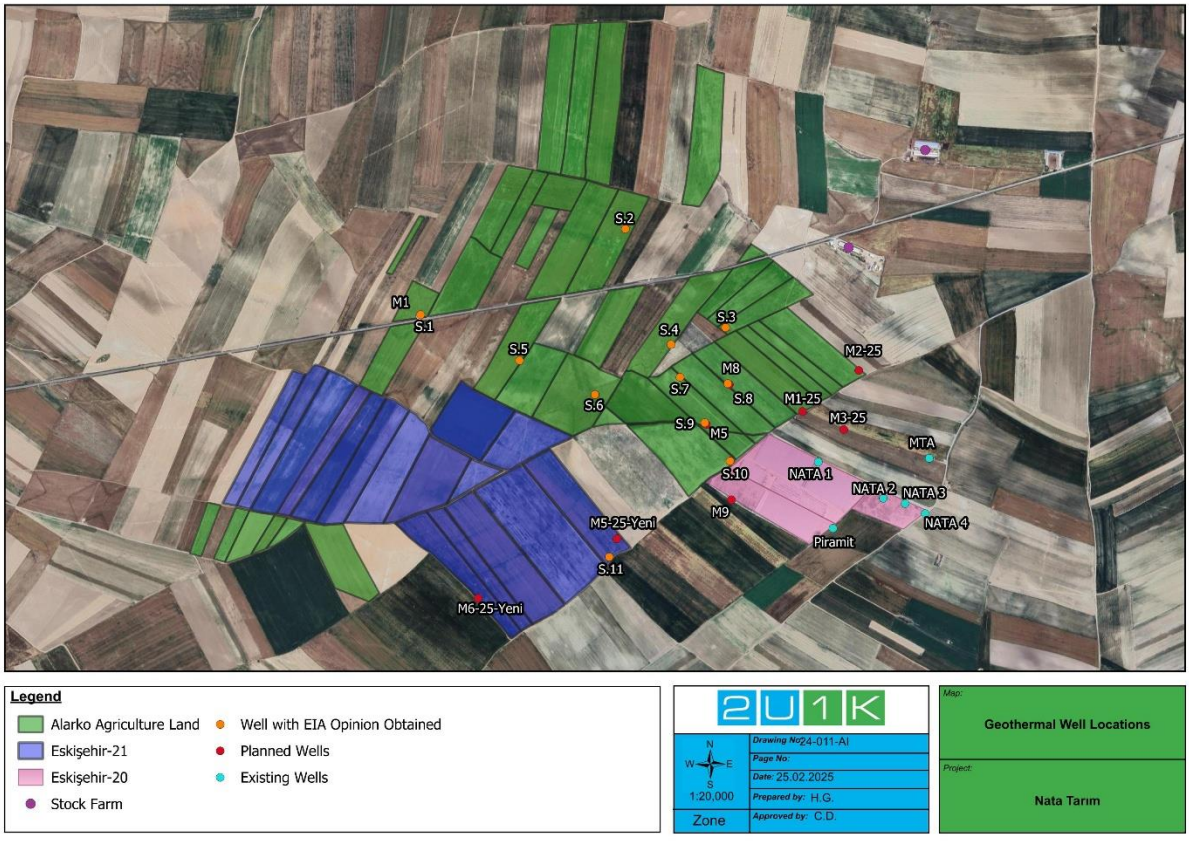


Figure 3-6 Location of 9 wells planned to be drilled on the map, old well locations, existing wells

3.2.2 Heat Transmission Line

The heat energy generated by circulating the geothermal fluid in a closed-circuit system will be transferred to the greenhouse facilities with the help of plate heat exchangers. The heat energy will be used in the activities of greenhouses designed as geothermal hydroponic agriculture campuses (**Figure 3-7**). The aim is to continue greenhouse activities without interruption throughout the year by using the energy for heating purposes. The geothermal source will be preserved with re-injection of the fluid. Fresh water resources will definitely not be used for feeding purposes.

The designs for the circulation and heat transmission line of the geothermal fluid, which will pass completely underground, will be finalized in the later stages of the project. Details about the heat transmission line will be shared with the completion of the designs. Environmental and social assessment will be carried out according to these designs and the results of the study will be submitted as an annex to the ESDD.

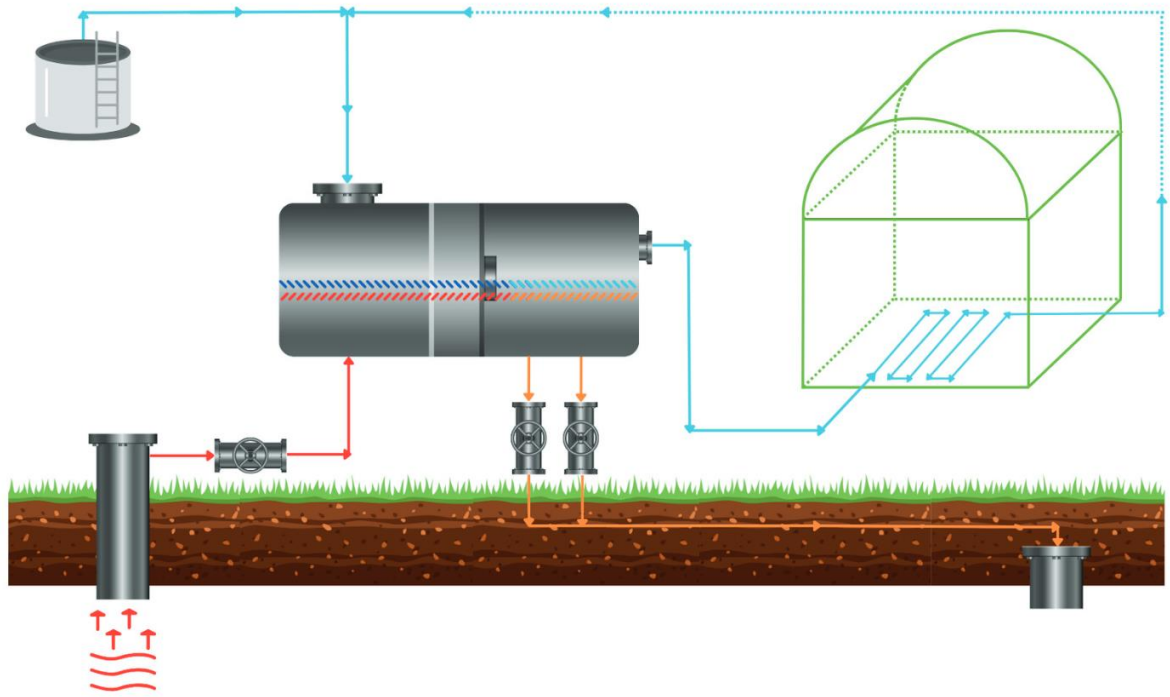


Figure 3-7 Closed circuit geothermal resource utilisation

3.2.3 Greenhouse Campus

Excavation, filling and foundation works will be carried out for the greenhouse facilities planned to be covered by the financing. Ventilation systems, automation will be installed in the greenhouses, greenhouse roof and side coverings will be made, and greenhouses will be completed. Greenhouses will have thermal curtains, fly nets, plant hangers, irrigation system.

1 spare water tanks with a capacity to meet the daily water requirement will be installed for the irrigation system.

The Project Owner will agree with the subcontractor for the installation of the greenhouses. The construction steps for each greenhouse during the greenhouse construction phase are listed below.

1. Greenhouse steel construction
2. Galvanised gutters
3. Plant hanger system
4. Ventilation system
5. Polythene cover
6. Polycarbonate coating
7. Fly netting
8. Curtain system
9. Electrical system
10. Air circulation fans
11. Ground cover
12. Plant growing system
13. Plant growing beds
14. Heating system
15. Irrigation system
16. Automation and air conditioning system
17. Doors (sectional, photocell etc.)
18. Drainage and manure return systems
19. Stormwater return systems
20. Fogging and humidification system
21. Central pest control system
22. Technical area
23. Concrete and earthworks

The Project Owner will equip the air conditioning, irrigation, ventilation and energy efficiency systems with modern equipment during the installation phase of the greenhouse facilities; the greenhouses will be constructed in co-operation with the subcontractor. In Eskişehir-21 greenhouse, 3 greenhouses will be constructed, total greenhouse area will be 813.936 m^2 and production area will be 735.239 m^2. The difference will be technical and transition areas. Details of Eskişehir-21 greenhouse areas are given in **Table 3-2** and greenhouse layout plan is given in **Figure 3-3**.

3.2.4 Energy Transmission Line

Although electricity for the project activities will be supplied from the grid, the energy transmission line (ETL) details are still in the planning stage. After the facility capacity is determined, a new clean line application will be made to Turkish Electricity Distribution Company (TEİAŞ). Whether the construction of the ETL will be carried out by the Project Owner or TEİAŞ will be determined after formal negotiations are finalised. It is considered as a project component as it is likely to be constructed and financed by the Project Owner. Although the ETL is planned to pass through the land of the Project Owner, land acquisition will be carried out on a voluntary basis if it goes beyond these lands. This issue is analysed under land acquisition.

A total of 7 poles will be disassembled as they are within the boundaries of the land. These poles are 34.5 KV medium voltage poles belonging to the Project Owner. A request will be made to Osmangazi Elektrik Dağıtım Inc. regarding the project and the processes will be followed.

1 pole to be cancelled will be allocated to the drilling teams for the works to be moved to the next parcel outside the land boundary. A 400 KVA pole type transformer facility will be installed here and will be used to provide energy for the mobilisation of the teams.

One of the 6 poles to be cancelled is the pole type transformer feeding the well pump. The cancelled energy of this transformer will be fed back by additional underground cabling from another line closest to this area.

According to the initial designs, the overlap of the power line and cold-water wells is given in **Figure 3-8**, the ETL to be dismantled, existing lines and planned lines are given in **Figure 3-9** and **Figure 3-10**.

As the final designs are determined at a later stage, an environmental and social assessment will be carried out and the results of the study will be submitted as an annex to the ESDD.

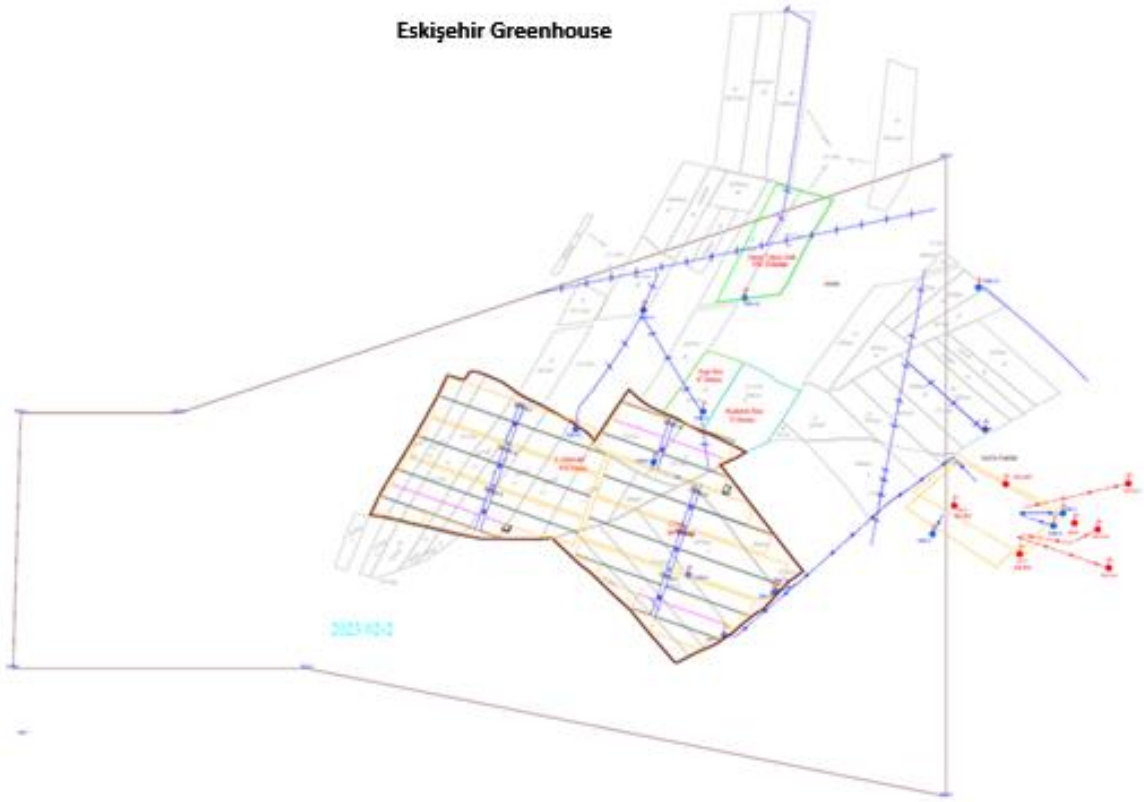


Figure 3-8. Overlapping power line and cold-water wells

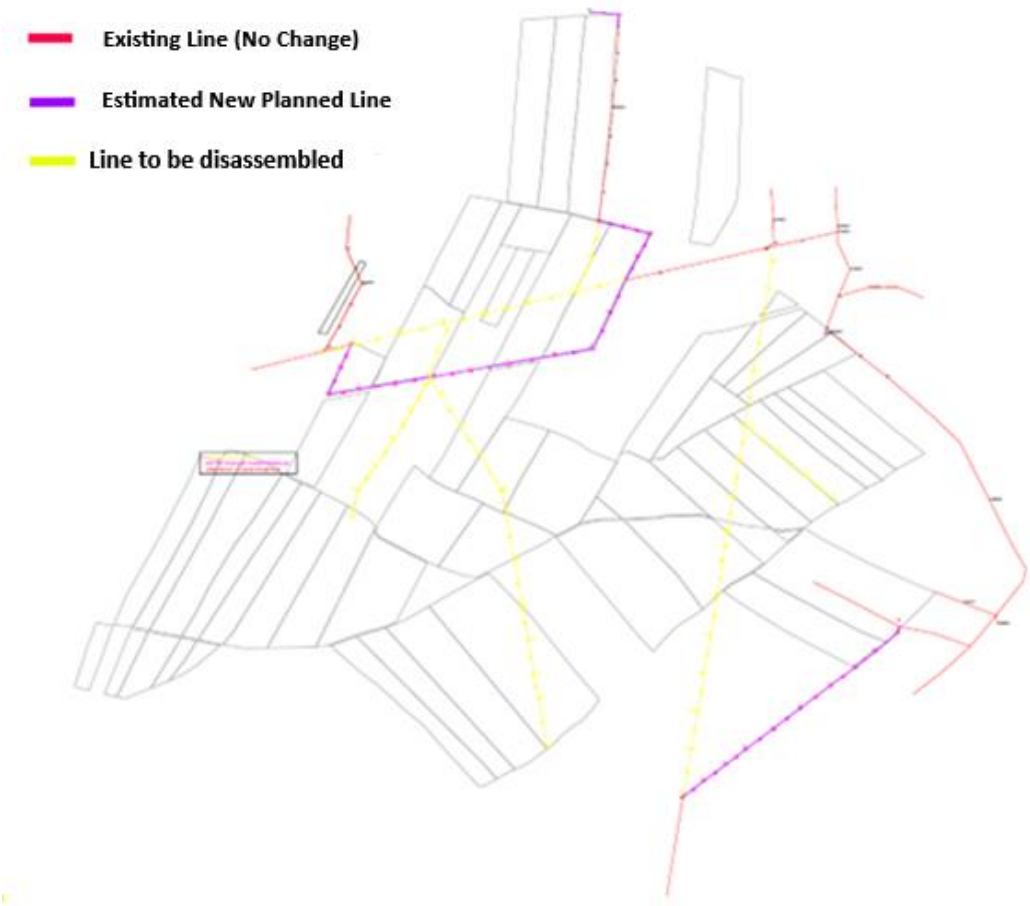


Figure 3-9. Energy transmission line first designs

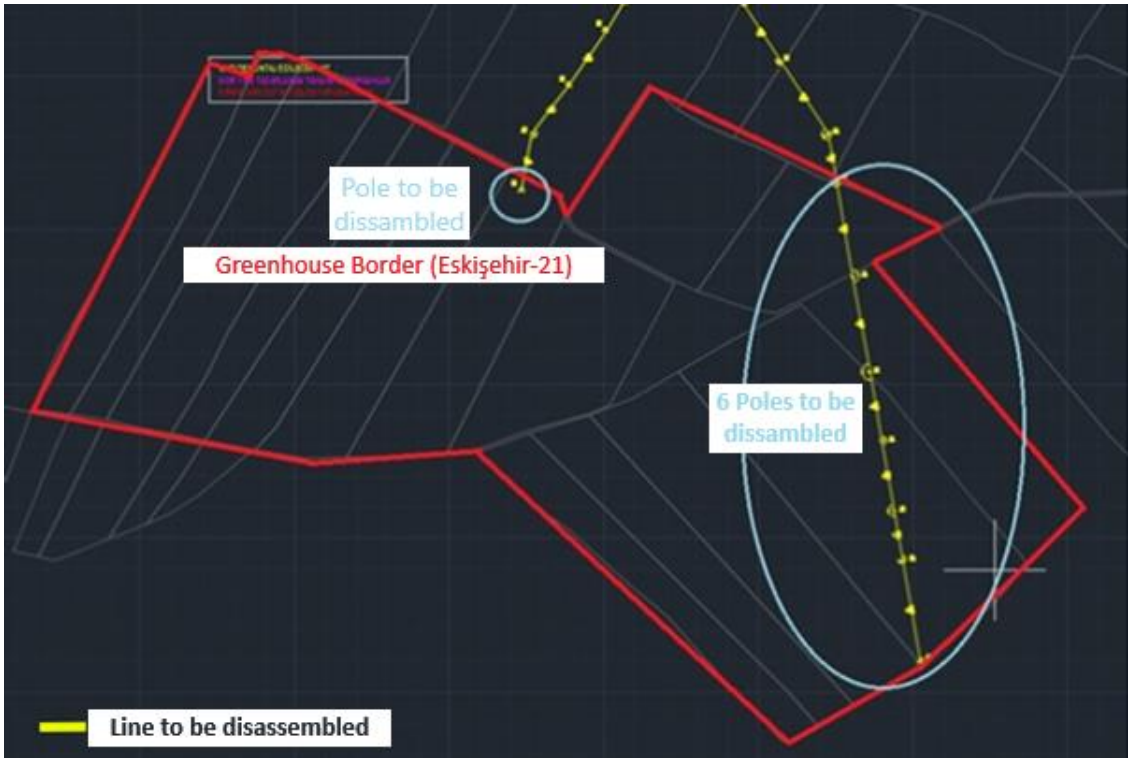


Figure 3-10. Poles to be dissembled in the power transmission lines

3.2.5 Cold Water Wells

Currently, Nata Tarım provides water for its greenhouse activities from existing artesian wells. There is a Groundwater Utilisation Certificate with document number K.ES.03.1568. During the drilling and construction works, the water requirement will be met from the artesian wells belonging to Nata Tarım and during the operation period, the water requirement will be met from the new water wells to be drilled.

Average water consumption in greenhouses is expected to be 2700 m^3/year per hectare. For 850 ha production area, the annual water requirement expectation will be approximately 2,300,000 m^3/year. It is planned to drill 20-25 wells with a depth of 350-400 metres and a capacity of approximately 70 m^3/hour in order to meet the water demand required for greenhouse activities in the new greenhouses to be established. The number of wells will be clarified after analysing the technical specifications and capacities of the wells to be drilled. The area where water wells are planned to be drilled is shown in **Figure 3-11** . Groundwater well exploration and utilisation permits will be obtained before the wells are drilled.

Figure 3-11. Planning area for cold water wells

3.2.6 Administrative, Social and Auxiliary Facilities

Within the scope of the Project, which is designed as a campus, Administrative Building, Academic Building and Social Facilities are planned within the project area. The first projected areas for these facilities are shown in **Figure 3-12**. When the designs are completed, the areas

where the facilities will be located will be finalised and evaluations will be made according to this data.

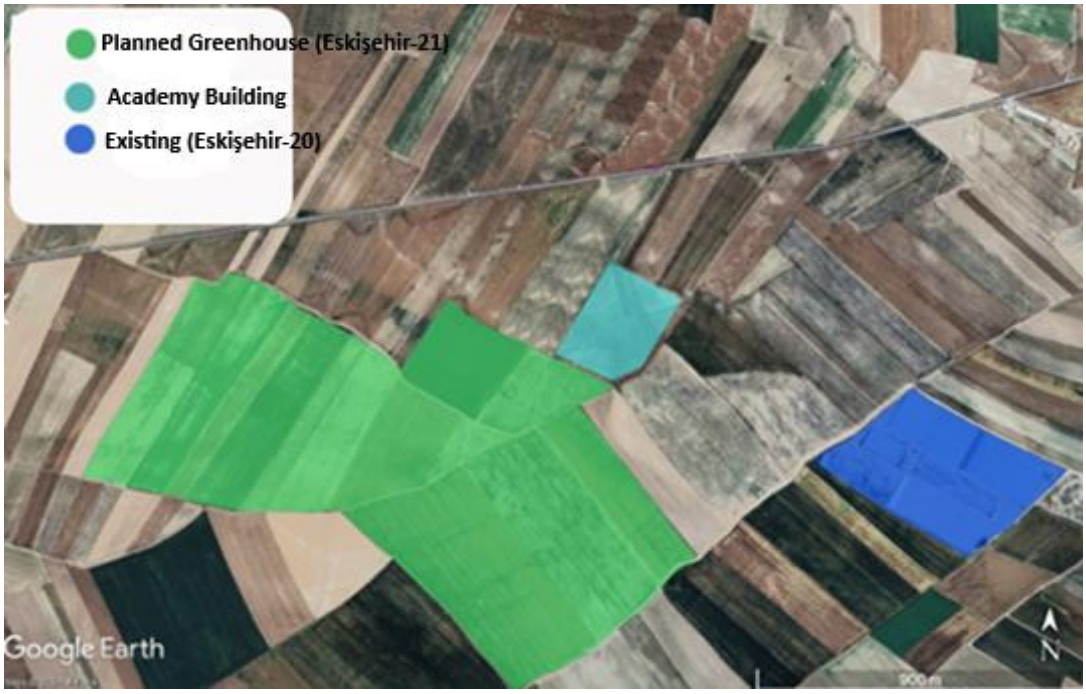


Figure 3-12. Layout of greenhouse area and administrative facilities

3.2.7 Temporary Facilities

The accommodation of the employees during drilling operations will be provided within the province of Eskisehir. No camp site will be established for the drilling team.

For the greenhouse construction works, it is planned that the majority of the employment will be provided locally and/or accommodated in settlements. For the employees who cannot be provided locally, a camp site will be established within the project site. The location and capacity of the camp site has not yet been determined, and inputs will be made when determined.

3.3 Associated Facilities

When the World Bank defines associated facilities, it refers to facilities that are not included in the project financing, that will be realised simultaneously, that are necessary for the project to be viable, and that would not have been constructed without the project.

World Bank definition: *"Associated Facilities are those facilities that are not financed as part of the project and which, at the Bank's discretion: (a) are directly and substantially related to the project; (b) are carried out or planned to be carried out concurrently with the project; and (c) are necessary for the project to be viable and would not have been constructed, expanded or*

carried out but for the project. Facilities or activities must fulfil all three criteria to be an Associated Facility."

Since there are no components included in these definitions, there is no associated facility in the project.

3.4 Project Area of Influence

The Area of Influence (AoI) is an important element in the assessment of the environmental and social impacts of a proposed project, as it provides information on the physical and/or social dimension against which the assessment should be made. According to the definition given in IFC PS 1, the Area of Influence includes:

- (i) the project[5] and activities and facilities within the scope of the project[6] that are directly owned, operated or managed by the client (including contractors), (ii) impacts caused by foreseeable developments that are not planned but may occur at a later date or in a different location due to the project, or (iii) indirect impacts of the project on biodiversity or ecosystem services that constitute the livelihood of Affected Communities.
- Project-related facilities not financed under the project, which would not have been constructed or extended in the absence of the project, but without which it is not possible to realise the project. [7]
- Gradual impacts on the area or resources directly used or affected by the project and cumulative/aggregate impacts resulting from existing, planned or reasonably identified developments in the process of identifying risks and impacts. [8]

The impact area for the Project has been determined separately for environmental and social impacts.

Area of Influence for Environmental Impacts

In determining the Area of Influence (AoI), issues such as air pollutant emissions, which are expected to affect a wider area than the Project's impacts on noise, surface water and soil quality, have been taken into account. In this context, an initial area of 500 metres from the Project boundary has been selected to cover a wide range of environmental assessment

[5] For example, project locations, the project's air belt, water separation line or transport corridors.
[6] For example, power transmission corridors, pipelines, pipelines, canals, tunnels, diversions and access roads, borrow areas, waste sites, construction camps and contaminated land (e.g. soil, groundwater, surface water and sediments).
[7] Associated facilities may include railways, roads, independent power plant, power transmission lines, pipelines, utilities (e.g. electricity, water, natural gas, etc.), warehouses and logistics terminals.
[8] Cumulative impacts are impacts that are recognised as significant based on scientific concerns and/or the concerns of Affected Communities. For example: cascading impact of gas emissions on the air belt; reduction in water flow due to multiple water withdrawals from the water dividing line; increase in sediment load at the water dividing line, interference with migration routes or movements of wild animals; increase in traffic on roads used by communities or increase in accidents due to increased traffic.

activities. This defined area can be further expanded, if necessary, to assess relevant facilities and cumulative impacts.

Area of Influence for Social Impacts

The AoI for social impacts has been determined by considering transport activities during the construction of the Project, recruitment of workers, noise and dust generation during the construction and operation of the Project, and air quality impacts related to construction activities. At this phase, an area covering 1 (one) neighbourhood was selected as the priority social impact area. The closest settlement to the wells and the project area is İsmetpaşa Neighbourhood. The closest well to İsmetpaşa Neighbourhood is 2.2 kilometres away and the farthest well is 3.5 kilometres away.

In addition, there are two stock farms 200 and 700 meters away from the areas where land acquisition has been completed in the project, namely 121 plot 33,34,35 parcels. In addition, the first planned locations of the 3 wells are located within these parcels. These areas were also taken into consideration when assessing the project impacts. **Figure 3-13**, shows the project, license area and impact area.

In general, it is foreseen that the employees will stay in Eskişehir province. During the construction of the greenhouses, it is envisaged that workers will generally stay in Eskişehir or nearby districts. However, accommodation will be provided in the camp site for non-local workers.

3.5 Project Category

International Financial Institutions (IFIs) determine the project category through screening in the process of reviewing environmental and social risks and impacts. This is usually based on IFIs' classification lists of types of activities.

During the ESDD preparation phase, the construction and operation activities of the Project were analysed by considering the demographic, cultural, physical and geographical characteristics of the Project site. It was determined that the potential adverse environmental and/or social impacts of the Project are limited, few in number, generally localised, largely reversible and easily addressed through mitigation measures.

In the project, it is planned to meet the energy needs of hydroponic farming greenhouses by utilising the heat energy of the geothermal resource. There are no formal or informal users of the land required for the project and the land has been acquired through voluntary purchase. In addition, there are no protected areas in and near the project site. The Project is expected to be classified as Category B+ due to the Project's land extent, the amount of acquisition and the number of wells.

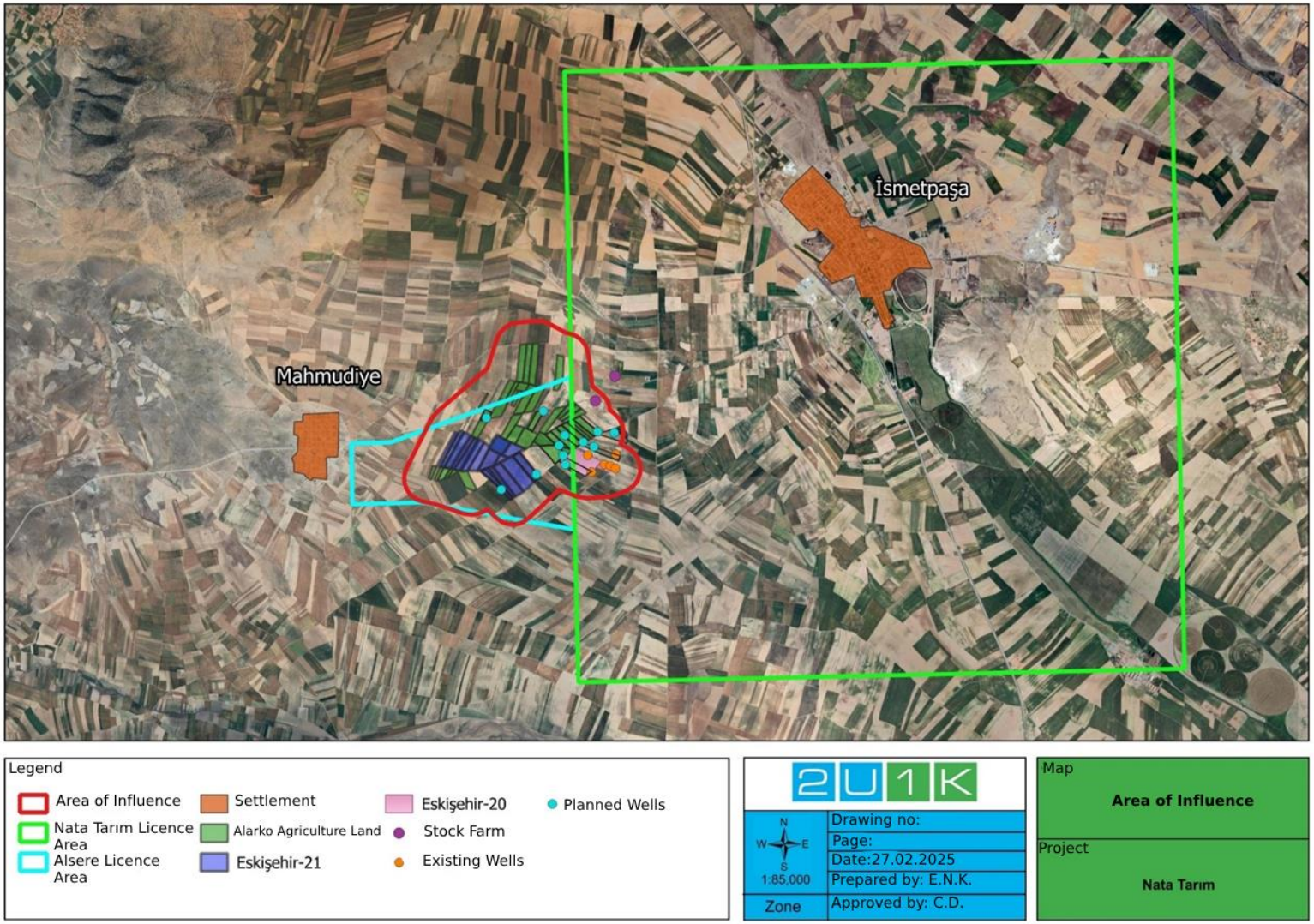


Figure 3-13. Project and its area of influence

4 ENVIRONMENTAL AND SOCIAL ISSUES RELATED TO EXISTING PROJECTS OR ACTIVITIES

4.1 Water Source and Water Quality

Wastewater from greenhouse farming activities, geothermal fluid leaks, drilling mud, faulty re-injection practices and uncontrolled fluid discharge are the most important factors that can affect surface water resources. These activities can lead to both physical and chemical changes that can be detected through surface water monitoring. Such changes occur as a result of incorrect practices. However, these impacts can be minimised through mitigation measures, proper implementation, educational activities, increased inspections and advances in technology.

These impacts may also affect groundwater resources over time depending on lithological characteristics, basin geometry and hydrogeological system characteristics. These physical and chemical impacts are more difficult to detect and minimise in surface water than in groundwater. In some cases, it may not be possible to improve these impacts.

Although the lands that were used only for agricultural purposes before the Project will be used as agricultural land with the Project, groundwater and surface water contamination is not expected since soilless agriculture will be carried out. In addition, there is no surface water near the Project.

In order to detect possible contamination from drilling, 2 soil samples should be taken in each drilling area before drilling starts - at the sludge pool and generator locations - and it should be checked whether there is any contamination from drilling. Before drilling, an observation well should also be drilled according to the groundwater flow direction and groundwater quality should be monitored during drilling.

Currently, water requirement in Nata Tarım greenhouse activities is provided from existing artesian wells. There is a Groundwater Utilisation Certificate with document number K.ES.03.1568. During drilling and construction works, water requirement will be met from artesian water wells belonging to Nata Tarım.

New wells are planned to be drilled to meet the cold-water requirement arising from greenhouse activities during the operation period. Average water consumption in greenhouses is expected to be 2700 m^3/ha/year. Based on this assumption, the annual water requirement for 850 ha production area is calculated as approximately 2,300,000 m^3/year. In order to meet this need, it is planned to drill 20-25 wells with a depth of 350-400 metres and a capacity of approximately 70 m^3/hour. The number of wells will be clarified as a result of the examination of the technical specifications and capacities of the wells to be drilled. Water sustainability analysis may be required after the wells to be drilled and the amount of water to be used are finalised.

4.2 Wastewater Management

Within the scope of the Project, wastewater will be generated during drilling, construction and greenhouse activities. These wastewaters are wastewater from drilling, drainage water from greenhouse activities, domestic wastewater to be generated during construction and operation. Improper management of water resources and wastewater can have serious impacts. Especially in the utilisation of geothermal resources, incorrect applications may cause harmful effects due to the composition of geothermal fluids. If the wastewater is not treated properly, these impacts can lead to negative consequences in terms of soil and groundwater quality.

According to Article 27 of the Regulation on Control of Water Pollution (RoCWP) (Official Gazette Date: 31.12.2004, No: 25687) published by the Ministry of Environment, Urbanisation and Climate Change, when the flow rate of geothermal spring waters extracted from underground exceeds 10 L/s for various purposes such as energy production and heating, it is obligatory to dispose of the water by reinjection into the formation from which the water originates. Failure to dispose of the water by reinjection will lead to rejection of the operating licence.

Article 31 of the same Regulation sets the discharge standards for industrial wastewater from the energy production sector, including processes such as coal and lignite preparation, thermal power plants, nuclear power plants, geothermal energy and similar facilities. These standards for industrial wastewater discharge are defined in **Table 4-1**.

Table 4-1. Regulation on Control of Water Pollution Table 9.5

Parameter	Unit	2 hours	24 hours
COD (Chemical oxygen demand)	mg/L	60	30
Oil and Grase	mg/L	20	10
Total Cyanide (CN^-)	mg/L	-	0.5
Temperature	°C	-	35
pH	-	6-9	6-9

If geothermal fluids are not re-injected underground, the quality of the wastewater discharge will be in accordance with Article 27 of the Water Pollution Control Regulation on the use of receiving water bodies and in accordance with the guidelines defined in the General EHS (Environment, Health and Safety) Regulations. In addition, Article 27 of the Regulation on Water Pollution Control requires water analysis of geothermal wastewater and the receiving environment to which it will be discharged within the framework of the parameters in Table-9.5 and Table-19 of the Regulation in case it is scientifically proven that re-injection is not technically possible. The Ministry determines the discharge standards for geothermal wastewater by taking into account the results of the analyses, the flow rate of the wastewater and the receiving environment and the usage status of the water in the receiving environment.

[9] There will be no fluid outflow within the scope of the Project during drilling and construction period.

The geothermal fluid from the 5 production wells is returned to the reserve through reinjection wells. Geothermal fluid will also be reinjected underground in the new wells to be drilled.

There is no surface water near the Project area. The lands that were used only for agricultural purposes before the project will be used as agricultural land again with the project, but groundwater contamination is not expected since hydroponic agriculture will be carried out. However, 2 soil samples should be taken before drilling starts in the drilling areas, and it should be checked whether there is any contamination from drilling in the sludge pool and generator locations. This control will be done by comparing the samples to be taken when leaving the well location after drilling.

In the existing facility, drainage water is treated with an ultrafiltration system and the treated water is reused. No wastewater is generated from drainage waters.

Currently, domestic wastewater is collected in a 64 m3 sealed septic tank located in Eskişehir-20 facility and sent to Eskişehir Water and Sewerage Administration's (ESKİ) treatment plant by vacuum trucks. Wastewater deliveries are recorded.

During the site visit, it was determined that the sewerage system does not reach the Eskişehir-21 greenhouse site. For this reason, it is planned to install a two-compartment sealed septic tank on the site during drilling and construction activities. The septic tank will be checked daily and before it is full, the wastewater in it will be taken by a vacuum truck to be sent to Eskişehir Metropolitan Municipality ESKİ General Directorate Wastewater Treatment Plant. Protocols will be established for the acceptance of wastewater in this regard.

It is planned that the municipal sewerage system will be extended by the Project Owner for the disposal of wastewater during the operation and construction period of the Project. In this context, negotiations are ongoing with Eskişehir Metropolitan Municipality about the construction of the sewerage system to be financed under the Project. If the negotiations are concluded positively, the wastewater will be fed into the sewerage system. Following the designs to be determined at the end of the official negotiations, the wastewater will be conveyed to Turkmen Mecidiyekoy Treatment Plant or Mahmudiye Treatment Plant via sewerage.

[9] Regulation on Water Pollution Control - Article 27
https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=7221&MevzuatTur=7&MevzuatTertip=5

If this option cannot be realised, septic tanks will be installed during the construction phase and the wastewater will be disposed of at the municipality's wastewater treatment plant by vacuum trucks.

In the operation period, if the sewerage cannot be extended, a wastewater treatment plant is planned for the disposal of domestic wastewater. Necessary permits will be obtained for wastewater disposal. Wastewater will never be discharged to the receiving environment without treatment.

4.3 Waste Management

The wastes likely to be generated due to the Project activities have been evaluated and given below. National regulations and the relevant policies of the World Bank will be taken into consideration in the management of the wastes to be generated in the Project. Wastes and the national regulations followed are given in the sub-headings. In addition, the Project Owner has prepared a Zero Waste Management Plan and this plan is given in Annex-D.

Currently, wastes generated by Nata Tarım activities and disposal methods are given below. There are separate storage areas for wastes in accordance with the regulations and the stored wastes are given to licensed companies / institutions.

02 01 03 and 20 02 01 waste coded greenhouse plant wastes were accepted to Mahmudiye Solid Waste Transfer Station on 26.10.2024 for transfer to the disposal facility after the permission obtained from Eskişehir Metropolitan Municipality on 18.10.2024. 110.84 tonnes of vegetable waste was sent to the transfer station between 26.10.2024 - 04.11.2024.

An agreement was made with ESÇEV engineering for the recycling and disposal of paper-cardboard and packaging waste, and 860 kg of waste was received by the company on 27.08.2024.

Packaging wastes containing residues of hazardous substances or contaminated with hazardous substances (15 01 10) are also taken by the licensed disposal company ESÇEV Engineering. On 30.08.2024, 650 kg of waste was delivered to ESÇEV Engineering. Delivery records are kept on the mobile waste tracking system, Motat.

Vegetable wastes such as leaves and seedlings that will be generated during the production phase at the new sites will be separated into small pieces with biochopper (shredder) and the volume will be reduced and sent to the solid waste disposal sites of the municipalities, but in this regard, the Project Owner is negotiating with biomethanisation plants, composting plants and biomass incineration plants in order to bring vegetable wastes into the economy and aims to find a sustainable solution to the issue. The permits currently obtained from the municipality will be maintained for these wastes.

Cocopeat and similar soil alternative materials used instead of soil in production are replaced with new ones after completing their productive life. Since these products can be used in different sectors, especially in landscaping and ornamental plant cultivation, they are shipped to be used for agricultural production and no waste is generated.

Table 4-2. Possible wastes to be generated within the scope of the Project

Waste Code	Description
02 01 03	Plant tissue waste
20 02 01	Biodegradable wastes
15 01 11	Dangerous porous solid (e.g. asbestos) metallic packaging, including empty pressurised containers
01 05 04	Freshwater drilling muds and wastes
15 01 10	Packages containing residues of hazardous substances or contaminated with hazardous substances
15 02 02	Absorbents contaminated with hazardous substances, filter materials (oil filters if not otherwise specified), cleaning fabrics, protective equipment
15 01 01	Paper, Cardboard and Packaging
15 01 02	Plastic Packaging
13 02 08	Other engine, transmission and lubricating oils
16 03 05	Organic wastes containing hazardous substances
16 01 07	Oil filters
16 06 05	Waste Battery and Accumulators
01 05 04	Freshwater drilling muds and wastes

Drilling Mud: The disposal method of drilling sludge is not defined in the existing regulations and the previous Directive 2012/15 on 'Disposal of Drilling Sludge and Wastes Resulting from the Physical Treatment of Chromium Ore' has been repealed. In addition, the regulation on mining wastes (Ministry of Environment, Urbanisation and Climate Change, Official Gazette Date: 15.07.2015, No: 29417) does not cover geothermal activities, which makes it impossible to define disposal methods for solid wastes arising from geothermal activities.

However, the hazard class and disposal method of drilling mud are determined based on the hazardous properties given in Annex-2 of the Regulation on Land Disposal of Wastes and the limit values given in Annex-3/A of the Regulation on Waste Management.

Standard for Sludge Retention Ponds: Since geothermal activities are excluded from the scope of the Mining Waste Regulation and the regulation on the disposal of drilling muds has been repealed, the specific regulations on sludge retention ponds are not clear. However, the relevant provisions of Regulation on Waste Management and Regulation on Landfilling of Wastes shall be applied.

Domestic Solid Wastes

Domestic solid wastes will be stored in sealed containers in accordance with the Regulation on Waste Management[10] and will be regularly collected and disposed of by Alpu Municipality.

Packaging Wastes

Packaging wastes that will be generated due to the activities within the scope of the Project will be collected and stored separately on site in accordance with the Regulation on Control of Packaging Waste[11] and then delivered to licensed recovery companies.

Waste Battery and Accumulators

If waste batteries are generated within the scope of the Project, they will be collected separately and placed in waste battery collection boxes in Eskişehir.

Since the maintenance and repair operations of the construction machinery to be involved in the project activities will be carried out at the authorised services in the region, waste accumulators are not expected to be generated. Nevertheless, if waste accumulators are generated at the site, they will be stored in a temporary storage area with a impermeable floor in accordance with the 'Regulation on the Control of Waste Batteries and Accumulators' and delivered to licensed companies for disposal.[12]

End-of-Life Tyres

No waste generation is expected since the maintenance and repair operations of the construction machinery to be involved in the project activities will be carried out at the authorised services in the region. In case of waste tyres, these wastes will be stored in accordance with the 'Regulation on Control of End-of-Life Tyres'[13] and delivered to licensed recovery facilities.

Waste Oil

Although no waste oil generation is expected since the maintenance and repair operations of the construction machinery to be involved in the Project activities will be carried out at the authorised services in the region, if maintenance and repair is required on site, maintenance and repair will be carried out in designated areas with impermeable floors. In accordance with

[10] Waste Management Regulation – https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=20644&MevzuatTur=7&MevzuatTertip=5
[11] Regulation on Control of Packaging Wastes https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=38745&MevzuatTur=7&MevzuatTertip=5
[12] Regulation on the Control of Waste Batteries and Accumulators – https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=7118&MevzuatTur=7&MevzuatTertip=5
[13] Regulation on Control of End-of-Life Tyres- https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=10799&MevzuatTur=7&MevzuatTertip=5

the Regulation on the Management of Waste Oils[14] waste oil will be stored in sealed drums in the designated area with impermeable floors and will be disposed of by delivering to licensed companies.

The need for food in the project area will be met from outside, and vegetable waste oil is not expected to occur, and if it occurs, it will be stored in accordance with the Regulation on Control of Waste Vegetable Oil and will be delivered to licensed companies for disposal.

Medical Wastes

There is no health unit within the scope of the drilling and construction stage of the Project and since the need for medical intervention will be met at the health centres in the city, medical waste generation will only occur in case of emergency intervention on site.

There will be a health unit during the operation period. At all stages, medical wastes will be collected separately in accordance withthe “Regulation on Control of Medical Wastes” [15] and delivered to contracted institutions for disposal.

Hazardous Wastes

Fertiliser and pesticide packages to be used in production are classified as hazardous waste and will be stored in the hazardous waste temporary storage area. All hazardous wastes will be separated according to their types and sent to licensed recovery and/or disposal facilities.

4.4 Air Quality

Although limited, greenhouse and geothermal resource utilisation activities may cause dust emissions. Dust emissions from the Project can be observed especially during construction and drilling phases. Monitoring and measurements should be carried out and necessary measures should be taken to reduce the cumulative impact of geothermal resource utilisation activities. Since dust emissions from geothermal resource utilisation can be addressed with mitigation measures, this parameter is considered as an emission that can be controlled to a large extent.

Non-Condensable Gases (NCGs) such as CO_2, H_2S, CH_4, NH_3, N_2, H_2 generated during geothermal resource utilisation may cause negative impacts on air quality. In order to determine NCG emissions from geothermal activities, measurements should be made in the plant areas and affected areas, and contribution values and mass flow rates should be

[14] Regulation on the Management of Waste Oils - https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=34051&MevzuatTur=7&MevzuatTertip=5

[15] Regulation on the Control of Medical Waste - https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=23273&MevzuatTur=7&MevzuatTertip=5

monitored. It is of great importance to evaluate the air quality impacts of geothermal resource utilisation activities together with other sectors and activities and to implement preventive measures with a holistic approach.

These gases should be monitored primarily at the source and in places where they may accumulate within the scope of occupational safety. The impacts on the environment of these gases, which decompose and occur in low amounts, is expected to be limited. During the construction and operation periods of the Project, air quality parameters should be monitored for compliance with limit values, national and international legislation. During the operation period, wells and related areas will be monitored regularly.

Attention should also be paid to the odour parameter during operations. The main cause of odour is H_2S emissions. Other activities and sources that may contribute to odour emissions include waste disposal areas, treatment plants, wastewater and wastewater contaminated surface waters.

The Project owner has shared the prepared 'Greenhouse Gas Mitigation Plan' and this plan is presented in Annex-E.

4.5 Noise

Since geothermal resources will be utilised as energy source for greenhouse activities in the project, high noise levels may be observed especially during the drilling phase. Noise is expected to be generated during the greenhouse construction period and during the operation period due to traffic load. Although it is not practically and economically feasible to completely eliminate noise generation, it is recognised that noise is an environmental component that can be mitigated to a large extent with appropriate mitigation measures. It is considered to be possible to avoid impacts if the distance to the nearest settlement (sensitive receptor) is more than 2 kilometres and necessary measures are taken for noise pollution. For nearby livestock farms, it is important to measure noise at the receiver, especially when the planned construction and drilling activities are less than 500 meters from the receiver, which was determined as the environmental impact area. Distances are not precise as the well locations are not finalised. In the current situation, no noise was observed at Nata Tarım facilities.

4.6 Soil Quality and Land Use

The most important sources of soil pollution include leaks from underground storage tanks, oil and fuel spills, infiltration of polluted water into groundwater layers and direct disposal of industrial wastes into the soil.

The Project may have certain impacts on soil quality due to greenhouse cultivation and geothermal resource utilisation. Extensive land clearing, excavation and drilling activities may be carried out during the construction phase of the Project. These activities may disturb the natural soil structure and may lead to soil compaction and erosion. Geothermal operations

involve the use of drilling fluids, which may contain chemicals that have the potential to contaminate soil if not properly managed. Improper disposal or leakage of these fluids can cause contaminants to enter the soil, affecting its quality. Projects utilising the energy of geothermal resources require the extraction and reinjection of water for heat transfer. Improper management of water resources can lead to water scarcity or excess water in the environment. These water imbalances can affect soil moisture levels and the availability of nutrients necessary for plant growth.

In addition, two soil samples should be taken before drilling starts in the drilling areas - at the mud pond and generator locations - to check for any contamination from drilling operations.

These lands, which are agricultural land, will be used for agricultural purposes and the soil quality will not change. In addition, hydroponic farming activities will be carried out within the scope of greenhouse activities. Direct interaction with soil is not expected in greenhouse activities. Although soil pollution is not expected to occur except for major accidents, the current situation does not require measurements. In case of an accident, the affected area should be intervened in accordance with the necessary regulations and compared with the limit values. The impacts of greenhouse areas on soil are limited to the construction phase. In operation phase possible impacts will be due to breakdown, maintenance and repair.

4.7 Biodiversity

During the construction phase of a geothermal project, various direct and indirect impacts may be encountered. For example, during the installation and operation of geothermal facilities, direct habitat and biodiversity loss may occur. However, the fact that the project area will be carried out in an already altered area can reduce the direct impacts of sensitive habitat or vegetation loss.

One of the direct impacts that may arise during construction activities could be the vehicle traffic used for facility construction. This vehicle traffic can pose a death risk to fauna species with limited mobility. These animals may face the risk of being crushed on the paths of vehicles.

Another significant direct impact that may be observed during the construction phase of the project is the introduction and spread of invasive species. With the commencement of construction activities, it is possible that soil from outside will be brought in on the tires of vehicles such as trucks and machinery used in the project, or especially in the areas where environmental regulations will be carried out in disturbed areas outside of greenhouse activities after the construction works are completed. This could lead to the unintentional transportation of invasive species' seeds within the soil and their spread into the environment. The fact that the project area and its nearby surroundings are primarily modified habitats, such as agricultural fields, will allow invasive species to spread rapidly in the area. If this situation occurs, it will become dominant, especially over the native flora and fauna found in fields and along roadsides, and it could lead to the loss of the natural biodiversity already confined in these areas.

Additionally, geothermal fluid leaks, drilling mud, faulty of reinjection practices, and uncontrolled fluid discharges have the potential to harm natural water sources or the environment.

Dust formation can have effects on plant species located near the project area, but it is anticipated that these effects will be temporary by nature.

Noise, visual disturbance, and vibration caused by construction activities can also have a negative impact on fauna species, causing them to be disturbed and to leave the area.

4.8 Traffic Safety and Management

Lack of traffic and pedestrian safety management can lead to various risks. This means that potential hazards to the safety of workers and local residents are not adequately identified, or appropriate measures are not taken. Inadequate traffic management can restrict access to and around the construction site or cause dangerous traffic situations. This can increase the risk of road accidents and threaten the safety of pedestrians on or near the work site. In addition, inadequate traffic and pedestrian safety management may lead to negative interactions with local communities and even legal issues. Therefore, it is important to effectively manage traffic and pedestrian safety and take appropriate measures during the project process.

Transport activities during the construction of the geothermal greenhouse facility are generally temporary and intermittent, limited to low volume light commercial and personal vehicles. However, considering that more workers will be present during the construction period, the vehicle traffic required for labour and material transport will increase significantly. This increase may lead to peaks in traffic density, especially in the morning and evening shift change hours, and may strain the capacity of the existing road infrastructure.

Processes such as the development of geothermal projects in the region, construction or upgrading of access roads, drilling operations, well testing and construction activities will lead to a temporary increase in industrial traffic. This may cause environmental impacts such as an increase in airborne particulate matter (PM) and greenhouse gas (GHG) emissions, especially from petrol and diesel engines. In addition, increased traffic density and mobility around the construction site may adversely affect the daily lives of local communities and increase the risk of traffic accidents.

Therefore, traffic management plans and measures need to be elaborated throughout the construction period to minimise safety risks and develop an effective communication strategy with local communities. These measures should include traffic divert signs, speed limits, road closure warnings, pedestrian access points and the presence of traffic control officers.

4.9 Cultural Heritage

Geothermal resource utilization activities can have an impact on cultural and historical heritage. Geothermal projects should ideally be carried out at the site of the resource. Especially during the planning stages (such as site selection), precautionary measures can be implemented to minimize or prevent potential impacts on cultural areas.

4.10 Labour and Working Conditions

During the construction and operation of geothermal energy projects, the labour and working conditions may be exposed to various impacts. Considering these impacts and taking appropriate measures is important for the safety, health, and well-being of the workers. The impacts that may occur during construction and operation can endanger worker health. These include potential workplace accidents, health risks, and the impact on physical and mental health due to long and intense working hours. In addition to these effects, it may also include risks such as discrimination in the workplace, harassment, conflicts with the local community, and the inability to manage workforce flow.

Currently, there are 83 blue-collar employees, 60 of whom are women and 23 of whom are men, and 6 white-collar employees, one of whom is a woman and 5 of whom are men, in the facility owned by Nata Tarım.

During the field visit on 30.07.2024, a focus group interview was conducted with 5 blue-collar female employees. It has been learnt that the employees are generally satisfied with their working conditions. The salaries of the employees are paid regularly and in case of overtime work, overtime pay is reflected in their salaries. The employees live in close neighbourhoods and commute to work by shuttle service. There are 6 shuttle buses in total and they are grouped by routes. Apart from this, the employees also stated that they are not discriminated against for any reason.

4.11 The Social Impacts of the Project

Lack of Information

Failure to inform stakeholders in the project or providing incomplete information can lead to various risks. This situation can reduce the project's acceptability in the community and create lack of confidence and concern among local communities. Additionally, it can lead to an increase in public health and safety risks and make it more difficult to monitor and manage environmental impacts. The lack of information can also lead to conflicts and legal issues. Finally, it may have negative impacts on the long-term sustainability and acceptance of the project. Therefore, it is critically important to effectively inform and ensure the participation of stakeholders during the development and implementation process of geothermal projects.

Land acquisition

Land acquisition for hydroponic agriculture and geothermal resource use generally involves permanent land acquisition, excluding pipeline routes. The size of the acquired land varies depending on the scale of the projects, such as the scale of greenhouse campuses and number of wells. Since geothermal resources are mostly found in agricultural areas, land acquisition can lead to economic loss in terms of livelihoods. Therefore, it is believed that this impact is negative, difficult to reverse, and causes a permanent effect.

The land acquisition has been completed within the scope of the project.

In the long term, the conversion of agricultural land to industrial land use may have a negative impact on livelihoods. However, since this negative impact is limited to the amount of land invested in, it is considered to have a limited effect. However, due to the inability to recover the agricultural land status and the impossibility of resale, the reversion of the acquired lands to their former agricultural status is considered a significant negative impact.

5 ENVIRONMENTAL AND SOCIAL ANALYSIS

In this section, the compliance of the planned or executed activities in the project construction and operation processes, as well as Nata Tarım's activities, with national legislation, IFC Performance Standards, and World Bank Operational Policies will be evaluated.

Currently, site preparation, drilling and greenhouse construction activities for the new greenhouses have not started yet. The design and preparation phase of the project is expected to be finalised. Once the planning phase of the Project is finalised, site preparation will commence. Site preparation includes steps such as clearing the site, levelling the land and preparing the foundation of the structures to be built. After the site preparation is completed, construction and installation works will start.

Monitoring of the implementation of the mitigation measures and commitments given in the ESMP during the project will be carried out by the project owner and the appointed independent consultant. Contractors will prepare and submit monthly monitoring reports to the project owner. The project owner and the independent consultant will submit monitoring reports to the lending institution every 3 months during the construction period and every 6 months during the operation period.

5.1 Field and Desk Study

The evaluation of the project and the project site in terms of environmental, social, and biodiversity aspects, as well as the determination of whether there are sensitive receptors and official/unofficial users in the field, was conducted by 2U1K experts D. Emre Kaya (M.Sc. Environmental Engineer), Celal Denizli (Biologist), Şeyma Nur Geyik (Sociologist), and Utku Yazıcı (Environmental Engineer), who carried out the first field visit on 16 February 2024. Project officials and TSKB experts accompanied this field visit, and a project kick-off meeting was held on the same day. Additionally, a preliminary meeting was held with the mukhtar of the İsmetpaşa Neighbourhood, which is the closest settlement to the site.

On 29 February 2024, Celal Denizli (Biologist) and Şeyma Nur Geyik (Sociologist) conducted a second field visit to examine the initially identified well locations.

The program of the first field visit conducted is as follows.

- Initial meeting with the Project Owner (manager and officials)
- Site visit
- Meeting with the mukhtar of İsmetpaşa neighbourhood
- Closing meeting with the Project Owner (manager and officials)

On 30 July 2024, Deniz Dirier (Sociologist), Sevim Büşra Ayna (Sociologist), and Utku Yazıcı (Environmental Engineer) conducted a third field visit. During the site visit, meetings were held with the former landowners, the members of mukhtar, and the project owner, and the site and

its surroundings were re-explored. Details regarding the site visits and findings have been elaborated in the relevant sections. Additionally, during this field visit, the Nata Tarım facility and lands were toured, and meetings were held with Nata Tarım employees.

On 19 September 2024, Nata Tarım and the project areas were visited again with the participation of the Project Owner and TSKB.

5.1.1 Field Study

The kick-off meeting was held on 16.02.2024 in Eskişehir with 2U1K, the Project Owner, and TSKB experts. In the meeting, the project, its current status, plans, impacts, and expectations were discussed, and the project was initiated. The participants of the kick-off meeting are listed below.

- D. Emre Kaya - 2U1K - Vice Chairman of the Management Board
- Şeyma Nur Geyik - 2U1K - Social Expert
- Sevgin Derinbay - TSKB - Social Expert
- Orçun Yıldızca - TSKB - Engineering Manager
- Mehmet Bayraktar - TSKB - Mechanical Engineer
- Özer Ayhan - Alsera - General Manager
- Oktay Eli - Alarko - Assistant Manager of Agricultural Project Financing and Business Development
- Nur Akgüz - Alarko Tarım - Incentive and Financing Expert
- Güventürk Kalaslıoğlu - Alarko Tarım - Executive Board Member
- Onur Ayral - Alsera - Geothermal Field Manager
- Lokman Aydemir - Makma Energy - Chairman of the Executive Board
- Prof. Dr. Hakan Hoşgörmez - İstanbul University
- Fazıl Rifat Sönmez – Alsera - Consultant
- Bekir Şahin - Beybur Agriculture - Chairman of the Executive Board
- Gülşah Alçay - Dünyaçed - Environmental Engineer
- Hacer Esen - Dünyaçed - Environmental Engineer
- Gültekin Öztürk - Gültekin Engineering - Geophysicist

5.1.2 Desktop Review

The desktop review encompasses the examination of the project's existing environmental and social documents, as well as all strategic level evaluation documents (such as the Project Introduction Document) and supporting documents.

In order to understand the previous work conducted and to identify the main topics that will be evaluated in more detail within the scope of this Report, project-specific documents have been reviewed.

5.1.3 Reference Documents

The main documents examined and referenced for the environmental and social assessment of the project are listed below.

- IR:2023-02 (ER:3339672) Geothermal Resource Exploration Drilling and Greenhouse Activity Project Introduction Document – Eskişehir, Dünyaçed, July 2024
- "Eskişehir Geothermal Greenhouse Investment Feasibility Report" March 2024
- Nata Tarım Final Project Presentation File, 2023
- Alsera Emergency Action Plan
- Alsera Greenhouse Gas Reduction Plan
- Alsera Zero Waste Plan
- Alsera Traffic Management Plan

5.1.4 Stakeholder Meetings

During the site visit, a meeting was held on 26.02.2024 with the mukhtar of İsmetpaşa Neighbourhood, which is the closest settlement to the project site and falls within the project's AoI. The information obtained from the meeting with the neighbourhood mukhtar has been detailed under section 5.11 and its subsections. On 30 July 2024, meetings were held with the member of mukhtar of İsmetpaşa Neighbourhood and the previous owners of the lands within the project area. In addition, meetings and interviews were held with Nata Tarım employees.

Public Information and Stakeholder Consultation Meeting was held on 08 January 2025 within the scope of the Project.

5.1.5 Reporting

The findings and observations obtained from the field visit, the information gathered from stakeholder interviews, and the project documents have been summarized in this report after being evaluated from an environmental and social perspective.

This report includes the information and evaluations listed below.

- Evaluation of the Environmental and Social compliance of project documents in terms of national requirements, World Bank Operational Policies, IFC requirements, and relevant international standards,
- Review of Environmental and Social management plans and identification of gaps,
- Findings from fieldwork,
    - Expert evaluations,
    - Site visit observations,
    - Stakeholder interviews (Mukhtar of İsmetpaşa Neighbourhood, previous owners of acquired lands, Nata Tarım Employees),
    - Provided documents and comments.

The necessary site preparation, drilling, and construction works for the project did not commence during the site visit and the time the report was written. Considering the current status of the project, gaps in national legislation and international standards have been identified, and actions to address these gaps have been created within the ESMP and sub-management plans included in Annex A. By implementing the management plans prepared for the project, the project's activities will be ensured to be in compliance with international standards.

5.1.6 Limitations

This report details the findings of the due diligence study conducted by 2U1K to determine whether the proposed project is subject to material environmental and social obligations. In conducting this study, 2U1K has attempted to independently assess the presence of such issues within the defined scope of work as outlined in our proposal. As part of this ESDD study, no soil, water, liquid, gas, product, exposure, OHS, biological and/or chemical sampling, analysis/testing, and/or social research and examination were conducted.

As with any environmental and social due diligence review, there is a certain degree of reliance on verbal statements made by the Project Owner or field representatives that cannot be easily verified through visual inspection or supported by any written data currently available. 2U1K cannot be held responsible for conditions or outcomes arising from relevant facts concealed, be kept, or not fully disclosed by the Project Owner or field representatives at the time the assessment was conducted.

According to the scope of work in effect and agreed upon during the review of the Project by 2U1K, as well as widely accepted engineering and scientific practices, this report and all field data have been obtained and/or compiled by 2U1K. The statements, results, and opinions contained in this report aim to present the best information regarding the environmental and social conditions in the project area by 2U1K.

This report, along with all field notes and data ("information"), has been created or collected by 2U1K on behalf of the Project Owner. The Project Owner may use the information at their discretion and share it with trusted third parties. However, the use of the information by any party other than those specifically mentioned above, or the reference to such information, will be at the risk of the respective third party, and regardless of whether the action is based on the validity of damage compensation (contract, tort, single, simultaneous or other negligence, and 2U1K's definitive liability, law, or anything else), there will be no legal recourse against 2U1K and/or 2U1K employees or managers. A party that refuses to adhere to the above-mentioned declaration cannot use this information or reference it.

5.2 Resource Efficiency and Pollution Prevention

According to the requirements set forth regarding resource efficiency, the environmental and social assessment process should identify opportunities and alternatives related to resource efficiency for the Project in accordance with GIIP (Good International Industry Practices). In doing so, the Project Owner will take technically and financially feasible measures to minimize the consumption of energy, water, and other resources, as well as material inputs, and to enhance efficiency in their use, while also recovering and reusing waste materials. The main focus should be on the activities considered the basic functions of the Project, but similar opportunities in other commercial activities of the Project Owner that are not part of the Project will also be taken into account. The Project Owner should integrate resource efficiency measures and clean production principles into product design and production processes to save raw materials, energy, and water, while also reducing the release of pollutants into the environment.

A reinjection system will be used where the rejected fluids are reinjected into the reservoir, and waste fluid discharge into receiving body is avoided. Thus, the impacts on air, soil, surface water, and groundwater environments will be completely prevented.

Test fluids will not be discharged into the receiving body and will not be reinjected into the aquifer. Rotary drilling will be used in the wells within the scope of the project. During the process, the edges of the well will be covered with concrete. The casings and concrete walls at the edges of the well will prevent the underground water and geothermal fluids from mixing. Due to project activities, there will be no discharge into the aquifer.

The impacts of drilling and geothermal fluid on groundwater should be monitored. Before drilling, an observation well should be opened according to the groundwater flow direction and groundwater quality should be monitored during drilling.

It is expected that a "Pollution Prevention and Control Plan" addressing air emissions, noise, wastewater discharges, hazardous materials management, and spill prevention related to the project will be developed and implemented, and that the necessary measures will be taken to meet international standards for the project.

According to preliminary calculations, it is foreseen that the water requirement in greenhouses will be approximately 2700 m^3/year per hectare during the operation phase of the Project. For 850 ha production area, the annual water requirement expectation will be approximately 2,300,000 m^3/year.

The drainage water that will be generated during the activities will be recycled and reused with 98% efficiency.

The Project Owner is working on designs with the aim of utilizing stormwater in greenhouse areas and reducing the use of well water. The details of the design have not yet been completed in the environmental assessment process.

The Project Owner produces under the "Good Agriculture" and "Global GAP (Good Agricultural Practices)" certifications. With environmental investments, it aims for zero waste and a sustainable environment. In this context, on-site reduction methods are used for packaging waste. All the packaging materials used in the production and packaging processes are selected from recyclable materials.

In addition to using reusable packaging or bulk chemicals in the facility, there is a reduction in chemical usage. In the production processes, the aim is to replace the use of chemicals with natural predators in disease control and to manage pests through regional and natural pheromone traps in line with physical mechanical control via Integrated Pest Management (IPM).

5.3 Water Source and Wastewater

The main wastewater of the project consists of drilling fluids, used geothermal fluids, wastewater from injection wells, well cleaning water (for blockage), and domestic wastewater. During routine activities in the project, no industrial wastewater will be generated from the process.

A wastewater management system in accordance with the regulations and standards will be installed and untreated water will never be discharged to the receiving environment. Activities will not be started before these systems are operational. These management systems, which are at the planning stage, are evaluated below.

Drilling Phase

During the drilling period of the project, the water needed will be sourced from licensed underground wells, and drinking water will be provided from packaged water supplied by licensed companies. In the drilling activities, the water requirement has been determined as drinking and utility water for personnel, dust suppression water, and water needed for drilling operations, totalling 27.64 m^3/day. In the calculations, the number of workers was assumed to be 21, and the average daily water consumption was estimated to be 168 litres/person-day[16], using the 2022 records of the Address-Based Population Registration System for Eskişehir province. Due to the plan to work on 5 wells simultaneously, there will be a maximum of 105 workers and a water requirement of 138.2 m^3/day during the drilling operations. The water

[16] Address-Based Population Registration System https://biruni.tuik.gov.tr/medas/?kn=95&locale=tr

required for the drilling activities will be obtained from licensed existing water wells near the drilling site. Water and drilling mud will be recycled, and water consumption will be reduced.

In the circulation system required for deep well drilling, the drilling fluid used is a general term for the fluids that ensure the healthy progress of well drilling. It contains organic and inorganic chemicals, minerals and fresh water from the formation of cuttings. Therefore, it is another pollution parameter that is very important to manage in terms of environmental threats.

There will be a clean/freshwater reservoir necessary for preparing the drilling fluid, a circulation reservoir where the drilling fluid to be circulated during the drilling process is held, and a mud pit where the drilling fluid and residuals from the recirculation well are collected. The drilling fluid will be cleaned through processes and separated from the mud liquid. Then, the high solid content mud will be stored in the mud pit. The same procedure will be applied at each well location. The amount of mud that will come out of the well during drilling varies depending on parameters such as drilling depth and drilling progress. The mud resulting from the drilling will be dried in a drilling mud pit and will be subject to the provisions of the Regulation on the Regular Storage of Waste. Since the ground where the drilling rig will be placed will be cover with chemicals and fluid temperature-resistant cement, the waste will not interact with the soil and groundwater.

The drilling mud will only contain water and bentonite. The MSDS (Material Safety Data Sheet) for the bentonite to be used is provided in Annex -F. In the absence of any chemical additives, the drilling mud will be classified under "01 05 04 code Freshwater drilling muds and wastes." Drilling mud disposal can be given to licensed disposal companies without the need for analysis. Since it is appropriate for the drilling mud to be given to a licensed cement factory for recycling/disposal after being dried in a mud pit, the Project Owner is focusing on this option.

If chemicals other than bentonite and water are used in the drilling mud, the waste code will change. In this case, a hazard analysis of the drilling mud must be conducted and the waste code determined. The analysis results should be evaluated in accordance with Annex-3/B of the Regulation on Waste Management, and the waste should be disposed of in accordance with the relevant articles of the Regulation on Waste Management.

During the drilling operations, domestic wastewater will be stored in a double-compartment impermeable septic pit or in the tank of a toilet cabin within a container system to be set up at the construction site, and permissions will be obtained for its transfer to the Eskişehir Metropolitan Municipality ESKİ General Directorate Wastewater Treatment Plant, and a protocol will be made regarding the acceptance of the wastewater.

Greenhouse Construction and Operation Phases

During the peak period of greenhouse construction, 750 people are expected to work. It is planned that the municipal sewerage system will be extended by the Project Owner for the disposal of domestic wastewater that will be generated during this phase. In this context,

negotiations are ongoing with Eskişehir Metropolitan Municipality about the construction of the sewerage system to be financed under the Project. If the negotiations are concluded positively, the wastewater will be fed into the sewerage system. The wastewater will be conveyed to Turkmen Mecidiyekoy Treatment Plant or Mahmudiye Treatment Plant via sewerage according to the final designs to be determined at the end of the official negotiations. Necessary permits will be obtained for wastewater disposal. Wastewater will not be discharged to the receiving environment without treatment.

If the sewerage system cannot be extended before the construction period, it is planned to collect the wastewater in sealed septic tanks and before the tanks are full, these wastewaters will be regularly transported to the Eskişehir Metropolitan Municipality WWTP and disposed of.

The wastewater to be generated during the operation phase of the Project will be largely limited to domestic wastewater. If the plan to extend the municipal sewerage system by the Project Owner during the construction period or during the operation period is completed, the disposal of wastewater will be provided in this way.

If the sewerage system cannot be extended, the installation of WWTP and disposal of wastewater in the receiving environment where the wastewater of İsmetpaşa Neighbourhood is discharged or in other suitable receiving environments in the vicinity is considered. At this point, the topographical structure of the region posed difficulties. There is no receiving environment in the neighbourhood to discharge under suitable conditions. For this reason, if this option is realised, it is on the agenda to transport the wastewater to the appropriate receiving environment through the transmission system.

The last option under consideration is the use of advanced treatment at the WWTP, storage of the treated water for irrigation purposes in agriculture and transmission of the water to the areas in need in the region. The last project has not been finalised. Wastewater management and discharge is also an issue to be monitored within the scope of the Project ESMP.

In addition, the drainage waters to be formed during the operation phase will be reused by reverse osmosis or ultrafiltration system of NUF company. The recycled use rate of drainage water is targeted to be 98%. The wastewater generated by 2% of the wastewater will be stored in the pond and sent to the wastewater treatment plant by vacuum trucks at certain intervals, or the drainage water will be treated by installing a treatment plant and will be disposed of in accordance with the requirements of the legislation (discharge to the receiving environment or treatment at the quality of use in agriculture by making it suitable for tree/agricultural irrigation). In addition, it is aimed to increase the drainage water recycling rate from 98% to 100% in the future.

Geothermal Fluid

In the operation, geothermal fluid will be returned to the geothermal reservoir through reinjection wells. There will be absolutely no wastewater discharge from geothermal fluid. During the maintenance of the wells, impermeable collection ponds will be established in the drilling areas to be used in case of any malfunction. In the event of any emergency, operations will be shut down through the installed automatic system. The geothermal fluid collected in the pond will be reinjected into the system with a reinjection pump, and the discharge of geothermal fluid into any environment will be prevented throughout the entire project lifespan. The Project Owner must prepare a wastewater management plan to minimize the risk of wastewater discharge before starting operations.

Although geothermal fluid will not be discharged into the receiving environment, there are guidelines in the Regulation on Control of Water Pollution for special cases. According to this guideline, if the geothermal fluid is inevitably discharged into surface waters, the geothermal fluid will be kept in a thermal pool where the temperature of the fluid must be reduced to the permissible limits set by the Regulation on Control of Water Pollution. The storage pond should be designed and of sufficient size to allow for the necessary cooling during the potential duration of storage and failure of the reinjection.

At each drilling site, two soil samples should be taken before the drilling begins and 2 more after the drilling- at the mud pit and generator locations - and any contamination caused by the drilling should be checked. Before the drilling, an observation well should also be opened according to the direction of the groundwater flow, and the groundwater quality should be monitored during the drilling.

5.4 Waste Management

The main national regulation regarding solid waste management is the Regulation on Waste Management. At the international level, the IFC EHS Guidelines for Waste Management expect the complete prevention of waste generation from Projects. When these waste reduction tools are already implemented and waste generation still occurs, they should comply with national and international standards, and in their absence, should comply with GIIP.

The solid waste that will be generated generally consists of household solid waste from personnel, vegetable waste, packaging waste, waste batteries and accumulators, medical waste, hazardous waste, drilling mud, and excavation waste. These wastes will be collected separately. In case of spillage/leakage, spill kits should be available at the campsite/construction site/waste storage area.

Vegetable waste generated during the production phase will be reduced in volume by being shredded into small pieces and sent to municipal solid waste disposal sites. However, the Project Owner is working on the economic utilization of vegetable waste in this regard. They

are in discussions with biomethanisation facilities, compost facilities, or biomass incineration facilities and aim to achieve a sustainable solution.

Cocopeat and similar soil alternative products used in production are replaced with new ones after they have completed their efficient lifespan. These products are transported for use in agricultural production again because they can be used in different sectors, primarily in landscaping and ornamental plant cultivation, and no waste is generated.

As mentioned above, the drilling mud will only contain water and bentonite. In the absence of any chemical additives, the drilling mud will be classified under "01 05 04 Code Freshwater Drilling Mud and Wastes." Drilling mud disposal can be given to licensed disposal companies without the need for analysis. After the drilling mud is dried in the mud pit, it is planned by the Project Owner to be sent to a licensed cement factory for recycling/disposal.

If chemicals other than bentonite and water are used in the drilling mud, the waste code will change. In this case, a hazard analysis of the drilling mud must be conducted and the waste code determined. The analysis results should be evaluated in accordance with Appendix-3/B of the Regulation on Waste Management, and the waste should be disposed of in accordance with the relevant articles of the Regulation on Waste Management.

Household waste will be stored in closed trash bins and will be collected regularly by the municipality for disposal. Packaging waste will be stored separately in recycling bins.

Hazardous waste will be stored in a temporary waste storage area with a lockable, closed door that built on an impermeable surface, as required by regulations, and will be delivered to licensed disposal companies.

In addition to the Project, Regulation on Waste Management, it must comply with the guidelines of the Regulation on Control of Packaging Waste, Regulation on the Management of Waste Oils, Regulation on the Control of Waste Batteries and Accumulators, Medical Waste Control Regulation, and Regulation on the Control of End-of-life Tires.

A temporary waste storage area should be established in accordance with international guidelines and regulations, an impermeable surface should be provided for hazardous waste, and a blind drainage channel should be present on the floor of the storage area. Waste records should be kept regularly.

Within the scope of the project, medical wastes to be generated by the health unit will be collected separately in accordance with the “Regulation on Control of Medical Wastes” [17] and delivered to contracted institutions for disposal.

5.5 Air Quality

During the construction phase of the project, the issues related to air quality are dust and exhaust emissions.

In the Project Introduction Document (PID), since the mass flow rate of controlled and uncontrolled dust emissions is calculated to be below 1 kg/hour and this value is lower than the dust emission limit value of 1.0 kg/hour specified in Appendix-2 Table 2.1 of the "Regulation on the Control of Industrial Air Pollution" published in the Official Gazette dated 03.07.2009 and No 27277, and the " Regulation on the Amendment of the Regulation on Control of Industrial Air Pollution " published in the Official Gazette dated 20.12.2014 and No 29211, there was no need to conduct dust dispersion modelling, and therefore, no modelling study was carried out. Additionally, the Project Introduction Document specifies measures to reduce impact such as loading/unloading without spilling, watering, etc.

It has been committed that water spraying will be done to minimize dust formation and that the provisions of the Regulation on the Control of Industrial Air Pollution will be adhered to. When these measures are taken, the potential impacts caused by dust emissions will be minimized and will be limited to the construction site. During the site visit, it was observed that work had not yet begun on the site, and no dusting was noted.

To reduce exhaust gas emissions from construction vehicles, all vehicles will be regularly inspected and maintained.

Depending on the characteristics of the geothermal resource, the presence and concentration of potential air pollutants may vary. Geothermal fluids can contain some harmful air pollutants such as mercury and hydrogen sulphide. In addition to these compounds, geothermal fluids can also contain environmentally harmful gases such as carbon dioxide and methane. The emission of these gases, especially when it occurs in enclosed spaces during the initial discharge, can primarily lead to occupational health and safety issues. Additionally, the emission of these gases can lead to significant air emissions and associated impacts, depending on the chemical properties of the geothermal resource. Compared to fossil fuel-burning sources, geothermal operations generally emit less greenhouse gas (GHG). Emissions can also be released during well drilling and flow tests.

[17] Tıbbi Atıkların Kontrolü Yönetmeliği - https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=23273&MevzuatTur=7&MevzuatTertip=5

In the project, it is planned to use a re-injection system where reject fluids are reinjected into the reservoir without discharging waste liquids, including NCG (non-condensable gases - CO_2, H_2S, CH_4, NH_3, N_2, H_2, etc.) into receiving environments. Non-condensable gases resulting from the use of geothermal resources can have adverse effects on air quality.

Hydrogen sulphide (H_2S) is a colorless, corrosive, and highly toxic gas. It has a sharp smell like rotten eggs. Since a closed system will be used within the scope of the project, there will be no H_2S emissions except in the event of an accident. However, necessary precautions must be taken against such a situation.

The Project Owner has stated that all the work to be carried out at the wellhead during drilling operations and well construction will be conducted by the contractor companies. The Project Owner will supervise the contractor's work and monitor its environmental performance.

The World Health Organization (WHO) recommends that the concentration of H_2S gas in the air should not exceed 7 µg/m3 on average over 30 minutes to prevent odor disturbance. For H_2S gas, the WHO's other air quality limit values are defined as 150 µg/m3 (24-hour average) and 100 µg/m3 (1-14 days). In Turkey, there is no H_2S limit value according to the Air Quality Assessment and Management Regulation. According to the Air Quality limit values in the Facility's AoI in Appendix-2 of the Regulation on the Control of Industrial Air Pollution, the H_2S limit is a Short-Term Limit Value of 20 µg/m3 and an hourly limit of 100 µg/m3.

Odor is one of the expected impacts of geothermal energy projects. Zero emissions are expected from the geothermal system planned as a closed loop. In facilities where H_2S is emitted, the emissions or NCG's are recompressed and injected underground along with the resulting liquid.

In this context, during the operation of the facility, NCG emissions and odor release into the atmosphere are not expected. The geothermal fluid will only surface at the wells that will be opened, and the piping will be done underground. The geothermal fluid will transfer heat to the closed-loop greenhouse system using a fluid plate heat exchanger. The geothermal fluid will be reinjected back into the source through reinjection wells.

The geothermal fluid extracted from underground can cause complaints regarding wastewater, gases, bad odors, and drilling mud due to the release of gases separated from the geothermal fluid into the receiving environment after any technical failure. In this context, analysis studies should be conducted to regularly measure odor concentrations, and the measurement results should be compared with the limits provided in Article 9.1.b of the Regulation on the Control of Odorous Emissions during the operational period.

Almost all geothermal fluids contain some Non-Condensable Gases (NCGs), primarily CO_2 (the most important GHG). The amount of existing NCGs varies depending on the specific geothermal fluid in question.

By reinjecting the NCGs into the geothermal reservoir along with the fluid from the geothermal facilities, the fluid remains in a closed system without harmful emissions. With this closed system, zero gas emissions can be achieved. In this case, there is no obligation to quantify direct emissions.

To control the potential leakage of odors and gases that may arise from the project, air quality measurements should be continuously conducted during the drilling and operation phases. The project owner has stated that these measurements will be conducted regularly.

During the operation phase, greenhouses are not expected to have an impact on air quality. During this period, the most important impact on air quality is the emissions caused by vehicles that transport workers and materials. Periodic checks of vehicles will be carried out and a Traffic Management Plan will be prepared to minimize exhaust gas emissions.

Dust formation due to greenhouse activities and transportation, since road are covered with asphalt, is not expected during the operation period.

5.6 Noise

The closest settlement to the greenhouse construction and the drilling wells is İsmetpaşa Neighborhood. The nearest well to the neighborhood is 2.2 km away. Two stock farms located 200 and 700 meters away from the project area on parcels 33, 34, 35 of plot 121, where land acquisition has been completed, have also been determined as sensitive receptors. Additionally, the limit values of the Regulation on Control of Ambient Noise are provided in **Table 5-2**. According to the acoustic report presented in the Project Introduction Document, there will be no noise source during the operational phase of the project. The acoustic report is presented in Annex-K.

Noise will be generated during construction and drilling activities. The noise level that will occur during this phase is calculated as 32.54 dBA at 2200 metres in the daytime at the nearest household (settlement) and it is predicted that the noise level will remain below the limit values according to national legislation and international guidelines. The values according to the distance calculated below the noise limit values at the nearest sensitive receptors, which are stock farms, are given in **Table 5-1**. Since the noise is intermittent and the level is low, the impacts at the receptors are expected to be below the calculated level.

Table 5-1. Noise level according to distance[18]

Distance (m)	Lday time(dBA)
100	63.67
250	54.88
500	47.62
1000	40.57
2200	32.54
3000	29.11
3500	27.39

With the finalization of the locations of the wells and the greenhouse placements, it will be determined whether noise measurements are necessary based on the distance of the noise source from sensitive receivers. In case the well drilling or greenhouse construction is moved closer than 500 meters to the sensitive receptor, noise measurement should be made for the sensitive receptor. In addition, if noise complaints are received from stock farms or settlements regardless of the distance, noise measurements should be made at the receptor.

Table 5-2. Limit values in the Regulation on Control of Ambient Noise

Noise Source	Parameter	Ambient Noise Level		
		Daytime	Evening	Nighttime
Industrial facilities, transportation sources	$LA_{eq,5min.}$	65 dBA	60 dBA	55 dBA
Businesses broadcasting music	$LA_{eq\ 63\text{-}250\ Hz}$	60 dBA	55 dBA	50 dBA
Workplaces	$LA_{eq,5min.}$	Background + 5 dBA		Background + 3 dBA
If there are multiple Workplaces	$LA_{eq,5min.}$	Background + 7 dBA		Background + 5 dBA
All sources	LCmax	100 dBC		

5.7 Soil Quality and Use

The project area consists of land suitable for agriculture. In the project, hydroponic farming will be carried out in greenhouses heated by the thermal energy of the geothermal source. In the areas where the greenhouses are located, the arable soil on the greenhouse floor will not be disturbed.

Poor environmental management during the construction phase, especially incidents of accidental spillage of liquid cement and other chemicals, can have negative impacts on soil

[18] Acoustic Report, Dünya Çed, February 2024

quality. There is a risk of land contamination due to the spillage of hazardous materials such as oil, fuel, or similar substances (for example, during the refuelling of machines working on-site). The magnitude of these effects can vary from small to large depending on the scale and duration of the adverse events. Such incidents that may cause soil contamination at the project site and/or related facilities can lead to exceeding the threshold values defined by the Regulation on the Control of Soil Pollution.

To prevent possible spills, all maintenance, repair, and fuel supply activities should be carried out in designated areas. In case of a spill, a spill kit and absorbents should always be kept close to the activities to enable prompt intervention.

During the planned exploration activity, chemicals such as thinners/viscosity reducers, fluid loss reducers, leak preventers, weighting agents, corrosion inhibitors, flocculants, filtrate reducers, and stabilizers that prevent degradation will be used in the drilling process.

During drilling, although the mud compositions and additive quantities will be clarified based on the values obtained from formation information, the Material Safety Data Sheets (MSDS) for all chemicals to be used in the drilling in the region must be included in the Project.

Since the ground of the area where the drilling rig will be placed will be concreted with cement resistant to chemicals and fluid temperature, the interaction of waste with soil and groundwater will be prevented.

Considering that negative impacts on the environment and human health may occur during the drilling, testing, transportation, and storage of chemical materials, all the provisions specified in the MSDS must be adhered to. To prevent impacts on human health during use, Personal Protective Equipment (PPE) should be provided to personnel, and chemical/hazardous substances should not be spilled, left, discharged, or mixed into the receiving environment. Since chemicals should not directly mix with the receiving environment and drilling mud/test water should not be discharged into the receiving environment, the indirect mixing of such mixtures into the receiving environment should be prevented. All chemicals to be used within the scope of the project must be stored in an enclosed area, isolated from the natural ground, surrounded by drainage channels, and on a chemically resistant concrete floor. Therefore, all maintenance-repair-fuel supply areas and the temporary/permanent storage conditions for all chemicals to be used should be surrounded by impermeable concrete and ground insulation resistant to chemicals, channels, collecting pools, etc.

At each drilling site, two soil samples should be taken before the drilling begins - at the mud pit and generator locations - and the presence of any drilling-related contamination should be checked.

The chemicals to be used during the operational phase of the project will be fed directly into a closed-loop system. Additionally, the chemicals that will be stored in their original packaging

include fuel; thinner, oil, and grease; and cleaning chemicals. There will also be an oil barrel in the area where the chemicals are stored.

During the operational periods, all chemicals must be stored in specific areas with secondary containment, such as covered concrete basins, to prevent any leakage from reaching the ground.

5.8 Biodiversity

The first field visit was conducted on 16 February 2024, to observe the Project Area and determine the habitat characteristics. Additionally, a second field visit was conducted on 29 February 2024, to observe the wellhead locations.

In the region where the project area is located, natural habitats have a very limited distribution, while modified habitats consisting of agricultural areas are common. There are no natural habitats within the boundaries and impact area of the project area. The nearest natural habitat is the steppe habitat located 3 km west of the project area. This is a situation that limits the fauna diversity in the area, especially flora. Natural plant distribution is generally located on roadsides and between fields. Fauna can also exist in these areas.

The Project Introduction Document also contains findings in this regard. In the same document, a total of 10 flora, 4 amphibians, 8 reptiles, 9 birds, and 6 mammal species have been identified in the project area and its vicinity. Among these species, only *Testudo graeca* is classified as VU (Vulnerable) according to the IUCN Red List. All the remaining species are in the LC (Least Concern) category. However, there are no endemic species among the species. All the flora and fauna species present in the project area (including *Testudo graeca*) are widely distributed in Turkey.

In the assessments made in terms of legally protected and internationally recognised areas, it has been determined that the project area is not located within any of these areas. In addition, the Project area does not include Internationally Recognised Sites with high biodiversity value such as World Heritage Natural Sites, Biosphere Reserves, Ramsar Wetlands of International Importance and Alliance for Zero Extinction Sites (AZE). It is emphasised that the Project is not located within any protected area in the project introduction file.

Accordingly, the map showing the legally protected and internationally recognised areas around the project area is given in **Figure 5-1**. The distances of these areas to the project area are also presented in **Table 5-3**.

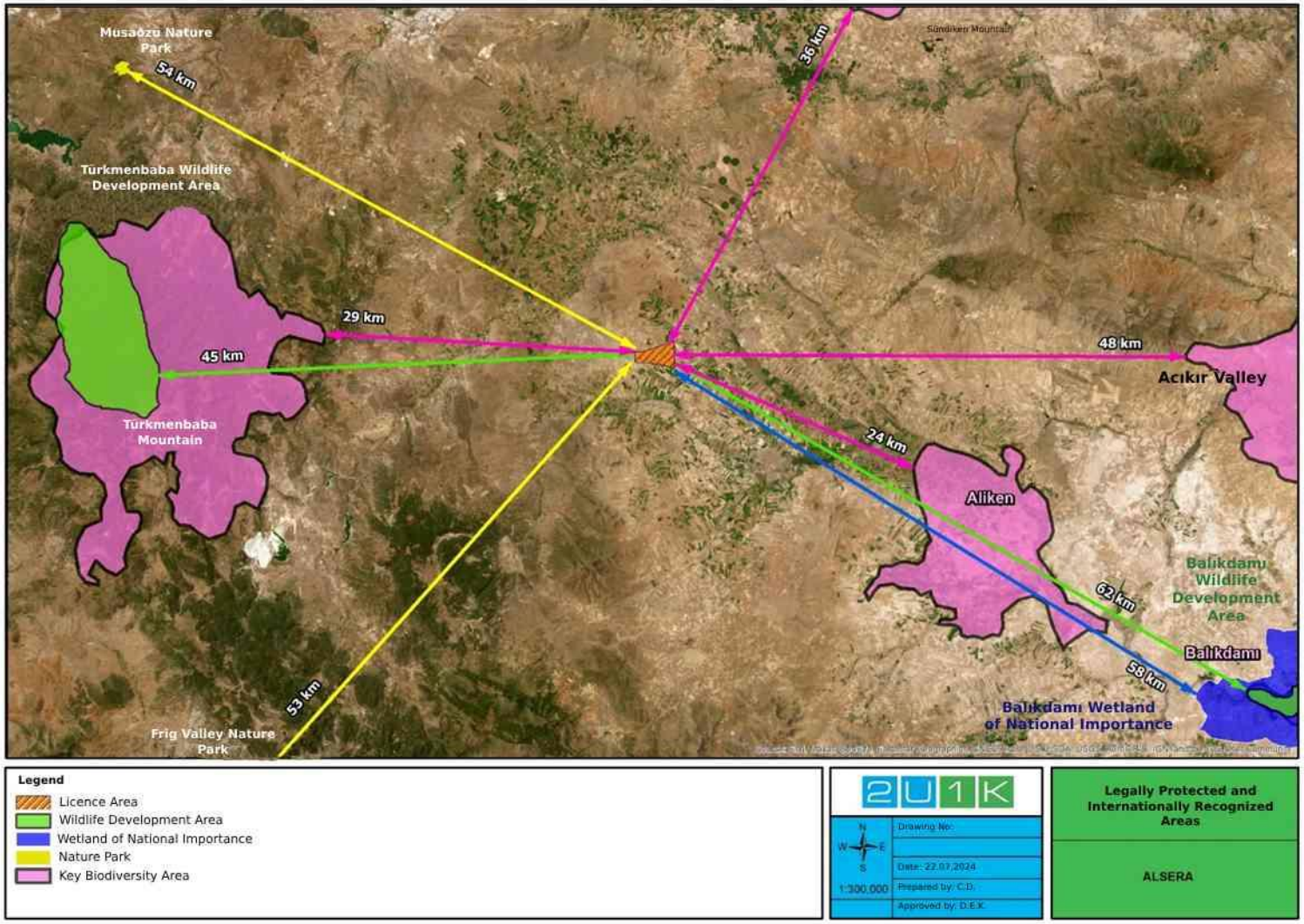


Figure 5-1. Legally Protected and Internationally Recognized Areas

Table 5-3. Distances of Legally Protected and Internationally Recognized Areas According to the Project Area

Area Name	Status	Distance (km)
Türkmenbaba	Wildlife Development Area	45
Balıkdamı	Wildlife Development Area	62
Balıkdamı	Wetland of National Importance	58
Frig Vadisi	Natural Park	53
Musaözü	Natural Park	54
Türkmenbaba Dağı	Key Biodiversity Area (KBA)	29
Aliken	Key Biodiversity Area	24
Sündiken Dağları	Key Biodiversity Area	36
Balıkdamı	Key Biodiversity Area	62
Acıkır Vadisi	Key Biodiversity Area	48

Dust formation is also a concern due to construction activities. Dust, especially in habitats not directly affected by construction activities, can harm plants due to the transportation of dust and its deposition on plants.

During these activities, fauna may interact with construction machinery and humans. These interactions can be intentional or accidental. To prevent these interactions, activities such as hunting within and around the project area should be strictly prohibited. In addition, accidental interactions mostly occur during the operation of construction machinery and the movement of other vehicles used in the project within the site. In such cases, speed restrictions and the relocation of encountered fauna from the area are generally implemented.

During the operational period, no activities will be carried out outside the designated area for the project. Therefore, an increase in habitat loss is not expected. Considering that the project will be carried out in modified habitats, it is anticipated that this impact will be minimal.

During the operational period, there may be fragmentation effects on fauna caused by the pipelines. In this context, the passage of fauna will be allowed to minimize the fragmentation effect.

Foreign invasive species have not been evaluated within the scope of the PID. The evaluation of these species is important because the potential spread of invasive species can have destructive effects on the ecosystem.

No critical habitat assessment has been conducted under the PID framework. However, based on the literature and field studies, it has been concluded that there is no critical habitat in the project area.

According to the commitments made in the PID, the personnel who will be working will be warned not to harm wildlife and to show the necessary sensitivity. During the activities, our country, which is a party to the aforementioned agreement, will comply

with the measures and laws and regulations to be enacted in accordance with national and international agreements. During the activities, in case of any risks to the existing fauna and flora, in the continuity of biological balance, and in the preservation of natural habitats, cooperation will be established with the competent authorities, and the natural balance will be ensured.

Evaluation

In the field studies conducted, no spread of an invasive species was detected in the area. However, due to project activities, there is a possibility of the introduction of invasive species from outside the project area into the project site. Therefore, even if invasive alien species have not been detected in the area, preventive measures should be taken during project activities to prevent their potential introduction.

5.9 Occupational Health and Safety

Currently, the project is in the planning and design phase. No contractor has been assigned yet within the scope of construction activities.

Companies operating in Turkey are obliged to comply with local legislation, including Law No. 6331, the Occupational Health and Safety Law, and relevant regulations and notifications, regardless of their main area of activity. The implementation of the relevant regulations also includes those who previously worked under Nata Tarım and currently work under the project owner.

The project owner must ensure that all measures related to Occupational Health and Safety (OHS) are taken. OHS measures should include the identification of potential hazards, the implementation of preventive actions, employee training, the recording of work accidents and illnesses, and emergency response. All the measures to be taken within the scope of occupational health and safety (OHS) will be applied in the same way for those who previously worked at Nata Tarım and those who currently work under the project owner.

The project owner should create and implement an OHS management plan and relevant procedures to ensure safe working conditions on the project site. The OHS plan and procedures should also ensure that appropriate measures are taken regarding the safe use of the machines and equipment used, as well as the safe handling of chemical, physical, and biological substances. Employees should be provided with OHS training to understand and implement OHS requirements, and PPE should be supplied. The project owner should ensure that the project's OHS performance is regularly reviewed. Health and safety hazards and risks arising from project activities should be identified, and effective methods and actions should be determined to address these hazards and risks.

A system should be implemented to regularly review occupational health and safety performance and the working environment, and this system should ensure the identification of safety and health hazards and risks, the application of effective methods

to respond to identified hazards and risks, the prioritization of actions, and the evaluation of results.

The Health and Safety Plan, Emergency Plan, and Risk Assessment documents prepared for the drilling activities to be carried out within the scope of the Project should be prepared to cover all areas and hazard situations (e.g. toxic gas emissions that may occur during drilling) where the Project activities will be conducted.

In accordance with the Occupational Health and Safety Law No. 6331, a sufficient OHS organizational structure should be established within the scope of the Project. A workplace doctor and a workplace safety expert should be assigned within the scope of the project. The appointed workplace physician and occupational safety expert will identify deficiencies and shortcomings related to occupational health and safety during the implementation of the Project activities and will determine measures and recommendations. In addition to the OHS expert currently employed at Nata Tarım, a number of experts in accordance with the regulation will be assigned in the Project.

In this context, it is planned to establish an infirmary in the facility during the Project operation phase and to have a full-time physician and health personnel in the infirmary.

5.9.1 Accident and Incident Records

All work accidents and near-miss incidents should be recorded throughout the construction and operation period of the project. Accident investigation reports should include corrective and preventive actions and accident root cause analyses.

A total of 12 work accidents occurred between May 2024 and January 2025 at the currently operating Nata Tarım facility and their records were kept regularly. 7 of the 12 work accidents were accidents with lost days and a total of 36 working days were lost.

5.9.2 Trainings

All employees must receive occupational health and safety training. Training records should be kept for each employee. Basic occupational health and safety training should include, but not be limited to, the following topics:

1. General topics
   a) Information related to labor legislation,
   b) Legal rights and responsibilities of employees,
   c) Workplace sanity and order,
   d) Legal consequences arising from workplace accidents and occupational diseases

2. Health related topics
   a) Causes of occupational diseases,

b) Principles of disease prevention and the application of prevention techniques,
c) Biological and psychosocial risk factors,
d) First aid,
e) Harms of tobacco products and passive exposure,
f) Covid-19 precautions,

3. Technical issues
a) Chemical, physical, and ergonomic risk factors,
b) Manual lifting and carrying,
c) Explosion, blast, fire, and fire prevention,
d) Safe use of work equipment,
e) Working with display screen equipment,
f) Electricity, hazards, risks, and precautions,
g) Causes of workplace accidents and the application of prevention principles and techniques,
h) Safety and health signs,
i) Use of personal protective equipment,
j) General rules of occupational health and safety and safety culture,
k) Evacuation and rescue,

5.9.3 Risk Assessment

Under Article 6 of the Occupational Health and Safety Risk Assessment Regulation, employers are required to conduct risk assessments covering the current conditions of the workplace, routine tasks to be performed, and maintenance work to be carried out. Additionally, potential emergencies based on hazard assessments are also identified. Risk assessments should be conducted by a team formed by the employer, consisting of the employer's representative, occupational health and safety expert, workplace doctor, worker representatives, workplace support teams, and workers with special experience related to the assessed risks. A risk assessment will be conducted for project activities, and relevant preventive measures and actions will be taken. Employees will be informed about the results of the risk assessment. In case of changes in working conditions and/or incidents and near misses, risk assessments need to be redone.

Article 14 of the regulation requires the principal employer, the Facility Owner, to coordinate and cooperate when there are multiple employers operating in the same workplace. In addition to these requirements, Article 15 regulates risk assessments and the coordination of related tasks in cases where subcontractors are present at the workplace. According to Article 15, the Facility Owner is obliged to provide the necessary information and documents for risk assessments to subcontractors, and is also obliged to coordinate, review, and control the risk assessment activities of the subcontractors. Contractors are obliged to conduct risk assessments related to their work, provide a copy

of the risk assessment studies to the Facility Owner, and ensure the implementation and adoption of necessary measures.

The Risk Assessment Report presented within the scope of the ESDD studies should be prepared to include the areas and hazard situations where all activities, including Project greenhouse activities, will be carried out.

There is a Risk Assessment Report prepared on behalf of Nata Tarım on 03.07.2024 and valid until 03.07.2028.

5.9.4 Emergency Action Plan

According to Article 5 of the “Regulation on Emergencies in the Workplace”, employers are obliged to prepare an emergency response plan for the site and inform subcontracted workers, temporary workers, and visitors about the adapted emergency response plan for the site. Contractors are also obliged to prepare a site-specific emergency response plan in collaboration with the Project owner.

The Emergency Action Plan includes the following items:

1) Workplace title, address, and employer's name.
2) The name, surname, and title of the preparer(s).
3) Preparation date and validity date.
4) Designated emergencies.
5) Preventive and restrictive measures taken.
6) Emergency response and evacuation methods.
7) A diagram showing the workplace or parts of the workplace that include the following elements:
    a) Locations of emergency equipment, including those to be used for firefighting.
    b) The location of the first aid supplies.
    c) If available, escape routes, assembly points, and evacuation plans, including warning systems.
    d) The names, surnames, titles, areas of responsibility, and contact information of the assigned employees and their backups, if any.

The Emergency Plan prepared for the project and included in the Project Introduction Document should be updated to include the above items specifically for project activities and should be posted in the relevant areas for information dissemination. The Emergency Plan should also include actions to be taken in the event of hydrogen sulphide release, including evacuation.

Additionally, project activities should include regular emergency drills based on predetermined emergency scenarios, taking into account the physical structure and conditions of the project area. The Emergency Action Plan prepared for drilling activities has been submitted by the Project Owner and presented as Annex-G to the report. The

Emergency Action Plan should be prepared to include all activities, including the project's greenhouse activities.

Emergency Action Plan on behalf of Nata Tarım was prepared on 03.07.2024 and is valid until 03.07.2028.

5.9.5 Employee Representative

For the project, a worker representative should be appointed as follows under the Occupational Health and Safety Law No. 6331:

1. In workplaces with two to fifty employees, one representative,
2. In workplaces with fifty-one to one hundred employees, two representatives,
3. In workplaces with one hundred to five hundred employees, three representatives,
4. In workplaces with five hundred to one thousand employees, four representatives,
5. In workplaces with one thousand to two thousand employees, five representatives,
6. In workplaces with two thousand one or more employees, six representatives.

5.9.6 Personal Protective Equipment

In addition to other safety measures to be taken in the project area, Personal Protective Equipment (PPE) such as insulated gloves, shoes, and masks should be provided to employees to protect them from workplace hazards, and training should be given to employees on the safe and effective use of these equipment. Within the scope of project activities, personal hydrogen sulphide monitoring devices, respiratory apparatus, and emergency oxygen tanks should be provided to employees at risk of hydrogen sulphide exposure.

5.9.7 First Aid

For the project, a first aid officer should be appointed in accordance with the rules provided below under the Occupational Health and Safety Law No. 6331:

- In less hazardous workplaces, there should be 1 first aid officer for every 20 employees,
- In hazardous workplaces, there should be 1 first aid officer for every 15 employees,
- In very hazardous workplaces, there should be 1 first aid officer for every 10 employees who are certified first aid officers.

Within the scope of the project, it should also be ensured that first aid training is provided to the relevant personnel by the Provincial Health Directorate and accredited first aid organizations.

5.9.8 Periodic Inspection of Work Equipment

The periodic control intervals and periodic inspections of work equipment for which the standards do not specify criteria are carried out within the intervals and criteria foreseen by the manufacturer, if any. If these matters are not determined by the manufacturer, the periodic inspection of work equipment is carried out at intervals determined based on the results of the risk assessment, taking into account factors such as workplace environmental conditions, frequency of use, and duration of use. The determined periodic inspection interval should not exceed one year, except for the exceptions specified in the Regulation on Health and Safety in the Use of Work Equipment.

Reports prepared as a result of the periodic inspection of the equipment should be prepared and approved in accordance with the above regulation.

5.10 Workforce and Working Conditions

The impact assessment of this section has been considered together for both the construction and operation phases, as potential impacts in both phases may yield similar results; therefore, the same impact mitigation measures will be applied to both phases of the Project.

The general purpose of this labor assessment is to identify significant labor issues and evaluate the Project's existing human resources policies and procedures. The Project Owner WB OPs must take reasonable measures to monitor labor and working conditions in accordance with the International Labour Organization (ILO) fundamental standards and the Turkish Labour Law (Law No. 4857). Employees who previously worked under Nata Tarım and currently work under the project owner are subject to the same standards.

Including management representatives, personnel with clearly defined responsibilities and authority limits should be assigned specifically for the project. Within the project-specific organizational structure to be established, there will be managers responsible for the coordination and management of the project, technical and financial experts who will work during the construction and operation phases of the project, at least one Social Expert, at least one Human Resources Expert, and an Occupational Health and Safety Expert (OHS). Basic environmental and social responsibilities should be well-defined and communicated to the relevant personnel. Personnel must also possess sufficient knowledge, skills, and experience to carry out the specific measures and actions required under the ESMP competently and efficiently.

In the internal audit of construction works and operational activities, personnel assigned from the Project Owner's central organization will regularly conduct audits and inspections.

The Project Owner has not yet contracted with a Contractor for the construction phase, and all Contractors involved in the construction and operation phases of the Project must act in accordance with the commitments and standards provided under EDDD, ESMP, and SEP.

The Project Owner does not have a written subcontractor management plan, and a subcontractor management plan will be prepared before an agreement is made with the contractor. The compliance of contractors with the standards specified in the EDDD, ESMP, and SEP will be guaranteed by the subcontractor agreement.

The project owner has a written Human Resources Policy. The policy provides information about the Project Owner's work process and the legal rights of employees. The Human Resources Policy is presented in Annex-H.

The Project Owner has prepared employee contracts that include the legal rights and responsibilities of the employees; examples of employee contracts for white-collar and blue-collar workers are provided in Annex-I. All personnel (including subcontractors) who will be involved during the construction and operation periods will be employed under contract, and salary and overtime payments will be made accordingly. A copy of the contract will be shared with the employee, and all legal rights and responsibilities will be explained in detail to the employee before the contract is signed. All employees will be hired as insured, and the insurance will commence from the start date of employment. In the case of foreign national employees, the Project Owner will strictly monitor work permits.

The Project Owner will provide Personal Protective Equipment (PPE) including masks, earplugs, and clothing to employees in accordance with the job requirements. Employees will not be on-site without the necessary protective equipment. In the event that the provided equipment and clothing wear out or lose their adequacy, the Project Owner is responsible for providing new ones.

In accordance with the Occupational Health and Safety Law No. 6331 and the Regulation on the “Communiqué on the Qualifications and Selection Procedures and Principles of the Employee Representative related to Occupational Health and Safety”, published under it, workplaces with 2 to 50 employees should have one employee representative, those with 51 to 100 employees should have two, and those with 101 to 500 employees should have three employee representatives elected and appointed. The Project Owner should organize the election of employee representatives during the construction and operation periods and encourage employees to become representatives. The employee representative should be introduced to the employees through training programs and announcements. The employee representative should be provided with an appropriate

environment and tools to hold meetings and conduct regular consultations. The absence of female individuals among employee representatives can lead to a culture of silence in the workplace. Female employees should be encouraged to become representatives, and necessary training programs should be provided for participation in such representation and managerial processes.

There is a Code of Conduct (CoC) policy prepared by the project owner, which is presented in Annex-I. The CoC policy emphasizes that union membership is not an obstacle. It guarantees that harassment and bullying will not be tolerated. It has been explicitly guaranteed that issues such as discrimination, child labor, and forced labor will not be present within the CoC. The CoC policy will be shared with employees as an annex to their employment contracts and will be explained verbally.

The Project Owner is obliged to provide behavior rules training to every employee (including subcontractors) to ensure that personnel working during construction do not cause any disturbance/conflict in local communities and that their interactions with community members do not lead to inappropriate behavior/misconduct. The Code of Conduct training will provide information on Gender-Based Violence (GBV), Sexual Harassment (SH) / Sexual Exploitation, and Abuse (SEA).

Currently, construction works have not started. The project is in the planning and design phase. Drilling works and greenhouse construction works are expected to start in 2025 and be completed in 2026. The project is expected to create temporary employment during the construction period. During the construction period, priority will be given to contributing to the local economy by using local materials and sourcing various goods and services locally.

While conducting recruitments, the local community will be informed about employment opportunities. Informative brochures left at neighborhood head offices can play a key role in this process. The Project Owner will inform its stakeholders about employment and procurement opportunities. It is important that the recruitment process is conducted transparently and that equal opportunities are provided to all applicants.

The drilling works to be carried out will be carried out 12 months a year, 25 days, 8 hours a day (single shift) according to seasonal conditions and 21 people are planned to be employed during the activities at each drilling point. Although there is no exact information on the number of personnel to be employed during the construction period, approximately 750 people are expected to work. During the operation period, an average of 900 people are planned to be employed by the Project owner.

The Project Owner will prioritize local employment during the operational period, taking into account the provision of the necessary skills and competencies. The proportion of women working within Alarko Tarım, the main structure to which the Project Owner is affiliated, is 71%, and the Project Owner aims to ensure that 90% of the personnel working during the operational period of this project are women.

The project owner also aims to establish a nursery, an academy building for training technical personnel, and social facilities in order to facilitate the working conditions of female employees in the project area.

During the construction period of the project, a campsite will be established in the project area for the accommodation of the personnel. The camp area is planned to be set up by the contractor who will be involved during the construction period. The Project Owner will be responsible for ensuring the supervision of the camp area and for ensuring that the camp area meets the worker accommodation standards[19] prepared by the IFC and EBRD and approved by the World Bank. The camp area will include rest areas for employees, a cafeteria, and sanitary facilities that meet hygiene standards. The Project Owner will prepare a Camp Management Plan to ensure the management and supervision of the camp area and to ensure its establishment in accordance with the relevant international standards. The camp management plan should be prepared before a contract is made with the contractor who will be involved during the construction period.

It is planned to provide transportation services for the personnel who will work during the operational period by the project owner. The contractor company will be responsible for the transportation of the personnel during the construction period. To ensure the comfort and safety of the employees, the shuttles will be made suitable for safe transportation. The number of services will be determined according to the number of personnel. The Project Owner will guarantee these matters through the contractor agreement.

The project area will be designed to include separate prayer rooms for male and female staff to enable them to perform their religious duties.

Changing rooms with appropriate ventilation systems that meet hygiene standards will be provided for female and male staff.

During the construction and operation periods, security personnel will be present on site. Security personnel should be trained on proper communication methods with employees and local communities.

5.11 The Social Baseline of the Project

In this section, quantitative and qualitative data have been compiled for the social baseline of the Project. The purpose of the socio-economic baseline study is to identify the socio-economic conditions and trends in areas potentially affected by the Project in order to understand potential impacts and develop appropriate mitigation measures. The socio-economic baseline defines the significant socio-economic issues of provincial and

[19] https://documents1.worldbank.org/curated/en/604561468170043490/pdf/602530WP0worke10Box358316B01PUBLIC1.pdf

local communities and creates a socio-economic database that can be used to monitor changes occurring in the affected communities after the Project.

To see the Project Area, identify sensitive recipients, and determine whether there are official/unofficial users on the land, the first field visit was conducted on 16 February 2024. During the site visit, a meeting was held with the Project Owner, and a preliminary discussion was conducted at the Project site with the mukhtar of the nearest settlement, the İsmetpaşa neighborhood. After the initial meetings, a second site visit was conducted on 29 February 2024, to inspect the wellhead locations.

The social area of influence of the project has been determined by considering land acquisition, workers accommodation, noise during construction and operation phases, workforce flow, changes in dust and air quality, and traffic-related impacts, with the nearest settlement being the İsmetpaşa neighborhood, located 1.5 km from the project area. Throughout the project's lifespan, the impact area can be expanded by the experts based on complaints from stakeholders.

Primary data regarding the communities living around the project area and the potential project impacts were obtained through an informative interview with the mukhtar of the İsmetpaşa neighborhood.

The only settlement close to the drilling and greenhouse areas is İsmetpaşa Neighborhood of Mahmudiye District of Eskişehir Province. Although İsmetpaşa Neighborhood is the only settlement remaining in the project impact area, there are two stock farms located 200 and 700 meters away from these parcels in the east of 121 plot 33,34,35, from the areas where land acquisition has been completed. These two stock farms have also been determined as sensitive receptors.

Secondary data plays an important role in understanding the socio-economic current situation and potential social risks and impacts. The information obtained from secondary data enhances the quality of the current situation studies. These data have been collected and prepared through regional and national statistics and project documents.

Although the land acquisition for the greenhouse area has been completed, the final locations of the wells have not been finalised. The location of the greenhouse campus projected well locations and the parcels for which land acquisition has been completed within the scope of the project are presented in **Figure 3-2** and **Table 3-2**. Cattle are raised in the above-mentioned stock farms and a full impact assessment will be possible after it becomes clear which activity will be carried out on the land they are close to. However, stock farms may be exposed to the following impacts during the construction period:

Noise and Vibration:

- Increased noise and vibration from construction activities can disturb animals and cause stress. This situation can lead to a decrease in milk production or a

slowdown in the rate at which animals gain weight, resulting in reduced productivity.
- Decreased productivity can lead to financial losses on farms due to both low production and increased treatment costs for animals experiencing health issues caused by stress.

Dust and Air Quality:

- Dust from construction activities can contaminate animal feed and water sources, which can negatively affect the health of the animals.
- If the feed and water sources are contaminated, farms may have to take protective measures or provide clean sources, which can increase operating costs.

Traffic and Access:

- An increase in construction traffic can make it difficult to access farms and prevent feed, materials, or veterinary services from reaching the farms.
- Delays caused by traffic or disruptions can prevent timely procurement of resources, which can affect farm operations and increase costs.

Water Use and Pollution Risks:

- An increase in construction traffic can make it difficult to access farms and prevent feed, materials, or veterinary services from reaching the farms.
- Delays caused by traffic or disruptions can prevent timely procurement of resources, which can affect farm operations and increase costs.

The greenhouse and wells will not have a significant impact on the stock farms during the operational periods. However, it can be observed that the vehicles that greenhouse workers use to go to and from work will increase traffic density on the roads passing near the livestock farms. Additionally, it is planned for the project owner to work in collaboration with the municipality to invest in sewage infrastructure in the area. If this investment is realized, sensitive recipients and stakeholders affected by the project will also be able to benefit from this service.

For the potential impacts of the project mentioned above, the following measures should be taken to minimize negative effects:

- Dust suppression techniques and noise barriers should be implemented during construction.
- Regular monitoring of water sources is important to prevent any pollution.
- Construction should be planned in a way that does not obstruct access to farms.

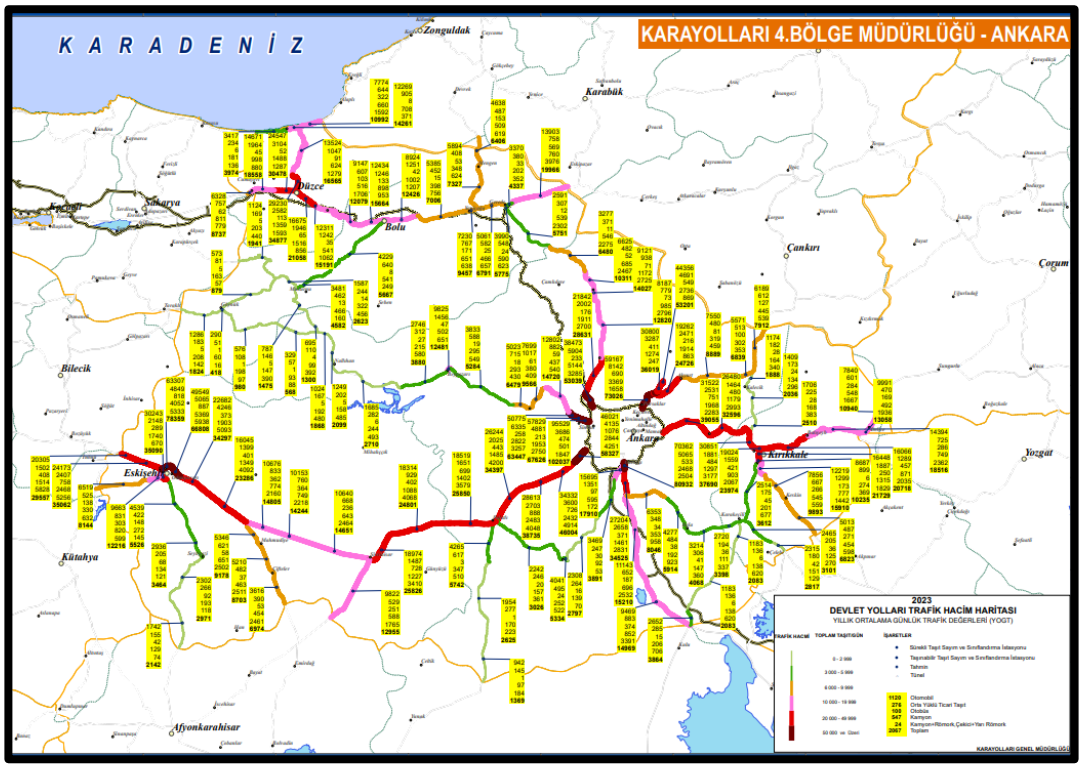
- By ensuring early and continuous communication with farm owners, their concerns should be addressed, and potential compensation mechanisms should be established.

5.11.1 Cultural Heritage

The activities to be carried out within the scope of the project will be conducted within the Environmental Impact Assessment (EIA) areas, and these areas are located on agricultural lands. In order to evaluate the baseline of the project area and its surroundings in terms of cultural heritage, an opinion letter was obtained from the Eskişehir Regional Board for the Protection of Cultural Heritage before starting the land preparation activities. As a result of the evaluations conducted, no cultural heritage or archaeological artifacts were identified. In the event that any archaeological remains or artifacts are found during the construction, all activities will be halted, and the Museum Directorate will be informed in accordance with Article 4 of Law No. 2863. The artifacts found during the construction works will be specified and recorded as "accidental finds." A "Chance Find Procedure" will be prepared before the commencement of construction works to explain the steps to be followed and implemented after a chance find. Correspondence on this matter will be updated considering all decisions made, and all documents will be presented in the ESMP's annex.

5.11.2 Traffic and Transportation

The 2023 Regional Directorate State Roads Volume Map of the General Directorate of Highways-Ministry of Transport and Infrastructure is presented in **Figure 5-2** of the traffic volume maps.



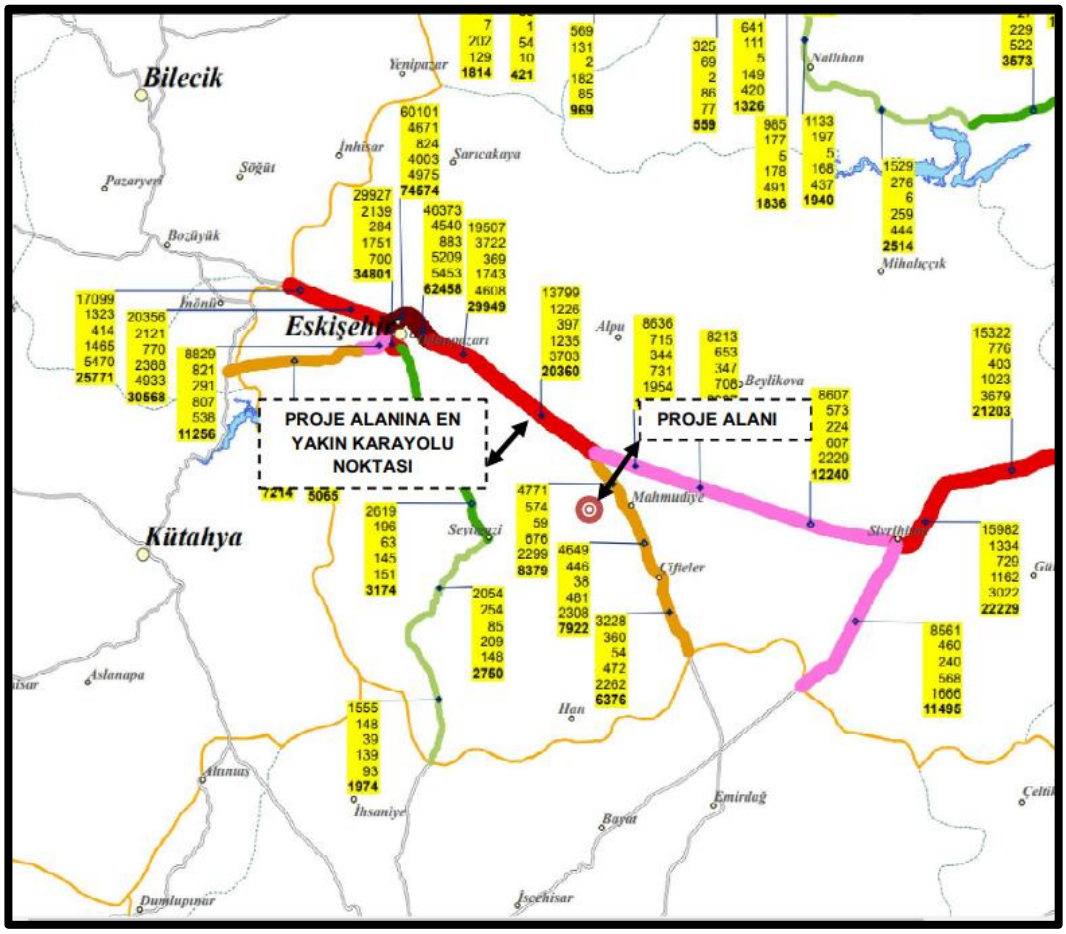


Figure 5-2. 4th Regional Directorate State Roads Volume Map

To the southwest of the activity area, the Ankara-Eskişehir Highway (E90) is located approximately 9 km away.

Table 5-4. Traffic Volume Map - Vehicle Passage

Vehicle Type	Number of Vehicles
Automobile	4649
Medium Commercial Vehicle	446
Bus	38
Truck	481
Truck, Trailer, Wrecker, Semi-Trailer	2308
Total	**7922**

During the construction activities to be carried out within the scope of the project, there may be heavy vehicle traffic and material transport. Also, an increase in traffic due to the vehicles that will transport the Project workers may be observed.

The number of vehicles to be used during the operation period of the project has not yet been finalized, but when updated information is available, it will be reflected in the ESDD. Considering the activities such as employees' transportation and material transportation during the operation period, the traffic load increase in the region is expected.

Times with low traffic density should be preferred for vehicle passages, and necessary warning signs should be placed on special connection roads. Personnel operating vehicles and construction equipment will be specially assigned and given traffic and road safety training. Maintenance of construction machinery and equipment will be carried out regularly, and regulatory speed limits for construction vehicles will be complied with.

A Traffic Management Plan has been prepared within the Project Introduction Document of the project. The Traffic Management Plan will be updated and shared with the contractor before the construction work begins, once the design phase of the project reaches its final stage. As required by the traffic management plan, all necessary signs, barriers, and control devices will be installed to ensure the safe use of the road by traffic and pedestrians.

Any damage that may occur on the surfaces of existing roads used during construction works due to heavy machinery will be repaired by the contractor. In the event that any damage occurs to the infrastructure elements on private lands due to construction activities, mitigating measures will be taken by the contractor. The Project Owner is responsible for ensuring that the contractors take corrective actions.

5.11.3 Demography and Population

The project will be conducted in the İsmetpaşa Neighborhood of the Mahmudiye District, Eskişehir Province. According to the 2023 data obtained from the address-based population registration system, the population of Eskişehir Province consists of a total of 915,418 people, with 454,606 men and 460,812 women. According to the 2023 data, the population of Mahmudiye district is 7,715 which consisting of 3,999 men and 3,716 women.

The neighborhood closest to the project area, İsmetpaşa, is presented in **Table 5-5**.

Table 5-5. Population Data of the Projects Area of Influence

Settlement Area	Female	Male	Total Population
İsmetpaşa Neighborhood	549	580	1.129

Reference: TÜİK 2023

In the meeting with the İsmetpaşa neighborhood mukhtar, it was asked whether there are any immigrants and/or refugees in the neighborhood. There are 3-4 Syrian citizens living in the neighborhood who work for animal husbandry. It has been stated that there are no social problems/tensions within the neighborhood.

5.11.4 Livelihoods and Employment

In the Northwestern Anatolia Region, which includes Eskişehir Province, the Pontids and Anatolids, among Turkey's tectonic communities, are adjacent to each other. Due to its geological and structural characteristics, this region is quite important in terms of both metallic minerals and industrial raw materials. Known as the symbol of the city, sepiolite is a type of ornamental stone found only in the province of Eskişehir in Central Anatolia, Turkey. Known as white gold, sea foam, and Eskişehir stone, nearly all commercially exploitable deposits of sepiolite are located in Eskişehir province (General Directorate of Mineral Research and Exploration (MTA)).

When looking at the sectoral distribution of the workforce in the Eskişehir economy, 52.1% of the population is based in services, 32.4% in industry, and 15.5% in agriculture. In the distribution of the main sectors within the provincial economy, it is observed that the services and industrial sectors stand out (Turkey Employment Agency (İŞKUR)).

The businesses with high employment are Arçelik Inc., TUSAŞ Motor Industry and Trade Inc., Eti Maden Kırka Boron Enterprises, Ford Automotive Industry and Trade Inc., and Eti Food Industry and Trade Inc.

The main types of agricultural products are grains, legumes, sugar beets, sunflowers, fruits, and vegetables. The diversity of agricultural products has also led to the development of agriculture-based industries. Turkey Sugar Refineries Inc. and numerous facilities producing biscuits and baked goods in the city can be given as examples of this.

Another source of livelihood, animal husbandry, is also based on small-scale livestock farming. It is one of the important sources of income for people working in the agricultural sector. In the Mahmudiye and Çifteler districts of Eskişehir Province, small-scale livestock farming is practiced. Additionally, racehorses are bred in the pastures of Mahmudiye District.

In a meeting with the mukhtar of the İsmetpaşa neighborhood, which falls within the projects Area of Influence, information about economic activities was obtained and is presented in **Table 5-6**.

Table 5-6. Common Economic Activities in the Project Area

Settlement Area	First Degree Common Economic Activity	Second Degree Common Economic Activity	Third Degree Common Economic Activity
İsmetpaşa Neighborhood	Animal Husbandry	Agriculture	Service Sector

In the neighborhood, cattle farming is being carried out, with approximately 2,000 large cattle and 4,000-5,000 small cattle. Agricultural activities are carried out for personal production, animal feed production, and sales. The generally produced products are sunflower, clover, and corn. There are no beekeepers or horse breeders. As the

neighborhood mukhtar stated, approximately 40-50 women living in the neighborhood work in the greenhouses located nearby.

5.11.5 Education

According to the Eskişehir Provincial Directorate of National Education, there are 495 schools/institutions, 6,557 classrooms, 11,697 teachers, and 137,811 students within the provincial borders. There are 3 universities in Eskişehir with a total student population of 65,954.

In Mahmudiye district, there are 961 students in primary education and 346 in secondary education, totalling 1307 students and 162 teachers. In primary education, the number of students per classroom is 15, while in secondary education, the number of students per classroom is 22. In the İsmetpaşa neighborhood, there is one elementary school and one middle school.

5.11.6 Health

In the Mahmudiye district, there is a state hospital and a family health center. There is a health center in the neighborhood, but it is out of use. Neighborhood residents go to the district center to benefit from health services.

5.11.7 Vulnerable Groups

Currently, the Project area is owned by the Project Owner and there are no informal users on the lands. However, the Project Owner should reconfirm that there are no formal/informal users before the Project starts construction works. If there is a need for new land acquisition in the later period of the Project and formal/informal users are identified afterwards, the Project Owner needs to carry out consultations with these users. If there are cultivated lands at this stage and construction works are started before the users receive their crops, the cost of the crops will be compensated by the project owner.

Informal users who are not official users within the scope of the project are also recognised as beneficiaries. Informal users will also be considered as beneficiaries and their activities in these areas will be determined, recorded and consulted by the project owner. Compensation methods will be applied according to the benefits obtained by informal users from the land.

According to the information provided by İsmetpaşa neighbourhood mukhtar, information on vulnerable/disadvantaged individuals/groups was questioned and the identified groups are presented in **Table 5-7**.

Table 5-7. Vulnerable/Disadvantaged Individuals/Groups in the Project Area

Settlement Area	Individuals over the age of 65 who live alone	Poor families *	Physically / Mentally disabled individuals	Female-headed households	Refugee households
İsmetpaşa Neighborhood	1 person	5 family	4 person	6 person	4

Reference: Survey Study with the Mukhtar, 2024

** Households dependent on social and economic support are defined as Poor Families by the mukhtar.*

5.11.8 Infrastructure and Services

During the survey conducted with the neighborhood mukhtar, information regarding the existing infrastructure and services was obtained and presented in **Table 5-8**.

Table 5-8. Existing Infrastructure Services in the Project Area

Settlement Area	Water Source	Irrigation Source	Sewer System	Waste Management	Public Transport Vehicle	Cooperative / Association
İsmetpaşa	Network Water	Groundwater	Available	Wastes collects by the Municipality	Minibus, bus	1

Reference: Survey Study with the Mukhtar, 2024

5.11.9 Land Acquisition

Currently, the land acquisition process for the greenhouse campus has been completed and the ownership of the Project area belongs to Beybur Agriculture and Livestock Inc. It is planned to transfer the shares of Beybur Agriculture and Livestock Inc. to Nata Tarım at a later stage.

In addition, a new greenhouse will be built on 813 decares of land and the net greenhouse production area will be 734 decares. This greenhouse is named as Eskişehir-21 greenhouse. In Eskişehir-21 greenhouse , production will be carried out using an area of approximately 813 decares with 3 greenhouse campuses .

According to the current data obtained from the project owner, a total area of 2,390,259.96 m^2 has been purchased from 20 people. In total, 67 parcels have been purchased and there are no tenants or users on the land. All land acquisition was made through voluntary purchase method. In the event of a need for land acquisition, the Project Owner will continue this land acquisition processes in accordance with World Bank OP 4.12.

During the field visit conducted on 30.07.2024, 6 out of the 20 individuals whose land acquisition processes had been completed were interviewed. Of the 6 former landowners interviewed, 4 were the sole owners of the land, while the other two former landowners were found to have partners. Although the meetings with the former landowners were

scheduled in advance, the number of people interviewed remained at 6 on the day we conducted our field visit due to urgent matters that arose for the individuals who were supposed to be met. All the lands are located within the boundaries of the İsmetpaşa neighborhood. The stakeholders conducting the land sale are residents of the İsmetpaşa neighborhood. The entire nature of the purchased lands is agricultural land. In discussions with the former landowners and the former village headman, it was stated that the land was sold at a price above the market value compared to similar locations and types of land. The land payments were received through bank accounts. As a result of the sale of the lands, individuals have generally made property investments such as houses or fields with the payments received. In all the conducted interviews, it was determined that there were no negative situations between the company and the landowners during the sales process, and the sales were carried out using the voluntary seller-voluntary buyer model. Documents showing the land parcels within the project area and details of the purchasing processes are presented in Annex-J.

After the design of the power transmission lines is completed, the need for land acquisition and Resettlement Plan may arise. In such a case, TEİAŞ will carry out the expropriation process and the Project Owner will make prepayments to the landowners before entering the site according to the urgency of the works on the site. The Project Owner will carry out all land acquisitions on a voluntary basis and will meticulously document all written agreements and payments. The Project Owner will prepare and implement a Resettlement Plan in case of the need to prepare a Resettlement Plan according to the land acquisition needs when the ETL designs are completed.

Stakeholders are informed about the project. However, in order for stakeholders to have more detailed information about the project, the project owner organised a consultation meeting , relevant information is presented in 5.13 and SEP.

5.11.10 Level of Knowledge About the Project

According to the information obtained during the interview with the neighbourhood headman, the residents of the neighbourhood are aware of the Project. The neighbourhood mukhtar was also asked whether he has received any complaints so far. There are no complaints, and no negative perception has been detected.

As a result of the interviews, it was learnt that the landowners are aware of the Project. Landowners are aware that the land purchase was carried out by Beybur Agriculture and Livestock Inc. for the Project Owner.

A public participation meeting was held on 08.01.2025 to provide more detailed information about the project to the affected groups and to answer questions about the project. Following this meeting, the Community Liaison Officer organised informative interviews on the Environmental and Social Due Diligence Report, Stakeholder Engagement Plan and Environmental and Social Management Monitoring Plan.

Detailed information on the meeting and informative interviews is provided in the Stakeholder Engagement Plan.

5.12 Cumulative Impacts

Cumulative effects are defined as impacts arising from other third-party activities that affect the same recipients as the proposed Project, either simultaneously or planned. The assessment of these effects takes into account the impacts created by past, present, and planned similar projects in the project impact area.

Cumulative effects can arise from interactions with the environment or among environmental components themselves. These "pathways" between the source and the effect are often the focal point in the assessment of indirect or cumulative effects. The magnitude of the combined effects on a path can be equal to the sum of individual effects (additive effect) or create a greater impact (synergistic effect).

This Cumulative Impact Assessment (CIA) approach has been carried out in accordance with the IFC Good Practice Handbook titled " Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets"[20]. Under the IFC PS 1 Guidance Notes (GN41), the cumulative assessment should be "proportional to the incremental contribution, source, scope, and severity of the anticipated cumulative effects." This assessment focuses solely on potentially significant cumulative impacts and the Project's meaningful contributions to these impacts.

The CIA process aims to predict the cumulative effects to which the Project could contribute. The assessment is based on estimating the magnitude of impacts arising from other activities, in accordance with the status of activities/developments around the Project site and the nature of the existing information. In this process, the status of Valued Environmental and Social Components (VECs) and the scope of the extended spatial and temporal boundaries in the analysis are evaluated.

The CIA methodology includes the following stages:

- Determining spatial and temporal boundaries, the scoping phase to identify VECs and all other activities/developments affecting these components,
- Determining the current status of VECs,
- Assessment of cumulative impacts and determining the significance of VECs on future conditions,
- Developing mitigation measures and management strategies.

[20] https://www.ifc.org/content/dam/ifc/doc/mgrt/ifc-goodpracticehandbook-cumulativeimpactassessment.pdf

According to the information obtained during the desktop research, field studies and stakeholder meetings, it was determined that there are only 2 small-scale stock farms and individual cultivated fields within the Project's impact area. There are no other facilities and activities or planned projects within the impact area.

Therefore, cumulative impacts that the Project may contribute to are not expected.

5.13 Stakeholder Engagement

A stakeholder is defined as any individual, organization, or group that may be affected by the Project or has an interest in the Project and its impacts. The purpose of stakeholder identification is to determine which stakeholders will be directly or indirectly affected—positively or negatively ("affected parties")—or have an interest in the Project ("other interested parties").

The Project Owner is currently maintaining communication with official institutions. Individual contact has been made with the neighborhood residents regarding land purchases.

It is especially important to make an effort to identify disadvantaged and vulnerable stakeholders who may be differently or disproportionately affected by the project or who may have difficulty participating in and contributing to the development process. Stakeholder identification is also an ongoing process and will require regular review and updates. A Stakeholder Engagement Plan (SEP) has been prepared for this project to identify the stakeholders within the project framework and to determine the methods of engagement for the future of the project.

Identifying stakeholders is an ongoing process, and it is likely that different issues will concern different stakeholders. Therefore, stakeholders have been grouped according to their connection to the project. Understanding the connections of a stakeholder group with the Project helps to define the key objectives of any participation.

A Community Liaison Officer with the necessary qualifications will be appointed by the Project Owner to implement the SEP, and this staff member will be responsible for stakeholder engagement activities; however, the Project Owner has ultimate responsibility for the implementation of the SEP.

Stakeholders interested in and affected by the project are presented in **Table 5-9**.

Table 5-9. Stakeholder Groups

Stakeholder Groups	Type of Stakeholder	
	Affected Party	Relevant Party
Internal Stakeholders		
Subcontractors and Project Owners Employees		√
External Stakeholders		
Local Communities		
• Residents of İsmetpaşa Neighborhood,	√	
State / Authorities		
• Ministry of Energy and Natural Resources, • Ministry of Environment, Urbanization and Climate Change, • Ministry of Treasury and Finance, • Ministry of Industry and Technology, • Ministry of Agriculture and Forestry, • Eskişehir Governorship, • Eskişehir Provincial Directorate of Environment, Urbanization and Climate Change, • Eskişehir Provincial Directorate of Health,		√
Creditor		
• TSKB		√
Municipality		
• Eskişehir Metropolitan Municipality • Mahmudiye Municipality	√	√
Landowners		
• Land owners from whom the purchase is made	√	
Vulnerable Groups[21]		
• Households with family members who have physical and/or mental disabilities, • Elderly individuals over 65 years old who live alone and are in need of care, • Households where women are the head of the family, • Households with low or no income, and • Refugee households.	√	
Media		
• Local and National Media	√	

5.13.1 Stakeholder Engagement Tools

A series of tools and methods will be used for stakeholder engagement within the scope of the project. To ensure efficient and effective stakeholder engagement throughout the project lifecycle, the process will include not only the already established communication mechanisms but also any new mechanisms deemed appropriate.

The methods to be used for communicating with stakeholders are presented below:

[21] Detailed informationon vulnerable groupsis included in the Stakeholder Engagement Plan.

- Formal and informal face-to-face meetings (individual and collective) - This includes stakeholder meetings planned by the Project or requested by stakeholders.
- Project Owner Website – public project announcements, documents, reports, etc.
- Grievance Mechanism - specifically targets directly affected stakeholders. The details of the mechanism in question will be clearly introduced to the stakeholders within its scope.
- Media promotions - meeting participation invitations, information sharing, etc.

5.13.2 Stakeholder Consultation Meeting

A stakeholder consultation meeting was held on 08.01.2025 between 11.00-12.30 on 08.01.2025 at the Wedding Hall to provide information about the project. The meeting was attended by the Mayor of Mahmudiye District and the Headman of İsmetpaşa Village, the owners of some of the purchased lands, TSKB's Environmental and Social Consultant 2U1K, and more than 70 people from the local community.

The authorities shared information about the project details, explained its environmental and social impacts, gave information about the employment processes, received the opinions of the public and answered their questions.

Following the above-mentioned meeting, the project proponent shared the Environmental and Social Due Diligence Report, Stakeholder Engagement Plan and Environmental and Social Management Monitoring Plan on its website to inform stakeholders. Ten days (10) after the disclosure of the reports, the Community Liaison Officer organised a series of information meetings to provide information about the reports and plans and to listen to stakeholders' views, suggestions and concerns about the project.

Detailed information on the meeting and the information meetings is provided in the Stakeholder Engagement Plan.

5.13.3 Future Stakeholder Engagement Activities

Stakeholder engagement will continue throughout the Project's lifespan. Key stakeholders will be informed about the progress of the Project, and they will have the opportunity to provide feedback on the effectiveness of mitigation and improvement measures and to raise their concerns or complaints.
The information to be shared with stakeholders will include, but not be limited to, the following:

- The purpose of the project,
- Impacts and the mitigation or enhancement measures implemented,
- Roles and responsibilities,

- Monitoring and management measures, and
- Information regarding the grievance mechanism for the project.

5.14 Grievance Mechanism

The purpose of the Grievance Mechanism (GM) is primarily to ensure that affected communities and project workers, including those affected by the project, have access to the problem-solving procedure. Grievances may indicate increasing concerns among stakeholders and, if not identified and resolved, can escalate. Identifying and addressing grievances supports the development of positive relationships among Project staff, local communities, and other stakeholders.

A structured Grievance Mechanism (GM) ensures that complaints related to the Project are addressed through a transparent and impartial process. For personnel working directly or indirectly on the project, a worker grievance mechanism will be used, while a public grievance mechanism will be used for external stakeholders of the project.

From the beginning of the Project, the complaint procedure should be shared with stakeholders through individual or group meetings, printed materials, and bulletin boards, and this process should continue throughout the Project's lifespan.

Complaints will be accepted by the GM officer appointed by the Project Owner, and the timeframe for responding or conducting further review will primarily depend on the complexity of the issue raised. However, ideally, it is expected that the complaint will not exceed 14 days after it is received.

The methods used to announce the GM should be culturally appropriate and aligned with the general information dissemination methods of the stakeholders. Women and men may access information differently, and it is necessary to ensure equal access to information for both groups. Stakeholders will be able to share their views and complaints through a range of options such as letters, emails, complaint boxes, and face-to-face meetings throughout the Project's lifespan.

All stakeholders submitting a complaint can request that their applications be evaluated confidentially. The Project Owner will ensure that the complainant's name and contact information are not disclosed without their consent.

5.14.1 Grievance Records

All incoming complaints will be entered into the Grievance Log with a separate reference number.

The Grievance Log will be used to track the status of the complaint, analyze the frequency of complaints, typical sources and reasons for complaints, and also to identify relevant topics and recurring trends.

All complaints will be recorded in the relevant Grievance Log along with the following information:

- Grievance reference number,
- Date of the grievance,
- Information on where the grievance was received and in what form (related to complaint boxes),
- Grievance's contact information (valid for non-anonymous complaints),
- Content of the grievance,
- Parties responsible for addressing the issue,
- Start and end dates of the grievance investigation,
- Investigation results,
- (For non-anonymous complaints) Information on proposed corrective actions to be sent to the complainant and the date of sending,
- Deadlines for the project team to take necessary measures,
- Indication of whether the corrective action is sufficient or the reason for the grievance not being resolved,
- Closure of the grievance,
- Actions pending in the case of unresolved grievances.

5.14.2 Duties and Responsibilities

The responsibilities of the Grievance Mechanism officer include, but are not limited to, the following:

- Ensuring that the Grievance Mechanism fully complies with all employment legislation,
- Ensuring that the Grievance Mechanism is regularly reviewed in light of changes in employment legislation and lessons learned from the operational process,
- Communicating the Grievance Mechanism to all direct and indirect employees through structured communication tools for the project,
- Ensuring that the Grievance Mechanism is a specific topic during new employee orientation,
- Providing appropriate guidance to maintain employee confidentiality on issues employees are reluctant to discuss with their supervisors,

- Advising and supporting subcontractor supervisors and managers on their roles and responsibilities for the successful implementation and operation of the Grievance Mechanism,
- Receiving complaints from employees,
- Recording complaints,
- Providing feedback to the complainant using appropriate communication methods,
- Following up on unresolved complaints and continuing necessary consultations,
- Filing information and records related to the Grievance Mechanism in an open and transparent manner.

5.15 Grievance Procedure

5.15.1 Workers Grievance Mechanism

The Worker Grievance Mechanism (WGM) is defined as complaints from employees (including both direct and indirect employees).

This mechanism has been structured to ensure an effective approach for the early detection, evaluation, and resolution of complaints throughout the Project's lifespan. The Grievance Mechanism must ensure that all employees who file complaints are not subjected to any retaliation.

The scope of the Worker Grievance Mechanism can be summarized as any worker with concerns related to fieldwork, including but not limited to occupational health and safety, working conditions, wages, issues between the local community or colleagues, hygiene issues in common areas, insufficient food supply, and concerns about employee safety.

The Grievance Mechanism will be communicated to all employees through written and verbal communication channels. Each employee should be informed about the grievance mechanism at the time of hiring, and information on how this mechanism works should be easily accessible, for example, in employee handbooks.

Confidentiality is very important to some employees; therefore, employees may submit grievances and remain anonymous. Employees who wish to submit a grievance anonymously should be allowed to do so. The response or actions taken in response to an anonymous grievance will be posted on notice boards in locations common to Project employees (e.g. cafeteria, dressing rooms, etc.). The Community Liaison Officer (CLO) will open the grievance boxes located in the project area every 5 days and will make an assessment to determine whether the issue raised by the complainant falls within the scope of the Worker Grievance Mechanism.

The duties of the Community Liaison Officer are as follows:

- Ensure that all employees attend training sessions related to the ESMP and SEP Keeping records of the conduct of training and awareness sessions for staff to ensure compliance with the environmental, social and safety commitments set out in the ESMP and SEP,
- To prepare quarterly environmental and social monitoring reports during the construction period and semi-annual environmental and social monitoring reports during the operation period to be submitted to the Lenders,
- Manage the employee and public grievance mechanism.
- Establish and implement the grievance mechanism system to ensure that it is in line with project guidelines and best practices.
- Facilitate effective communication channels for stakeholders to express their grievances by providing clear information on the existence of the mechanism and its procedures,
- Keep comprehensive records of complaints, including details of the parties involved, the nature of the complaints and the steps taken to resolve them,
- Conduct impartial and thorough investigations into complaints, collaborating with relevant project teams and stakeholders to gather information and assess the validity of concerns,
- Prepare regular reports outlining the status of complaints, trends, outcomes and suggested improvements to the grievance mechanism
- To ensure awareness and understanding of the process by training project staff and stakeholders on the grievance mechanism
- Engage with various stakeholders including local communities, government bodies and project partners to foster positive relationships and proactively address concerns.

All employees will be trained on discrimination and code of conduct. The trainings will be explanatory in nature on the concepts of sexual harassment and abuse, gender-based violence, abuse and harassment response. At the same time, through trainings, employees will be familiarised with the Project's Grievance Resolution Mechanism (described in detail in the Project's SEP document) and the steps to follow when exercising their legal rights. Brochures and posters containing the grievance redress mechanism and contact details of the authorised person will be available in places such as cafeterias, canteens, service areas used by employees. It is important for the Project Owner to emphasise that the right of workers to access the public grievance mechanism for non-work related issues will be protected.

Grievances should be investigated as soon as possible to prioritise resolution. Regardless of the general timeframes for response and resolution, some grievances may require immediate attention, such as where workers' livelihoods are at stake.

The management of the structured grievance mechanism is described in detail in the following text.

Step 1) Identification of the complaint

Complaints can be made to the Grievance Mechanism Officer in person or[22] via phone, letter, complaint boxes, or email.

Step 2) The complaint is recorded in the ' Grievance Log'

After the complaint is received and recorded, the Grievance Mechanism Officer will determine the department, management, or personnel responsible for resolving the complaint, depending on the subject and issue.

When it is determined that the complaint is outside the scope of the Project Grievance Mechanism, the complainant should be notified through their preferred communication method, and an alternative solution should be proposed.

Step 3) Grievance Tracking

The Grievance Mechanism Officer and relevant departments should evaluate the findings related to the complaint. This evaluation should aim to identify and analyse the cause of the complaint and determine appropriate impact mitigation measures. The analysis of the complaint involves evaluating the complaint from various perspectives, such as the employee's background, the frequency of the complaint, management practices, and recent developments in the workplace.

In necessary cases, within the scope of the complaint investigation, the Grievance Mechanism Officer may also hold one-on-one meetings with the relevant parties to ensure a more detailed understanding of the issue in question. A site visit may be deemed necessary to understand the nature of the complaint firsthand and to verify its validity and significance. The visit should also be conducted to verify the validity and seriousness of the complaint.

After the data related to the complaint is transferred to the relevant management unit, the complaint in question is discussed with the reporting worker and the regional and/or unit manager. The investigation phase must be completed within a maximum of 5 business days after the complaint is received.

Step 4) Resolution and closure of the complaint

Based on the understanding that the grievance mechanism is developed in consultation with the relevant departments or management, a resolution and closure process is established. The appropriate solution to the complaint should be communicated to the

[22] If the complaint is received directly by the Grievance Mechanism Officer or the worker representative, it will be recorded directly on the Grievance Form. All personnel involved in the project will be informed that all complaints should be communicated to the Grievance Mechanism Officer as soon as possible.

complainant in an appropriate manner within 2 business days after the complaint investigation phase is completed.

If the issue is outside the scope of the Grievance Mechanism Officer, the complaint should be referred to the Project Management Unit. The purpose of this is to try to resolve complaints within 7 business days after they have been referred.

Step 5) Complaint Process Record

After the complaint is resolved and this is communicated to the complainant, it is closed with a signature obtained from the authorized complaint handler. When updating the Grievance Log, the current status of the complaint and clarifying information on how the complaint was resolved should also be noted in the Grievance Log. The purpose of providing more information about the complaint record is to serve as a reference source for any similar complaints that may arise in the future.

In cases where the identity is kept confidential, a summary of the complaint and its resolution should be posted on bulletin boards and common areas within the project site and announced in safety meetings or weekly meetings.

There is a worker grievance mechanism for Nata Agriculture's existing operation and complaints are recorded (Annex-P). The worker grievance mechanism will be in place during the construction and operation phases of the Project and will be updated as necessary. Relevant staff responsible for managing the employee grievance mechanism has been appointed. Experts are familiar with the grievance mechanism. All employees will be informed about the grievance mechanism before starting work. Grievance boxes and informative brochures will be available at the Project construction site.

5.15.2 Public Grievance Mechanism

Complaints should be investigated as soon as possible to prioritise resolution. Regardless of the general timeframes for response and resolution, an urgent security issue or issues relating to the livelihoods of local people may require an immediate response.

There are 10 steps that complement the grievance mechanism. This process is described in detail in the text below.

Step 1: Determination of the Grievance

Complaints will be identified by the authorized personnel, and the process will be managed. Complaints can be submitted in person, by phone, by letter, through complaint boxes, or via email:

Step 2 : Recording the Complaint in the Grievance Log

After the complaint is received, it will be recorded in the ' Grievance Log' (in paper or electronic format) within one day. The Grievance Log will be managed by the authorized person. Then, the importance of the complaint will be assessed within five to seven days.

The criteria for importance are outlined in the list below:

Level 1 Grievance: an individual or "one-off" complaint (within a specific reporting period - one year) and is primarily a local complaint by nature.

Note: Some one-time complaints, e.g., when a national or international law is violated (see Level 3), may be significant enough to be considered a Level 3 grievance.

Level 2 Grievance: A complaint that is commonly found and repeated (e.g., noise, dust, etc. caused by the facilities).

Level 3 Grievance: A one-time complaint or widespread and/or repeated complaints; also complaints resulting in serious violations of Project Policies or national legislation, complaints leading to negative national/international media attention, complaints believed to cause negative comments from the media or other key stakeholders (for example, inadequate waste management).

When it is assessed that the complaint is outside the scope of the Grievance Mechanism, the complainant should be notified through their preferred communication method, and an alternative resolution path should be suggested.

Step 3: Acceptance of the Grievance

The grievance process is expected to be completed within 14 business days after the application is submitted (except for complaints that require immediate attention). If the complaint is not well understood or if additional information is needed, an explanation will be requested from the complainant at this step.

Step 4: The level of the Grievance

The level of 1st, 2nd, or 3rd grievances is determined by the authorized person, and all Level 3 grievance are reported to the Project Manager. It will consult with the senior management of the Project Owner and the Grievance Mechanism Officer to decide who should handle the complaints and determine whether additional support is needed for the response.

Step 5: Forwarding the grievance to the relevant departments

The mechanism officer forwards the complaint via email to the relevant department(s)/personnel (e.g., human resources, relevant administrative departments, etc.) within five to seven days to ensure an effective response is created.

Step 6: Responding to the grievance

If necessary, with the contributions of the upper management of the relevant departments, a response is prepared by the team to which the complaint has been assigned within 14 days. The response should provide a solution appropriate to the complaint, which may include additional information to clarify the situation by taking measures to reduce the issues, or it should compensate for all damages caused during the Project activities with financial compensation.

Step 7: Responding to the grievance

In Level 3 grievances, the relevant department's senior manager will close the complaint within 14 days, while in second-level and Level 1 grievances, it will be closed by the authorized person. Closure can be in the form of a signature on the complaint record or an email from the authorized person indicating the agreement that should be referenced in the complaint record. The authorized person makes the necessary filings and records the data in the Grievance Log.

Step 8: Sending an appropriate response to the grievance

The communication established for the response to the complaint should be carefully coordinated. The authorized person ensures that an approach to delivering the response is accepted and implemented.

Step 9: Checking whether the grievance has been properly closed

The complainant's response is recorded to help evaluate whether the complaint has been properly closed or whether further action is needed. The authorized person should use appropriate communication channels, such as phone or face-to-face meetings, to verify whether the complainant understands and is satisfied with the response.

If the grievance is made anonymously, a summary of the grievance and its resolution should be posted at the security booth at the entrance of the project area and also at the neighborhood headmen's offices in the affected areas. Additionally, the authorized personnel should communicate with the neighborhood headmen about the anonymous complaints and their resolutions.

If possible, the complainant's response should be recorded in the Grievance Log, which includes notes on impact mitigation measures to prevent the complaint from occurring in the future.

In the event that a specific issue communicated through the complaint mechanism cannot be resolved, the authorized person will provide a detailed explanation/justification as to why it could not be addressed. The response will also include an explanation of how the person who raised the complaint can continue with their complaint if the outcome is not satisfactory.

Step 10: The grievance is closed with the signature of the Authorized Person.

The mechanism officer evaluates whether a complaint can be closed or if further investigation is needed regarding the issue. If further attention to the matter is required, the Mechanism official should return to Step 2 to reassess the grievance.

After evaluating whether the grievance can be closed, the Mechanism officer will either close the complaint or seek the approval of the relevant administrative departments for the closure of level 3 complaints. Approval can be in the form of a signature to be affixed to the complaint record or an equivalent email to be filed by the Mechanism official and referenced in the grievance log.

There is an established public grievance mechanism. The relevant staff responsible for managing the public grievance mechanism has been appointed. Stakeholders were informed about the grievance mechanism during the public participation meeting held. Grievance boxes and informative brochures will be placed outside the Project construction site.

6 ENVIRONMENTAL AND SOCIAL ACTION PLAN

Action	Environmental and Social Risks (Liabilities/Benefits)	Requirement (DB OPs, GIIP)	Resources, Investment Needs, Responsibility	Timing	Goal and Evaluation Criteria for Successful Implementation	Application Status	Comments
OP 4.01							
Integration and implementation of the ESMP and the SEP into Project activities	Effective management of the project's environmental and social risks	OP 4.01	Project Owner Contractor	Before the start of drilling and construction activities	Implementation during the Drilling, Construction, and Operation Period		
A worker and public grievance mechanism will be established. A grievance mechanism officer will be appointed. It will be introduced to the project employees. On the website, the grievance mechanism and authorized contact information at the headman office in İsmetpaşa neighborhood will be introduced.	Effective management of stakeholder participation/grievance/requests during the construction and operation of the project	OP 4.01	Project Owner	Before the start of drilling and construction activities	Implementation during the Drilling, Construction, and Operation Period		
The Stakeholder Engagement Plan will be shared on the project owner's website	Effective management of stakeholder participation during the construction and operation of the project	OP 4.01	Project Owner	Before the start of drilling and construction activities	Sharing on the company's website Implementation and Updating as Necessary During the Drilling, Construction, and Operation Period		
Preparation of the subcontractor management plan covering the operation and construction of the project	Effective management of subcontractors during the construction and operation of the project	OP 4.01	Project Owner	Within 1 month after the signing of the Loan Contract	Submission of the Plan in accordance with standards		
The submission of the Environmental and Social Monitoring Report to the creditor regarding the implementation status of the commitments in the Environmental and Social Due Diligence Report and the environmental and social management of the Project.	Effective management of the project's environmental and social risks	OP 4.01	Third Party Project Owner	Every 3 months during the construction period, and every 6 months during the operation period	Submission of Environmental and Social Monitoring Reports to TSKB		
The Traffic Management Plan will be updated by the Contractor before the commencement of construction works, once the design phase of the Project is finalized. The project owner will be responsible for the preparation and control of the plan.	Management of the project's traffic risks	OP 4.01	Contractor Project Owner	Before the start of drilling and construction activities	Traffic management plan		
The Project Owner will create a Camp Management Plan to ensure compliance with the worker accommodation standards prepared by IFC and EBRD for the management and supervision of the camp site. The Camp Management Plan should be prepared before a contract is made with the contractor who will be involved during the construction period.	Meeting worker and accommodation standards	OP 4.01	Project Owner	Before the start of drilling and construction activities	Compliance with the camp management plan Inspection indicators Grievance records		

Action	Environmental and Social Risks (Liabilities/Benefits)	Requirement (DB OPs, GIIP)	Resources, Investment Needs, Responsibility	Timing	Goal and Evaluation Criteria for Successful Implementation	Application Status	Comments
During the construction and operation period, security personnel who will be on-site will be trained on proper communication methods with workers and local communities.	Management of the project's social risks	OP 4.01	Project Owner	During recruitment/at regular intervals	Training records Grievance records		
The Code of Conduct policy will be shared with employees as an annex to their employment contracts and will be explained verbally. The Code of Conduct training will provide information on gender-based violence, sexual harassment, sexual exploitation, and abuse.	Management of the project's social risks	OP 4.01	Project Owner	During recruitment	Training records Grievance records Audit indicators		
Preparation, implementation, and monitoring of a project-specific Occupational Health and Safety (OHS) Management Plan that ensures the identification of OHS risks and their adequate management. Appointment of an OHS officer with sufficient certification and experience for monitoring OHS performance.	Prevention/minimization of occupational health and safety risks that project activities may create for employees Compliance with national legislative requirements	DB OP 4.01 Occupational Health and Safety Law	Project Owner Contractor External Consultancy	Before the start of drilling and construction activities	OHS performance records OHS performance monitoring reports Assigned OHS officer for the project		
Conducting a risk assessment that includes site-specific risks (area-based hazard identification and risk assessment)	Effective management of site-specific occupational health and safety risks Compliance with national legal requirements	WB OP 4.01 Occupational Health and Safety Law, Occupational Health and Safety Risk Assessment Regulation	Project Owner Contractor External Consultancy	Before the start of drilling and construction activities	Conduct a project-specific Risk Assessment has been		
Preparation and implementation of the Emergency Response Plan for all phases of the Project Conducting emergency drills against various scenarios identified in the emergency response plan	Ensuring the effectiveness of emergency preparedness and response Compliance with national legislative requirements	WB OP 4.01 Occupational Health and Safety Law, Regulation on Emergency Situations in the Workplace	Project Owner Contractor External Consultancy	Before the start of drilling and construction activities	Emergency Plan Training records Drill records		
Keeping records of accident and incident statistics for all stages of the project, along with root cause analysis and corrective actions taken.	Improvement of the project's OHS performance	WB OP 4.01 Occupational Health and Safety Law	Project Owner Contractor	Before the start of drilling and construction activities	Accident/incident records and statistics		
Inclusion of compliance with ESYP and ESDD requirements in contracts with the contractor	Prevention/minimization of occupational health and safety risks arising from contractor activities	WB OP 4.01 Occupational Health and Safety Law	Project Owner	Before the selection of contractor	Inclusion of relevant clauses in contractor agreements		
Obtaining the necessary EIA opinions before drilling works in wells	Managing the environmental risks of the project	WB OP 4.01 Environment Law Environmental Impact Assessment Regulation	Project Owner Contractor	Before the start of drilling and construction activities	Existence of EIA positive or not necessary decision		

Action	Environmental and Social Risks (Liabilities/Benefits)	Requirement (DB OPs, GIIP)	Resources, Investment Needs, Responsibility	Timing	Goal and Evaluation Criteria for Successful Implementation	Application Status	Comments
For all stages of the project, the creation and implementation of a Pollution Prevention and Control Plan that addresses air emissions, noise, wastewater discharges, hazardous substance management, and spill prevention, in accordance with the ESMP.	Prevention/minimization of environmental risks and enhancement of the project's environmental performance Compliance with national legislative requirements	WB OP 4.01 Environmental Law, Regulation on Waste Management, Regulation on Control of Industrial Air Pollution, Regulation on Control of Ambient Noise , Regulation on Control of Soil Pollution and Point Source Contaminated Lands.	Project Owner Contractor External Consultancy	Before the start of drilling and construction activities	Pollution Prevention and Control Plan prepared for the project		
OP 4.12 Land Acquisition, Involuntary Resettlement, and Economic Displacement							
Stakeholders should be provided with more detailed information about the Project and the Project through a consultation meeting to be held in İsmetpaşa neighbourhood. If new land is acquired for the Project, all land acquisitions should be carried out through voluntary purchase and records should be kept. Stakeholders (landowners, tenants) should also be consulted on land acquisition. After the design of energy transmission lines is completed, preparation of Resettlement Plan depending on land acquisition status	Informing project stakeholders, transparent communication	OP 4.12	Project Owner	Before the start of drilling and construction activities	Records of consultation meetings conducted		
OP 4.04 Natural Habitats							
Evaluation of invasive alien species	Management of risks that may arise within the scope of any invasive alien species	OP 4.04	Project Owner Contractor External Consultancy	Within 1 month after the signing of the Loan Contract	Records of identified invasive species		
OP 4.11 Cultural Heritage							
A "Chance Find Procedure" will be prepared before the commencement of construction works to explain the steps to be followed and implemented after a chance find.	Protection of cultural heritage	OP 4.11	Project Owner	Before the start of drilling and construction activities	Chance Find Procedure		