



Figure 12-13. Black stork group passing 3 to 4 km east of the Project site

Table 12-2. Bird species observed during the ecological walkover surveys⁹

	Order,Family, Species	Common name	IUCN	BERN	MAK	EU Bird Directive
	CICONIIFORMES					
	Ciconiidae					
1.	<i>Ciconia nigra</i>	Black Stork ^c	LC	App-II		Ann-I
	ACCIPITRIFORMES					
	Accipitridae					
2.	<i>Buteo buteo</i>	Buzzard ^b	LC	App-II		
	FALCONIFORMES					
	Falconidae					
3.	<i>Falco tinnunculus</i>	Kestrel ^c	LC	App-II		
	GALLIFORMES					
	Phasianidae					
4.	<i>Francolinus francolinus</i>	Black Francolin ^b	LC	App-III		Ann-II-B
	CHARADIIFORMES					
	Haematopodidae					
	Laridae					
5.	<i>Larus michahellis</i>	Yellow-legged Gull ^c	LC	App-III	Ann-I	
	COLUMBIFORMES					
	Columbidae					
6.	<i>Columba livia</i>	Rock Dove ^b	LC	App-III	Ann-II	Ann-II-A
7.	<i>Columba oenas</i>	Stock Dove ^b	LC	App-III	Ann-I	Ann-II-B
8.	<i>Streptopelia decaocto</i>	Collared Dove ^c	LC	App-III	Ann-I	Ann-II-B
9.	<i>Streptopelia turtur</i>	Turtle Dove ^b	VU	App-III	Ann-II	Ann-II-B
	CAPRIMULGIFORMES					
	Caprimulgidae					

⁹ Comprehensive list including literature survey is presented in Table 5 of Annex J-I

	Order,Family, Species	Common name	IUCN	BERN	MAK	EU Bird Directive
	Apodidae					
10.	<i>Apus apus</i>	Swift ^b	LC	App-III		
	CORACIIFORMES					
	Meropidae					
11.	<i>Merops apiaster</i>	Bee-Eater ^b	LC	App-II		
	PASSERIFORMES					
	Alaudidae					
12.	<i>Galerida cristata</i>	Crested Lark ^c	LC	App-III	Ann-I	
	Hirundinidae					
13.	<i>Hirundo rustica</i>	Swallow ^c	LC	App-II		
14.	<i>Delichon urbicum</i>	House Martin ^b	LC	App-II		
	Pycnonotidae					
15.	<i>Pycnonotus xanthopygos</i>	Yellow-Vented Bulbul ^c	LC	App-III		
	Muscicapidae					
16.	<i>Erythropgia galactotes</i>	Rufous Bush Robin ^b	LC	App-II		
17.	<i>Saxicola torquata</i>	Stonechat ^c	LC	App-II		
18.	<i>Oenanthe oenanthe</i>	Northern Wheatear ^b	LC	App-II	Ann-I	
19.	<i>Monticola solitarius</i>	Blue Rock Thrush ^c	LC	App-II		
	Turdidae					
20.	<i>Turdus merula</i>	Blackbird ^c	LC	App-III	Ann-II	Ann-II-B
	Cisticolididae					
21.	<i>Prinia gracilis</i>	Graceful Warbler ^c	LC	App-III		
	Sylviidae					
22.	<i>Hippolais pallida</i>	Olivaceous Warbler ^b	LC	App-III		
23.	<i>Sylvia melanocephala</i>	Sardinian Warbler ^c	LC	App-II		
	Laniidae					
24.	<i>Lanius senator</i>	Woodchat Shrike ^b	LC	App-II		
	Corvidae					
25.	<i>Pica pica</i>	Magpie ^c	LC	-	Ann-II	Ann-II-B
26.	<i>Corvus cornix</i>	Hooded Crow ^c	LC	-	Ann-II	Ann-II-B
	Sturnidae					
27.	<i>Sturnus vulgaris</i>	Hooded Crow ^c	LC	-	Ann-I	Ann-II-B
	Passeridae					
28.	<i>Passer domesticus</i>	House Sparrow ^c	LC	-	Ann-II	
	Fringillidae					
29.	<i>Fringilla coelebs</i>	Chaffinch ^c	LC	App-III	Ann-I	Ann-I
30.	<i>Serinus serinus</i>	Serin ^c	LC	App-II		
31.	<i>Carduelis chloris</i>	Greenfinch ^c	LC	App-II		
32.	<i>Carduelis carduelis</i>	European Goldfinch	LC	App-II		
33.	<i>Carduelis cannabina</i>	Linnet ^c	LC	App-II		
	Emberizidae					
34.	<i>Emberiza melanocephala</i>	Black-Headed Bunting ^b	LC	App-II		
35.	<i>Miliaria calandra</i>	Corn Bunting ^c	LC	App-III	Ann-I	

a Species directly observed during 1st ecological site survey

b Species directly observed during 2nd ecological site survey.

c Species directly observed during both ecological site surveys.



Figure 12-14. Some bird species identified in the project area. a. Swallow, b. Rufous Bush Robin, c. Olivaceous Warbler, d. Black-Headed Bunting, e. Crested Lark, f. Yellow-Vented Bulbul, g. Stock Dove, h. Collared Dove.

Threat Status and Endemism of Fauna Species

The total number of terrestrial fauna species and birds listed in the Project site is 276. Among these, there are 4 (four) species of amphibians, 32 species of reptiles, 198 species of birds and 42 species of mammals. None of them are endemic and 7 (seven) species are listed in IUCN's threatened categories. One of them is listed as EN (bird species-*Neophron percnopterus*), six of them as VU (reptile species-*Testudo graeca*, bird species-*Aythya farina* and *Streptopelia turtur*, mammal species-*Myotis capaccinii*, *Rhinolophus mehelyi* and *Vormela peregusna*) and 11 of them as NT (2 (two) of them for mammal species and 9 (nine) of them for bird species).

In terms of IFC PSs, the Project site hosts endangered (CR and/or EN) vertebrate species (i.e., *Neophron percnopterus*) and a migratory bird species that may use the area during spring and autumn bird migration times. However, the Project site is not considered as a breeding or

long term sheltering and/or feeding site for these species. Some individual species may be seen flying above the area during spring and autumn migrations. Therefore, the Project site is not considered as critical for these species to survive, and the Project site is not considered to be a critical habitat for these species based on IFC PS6 criteria. A detailed Critical Habitat Assessment is provided in Annex K.

Since Turkey is on some important migration routes of birds migrating among Africa, Europe and Asia, migratory birds may be present in every part of Turkey including city centers. However, the Project site is not located on birds' main migration routes. The Project site is not within an IBA or Ramsar site and thus it does not meet the criteria to be considered as a critical habitat for migratory species.

Impacts on Terrestrial Fauna

The total number of terrestrial fauna species and birds listed in the Project site is 78 and 198 respectively. Some of the abovementioned species are resident in the Project site and some of them use the Project site at certain times of the day and/or year.

For instance, Palestine blind mole rats, Voles, Crested Larks, Mediterranean Spur-thighed Tortoises are present on-site throughout the year. In comparison, bats use the Project site during the night for feeding flights and some bird species use the area during migration periods. The current status of the Project site and existing habitat characteristics might be disturbed by Project activities; therefore, it is important to maintain untouched natural areas inside the Project site to provide some space for faunal species. Project activities will inevitably alter some areas. Therefore, undertaking the necessary precautions and mitigation measures will be critical to avoid disturbance on the fauna species during construction and operational phases.

Since there is no permanent or temporary water source in the Project site, the area does not appear to be important for amphibians. 4 (four) amphibian species are assumed to be present in low quantities in the Project site. Any of the amphibian species listed for the Project site is not threatened and/or endemic (Table 2 of Annex J-I).

32 reptile species are likely spread around the Project site, none of which are endemic. On the other hand, *testudo graeca* is listed in threatened categories of IUCN as VU. According to IUCN criteria, 3 (three) of the mammal species listed according to the IUCN criteria are threatened and considered as VU (*Rhinolophus mehelyi*, *Myotis capaccinii* and *Vormela peregusna*).

During the ecological walkover surveys, 34 of bird species among the 198 bird species listed were directly observed in the Project site. According to IUCN criteria, 3 (three) of the identified species (Pochard, Egyptian Vulture, and Turtle Dove) are listed in threatened categories among which one Turtle Dove flight was observed during the walkover surveys. The type of structures and industrial activities are also important factors affecting avifaunal movements.

Birds can be negatively affected by and collide with structures having movable and reflective components, such as wind turbines, high rise glass covered buildings and tall structures. Although the Project has components which can be regarded as tall structures (i.e. flare) above 100 m, due to the fact that the structure does not have movable components, the risks can be mitigated through specific mitigation measures (i.e., painting tall structures in bright colors so that they are visible to birds).

In Chapter 10, noise and vibration issues that will occur during construction and operation are evaluated.

According to the noise model, it is seen that the noise levels are at or below the IFC limit values. Considering the limit value of 50 dBA, its effect on fauna is insignificant.

Vibration calculations reveal the safe distance before vibration level reach 1 mm/s level is 65 meters for construction activities (i.e., pile driving). Thus; no impact is expected from constructional vibration as long as necessary precautions are taken and proper warnings are given as there are no receptors identified closer than 65 meters from the Project Site.

The blasting model was made by considering the antique waterway, which is the closest sensitive receiver to the project site and located at a distance of 30 m. Currently, there is no fauna in the area due to the carried out and ongoing fauna translocation studies and human activities. As a result, it cannot be expected that the fauna in the vicinity will be affected by the blasting.

12.4 Marine Section

The Mediterranean Sea is an important ecological area due to its highly migratory nature, widespread distributions and global economic importance. Species diversity in the Mediterranean basin gradually increases from east to west, with 43% of the known species occurring in the eastern Mediterranean, 49% in the Adriatic and 87% in the western Mediterranean.

Çukurova delta consists of Yumurtalık, Akyatan, Ağyatan and Tuzla lagoons. Sand dune ecosystems have been formed at the sea edges of these lagoons, which are regarded as biotope dunes for many of the endemic and/or threatened flora species and consist of many bird species such as francolins. Ceyhan and Seyhan rivers form large deltas where they flow into the sea. In addition to the main rivers, there are a number of seasonal creeks originating from the foothills of Aladağlar mountains. These small creeks determine the hydrology and microclimate of the region and provide habitats for many species.

Fresh and salty lakes, salty meadows and marshes are important feeding and breeding areas for many bird species such as ducks, seagulls, herons and terns, and serve as feeding and safe shelter for mammal species such as reed cat, otters and rats. Coastal ecosystems are also important for endangered species, with the Mediterranean monk seal using caves as a

terrestrial habitat for instance. Moreover, coastal ecosystems provide propagation areas for *Chelonia mydas* and *Caretta caretta*, seagrass meadows for feeding and seagrass meadows or muddy bottoms for wintering. Coastal areas provide feeding ground for migrative coastal birds, seagulls and terns.

Iskenderun Bay in Mediterranean Sea is one of the important areas in terms of fishing, industrialisation, transportation and urbanisation which create potential risk of pollution. Ministry of Environment, Urbanization and Climate Change (MoEUCC) is conducting pollution and quality monitoring studies in the Mediterranean Sea since the 2000s in accordance with Regional Sea Conventions signed by Turkey¹⁰ and national and international legislation. The Protocols of Barcelona Convention to which Turkey is a party are:

- Protocol for the Prevention and Elimination of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea;
- Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources and Activities;
- Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean;
- Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea;
- Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal;
- Protocol on the Prevention of Pollution Caused by the Discovery and Operation of the Continental Shelf and the Seabed in the Mediterranean;
- Protocol on Integrated Coastal Zone Management in the Mediterranean.

MoEUCC published the 2018 Marine Quality Bulletin for Mediterranean Sea which comprises ecological quality status assessments for the 2014-2016 period. According to this assessment, for sections of the coastal water bodies where the influence of Ceyhan River and Yumurtalık Bay dominates, the ecological quality was determined as ranging from “moderate to good” for the shoreline and “very good” for Yumurtalık Bay in 2016 as shown in Figure 12-15 a.

Additionally, coastal water bodies’ ecological quality status for Mediterranean coasts were assessed in Adana Environmental Status Report (2018). The ecological quality for sections of the coastal water bodies where the influence of Ceyhan River and Yumurtalık Bay dominates ranges from “moderate to poor” for the shoreline and “good” for Yumurtalık Bay in 2018 (shown in Figure 12-15 b).

¹⁰ The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) and Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention)

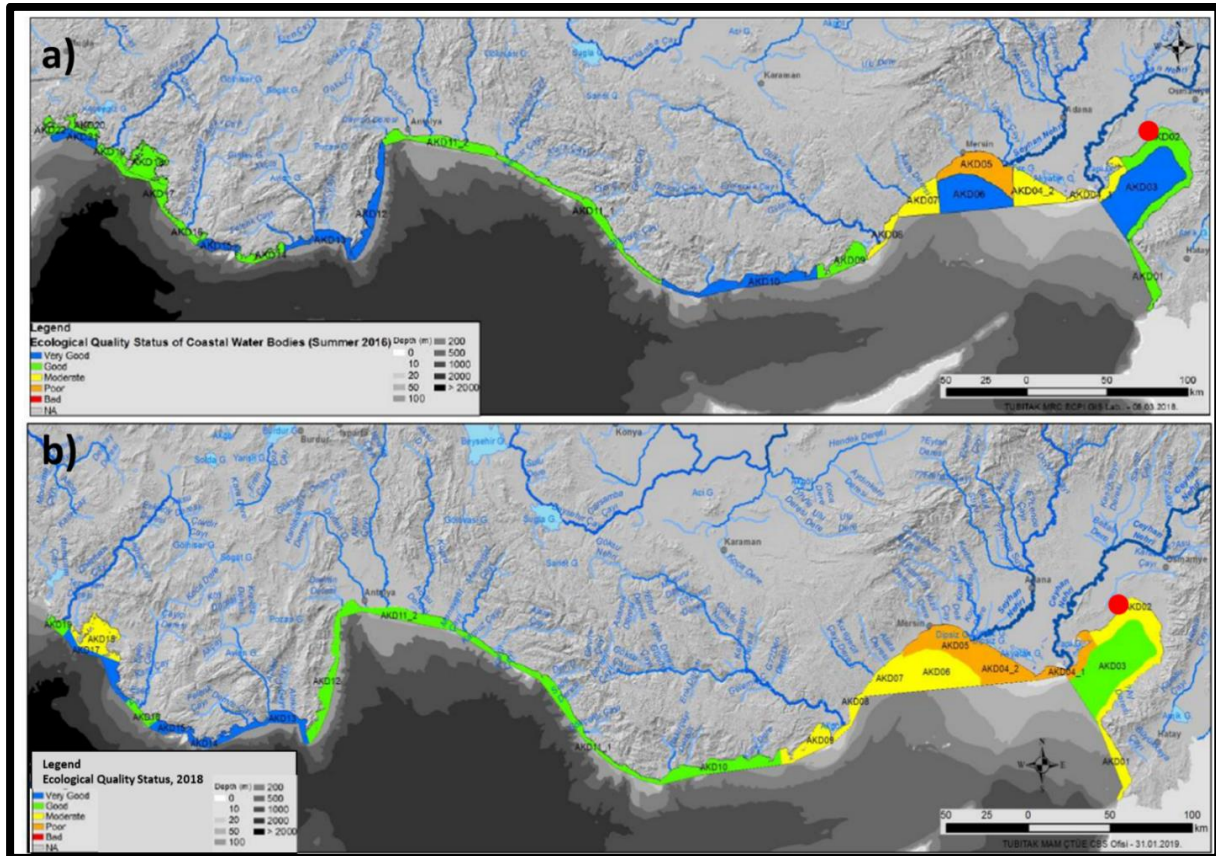


Figure 12-15. Coastal water bodies' ecological quality status in Mediterranean Sea (a) ecological quality status in 2016 and (b) ecological quality status in 2018 (Marine Quality Bulletin for Mediterranean Sea in 2018 and Adana Environmental Status Report (2018) respectively) – Project site is indicated in red

The most endangered marine vertebrate species are Mediterranean monk seal; common bottlenose dolphin, shortbeaked common dolphin, and striped dolphin; sperm whale; green turtle, leatherback turtle and loggerhead turtle; and cartilaginous fishes (sharks, rays, and chimaeras)¹¹. Monk seals were once present throughout the Mediterranean are now limited mainly to the Aegean coast. As reported in the State of the Mediterranean Marine and Coastal Environment report (UNEP, 2012), their numbers have been greatly reduced by poaching, capture, habitat destruction, and population fragmentation. The Mediterranean monk seal is now listed as Critically Endangered on the IUCN's Red List. Another endangered species are sea turtles which are affected by past exploitation; entanglement in fishing gear; loss of seagrass meadows; degradation of beach-nesting habitat due to sand extraction, tourism; pollution and plastic waste; and increased marine traffic. Loggerhead and green turtles have been listed as Endangered by the IUCN while the leatherback turtle is listed as CR.

There are neighbouring industrial facilities at both terrestrial and marine parts of the Project site. BOTAŞ, the neighbouring facility to the west of the Project site, conducts marine turtle research activities and small beaches between Yumurtalık and BOTAS District Management

¹¹ State of the mediterranean marine and coastal environment, UNEP (2012).

in Iskenderun Gulf have been reported to be important nesting areas for the critically endangered marine turtles “Green turtle (*Chelonia mydas*)” and “Loggerhead turtle (*Caretta caretta*)”. The BOTAŞ- BOTAŞ International (BIL) Facility has been carrying out Marine Turtle Monitoring Surveys regularly since 2002 in accordance with the commitments in the EIA and BIL Environmental Management Plans.

In the official letter by Ministry of Agriculture and Forestry (MoAF), General Directorate of Nature Conservation and National Parks dated 09.06.2020 received within the scope of consultations for EIA process for CPIR Port Project by Dolfen Consulting Engineering Company, the following requirements are listed:

- As the Project site is located in the close vicinity of Yumurtalık-Akkum Nesting Beach for marine turtles, the potential impacts of Project development on marine turtles as well as mitigation measures that shall be taken should be assessed and identified by qualified experts;
- Potential impacts of the Project on marine and coastal ecosystem together with mitigation measures to be taken should be assessed and identified by qualified experts;
- All the species that are under protection (i.e. VU, EN, CR and local endemic) should be systematically listed; and
- Potential use of the Project site by the Mediterranean Monk Seal and the potential presence of seagrass at the Project site should be evaluated.

Within the scope of the Project marine works, a number of construction activities will be conducted including excavation and filling. Therefore, identifying the baseline conditions of the marine ecosystem is crucial to understand and further assess the impacts of these activities on the ecosystem conditions. To this end, a site survey was undertaken by a team of specialists consisting of Prof. Dr. Salih Levent Turan (fauna expert), Prof. Dr. Galip Akaydın (flora expert), Prof. Dr. Aydın Akbulut (hydro-biologist), Assoc. Prof. Dr. Onur Candan (expert on Sea Turtles) and Assist. Prof. Dr. Burak Ali Çicek (expert on Mediterranean monk seal) in June 2020. The methodology and results of the study were presented in CPIR Port Terrestrial and Marine Ecology Assessment Report, 2020 (Turan et.al., 2020).

12.4.1 Marine Ecosystem

Methodology

The marine ecosystem has been studied within the scope of EIA conducted for CPIR Port Project. Construction and operation of the jetty, which is the part of associated facility have potential impact on marine environment and thus the assessment and results of the marine ecosystem study have been evaluated in this section of the ESIA Report.

Biological sampling studies were conducted at three different sampling locations in the study area as shown in Figure 12-16 on 27-28 June 2020 and 28th -29th June 2020 and 27th-28th

November 2021. The sampling studies included algae sampling as part of the food chain, zooplankton organisms sampling, benthic organisms sampling and fishery studies. The near-shore parts were found to be rocky, whereas the bottom of the open sea section was composed of sand. The following studies were conducted to identify and assess the impacts of the Project activities on the marine ecosystem; the methodology used for the analyses are summarised in Table 12-3:

- Measurement of the physical parameters such as temperature, salinity, electrical conductivity, pH and dissolved oxygen;
- For the areas where filling and dredging will be applied, identification of marine organisms (macro and microalgae, zooplanktonic organisms, benthic organisms and fish) and their habitats;
- Defining the rare, vulnerable, endemic species as well as protected species and their conservation status in the study area; and
- Identifying the magnitude of impacts on the marine ecosystem and biodiversity.

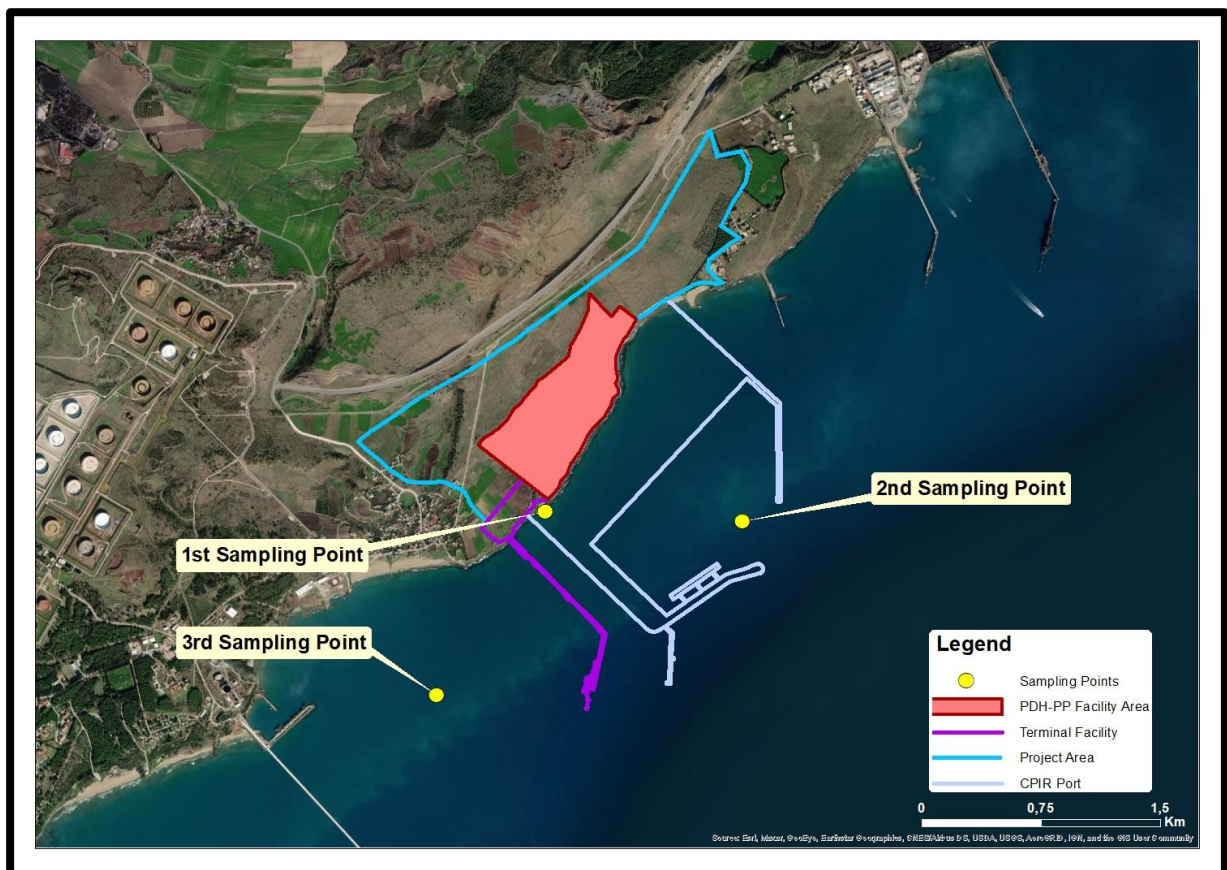


Figure 12-16. Sampling locations for marine ecology studies

Table 12-3. Methodology used during marine ecosystem analyses

Study	Methodology
Planktonic Organisms	<ul style="list-style-type: none"> In order to determine phytoplanktonic and zooplanktonic organisms, a plankton net with 33 µm pore size, 30 cm diameter and 1 m length was used. The samples were collected at the on-shore first sampling location and in the second sampling location by moving the net 200 m horizontally for 6 minutes. The samples were fixed in 4% formaldehyde solution. The samples were assessed with the use of a microscope in the laboratory.
Benthic Organisms	<ul style="list-style-type: none"> A Van Veen grab sampler was used to take samples at the two sampling locations for qualitative and quantitative identification of zoobenthic organisms living within the sediment. The sieved samples were placed into 5% formaldehyde solution. The samples were assessed with the use of a binocular stereomicroscope in the laboratory.
Marine Vertebrates	<ul style="list-style-type: none"> Fish sampling was conducted by use of fish nets of different pore sizes. The nets were left in the water for 1 day and then the fish were collected. The Underwater Visual Census (UVS) method was used to identify macro biodiversity by assessing the biotope (habitat) structures.

Findings

Planktonic Organisms: Algae are the primary producers in the marine environment with their ability to convert carbon dioxide and water into carbohydrates with the help of built-in pigments, and are very important for marine life as the first level of the food chain. Sampling for planktonic organisms is shown in Figure 12-17.



Figure 12-17. Sampling of planktonic organisms in the first sampling location at the shore (Source: Turan et.al., 2020)

Within the study area, a total of 119 taxon belonging to 7 different algae division were identified (provided in Table 6 of Annex J-II). The *Bacillariophyceae* group of algae were found to be the most common group in terms of variety with a total of 52 taxon, followed by *Dinophyceae* (34), *Chlorophyceae* (8), *Phaeophyceae* (10), *Rhodophyceae* (12), *Prymnesiophyceae* (1) and *Dictyochophyceae* (1). Only one of the algae species (i.e. *Sargassum acinarum*) is in Annex II of Barcelona Convention (i.e. List of endangered or threatened species). Contracting parties of the Convention are required to avoid or mitigate any changes in the living environment for Annex II species or prepare action plans for their reproduction.

As a result of the additional field studies, A total of 120 taxa records belonging to 8 different algae divisions were given in the research area. According to the data we have obtained as a result of the sampling, it is seen that phytoplanktonic organisms are more dominant in terms of species diversity than the bound forms. Especially *Bacillariophyceae* group algae has been the richest class in terms of diversity. 53 taxa belonging to this class, 34 from *Dinophyceae*, 1 from *Chlorophyceae*, 10 from *Phaeophyceae*, 12 from *Rhodophyceae*, 1 from *Prymnesiophyceae* and 1 from *Dictyochophyceae* were found. Some of the species given in the relevant table are supported by literature information. Details of additional field studies is given in Annex-T.

There are a number of important parameters for the development and growth of algae including water temperature, light transmittance, pH, salinity and dissolved oxygen. In general, the micro and macro algae species in the study area grow systematically and ecologically in a healthy way. As stated by experts, no significant impact is foreseen on algae population due to the Project activities.

In marine environments, conversion of plant protein to animal protein is an important step; *Copepods*, which is a dominant group of zooplanktons, is responsible for this conversion and thus is an important element in the food chain. *Copepods* are represented by 29 species where *Temora stylifera*, *Acartia clausi*, *Oithona nana*, *Paracalanus parvus taxins* are dominant organisms. In the study area, *Copepods* were found to be dominant both in number and density, followed by *Cladocera*. All the other species were identified in negligible numbers.

In general, the zooplanktonic organisms in the study area are composed of widespread species of the Mediterranean marine environment (Table 7 of Annex J-II). The number of species and density of these organisms are not expected to be affected by the Project activities.

Benthic Organisms: In order to determine the scale of human impacts on marine environment, the biodiversity of the environment is taken as an indication. In particular, benthic organisms are frequently used to monitor the potential changes in marine environments. Impacts that may be observed include changes in the conditions such as oxygen concentration in deep waters, increase in sulfide in sediment, temporary faunal changes, changes in benthic fauna and

decrease in number and biomass of benthic communities. Benthic organisms sampling and an example sample can be seen in Figure 12-18.



Figure 12-18. Benthic organisms sampling (a) and an example sample (b)
(Source: Turan et.al., 2020)

The *Mollusca* species, which are among the most common species in soft sea bed surfaces, are characterised as an indicator for contaminated environments due to anthropogenic activities. The water quality of the study area has been found suitable and organic pollution was not detected; therefore the high biodiversity of *Mollusca* in the study area is attributed to the characteristics of the sea bed (i.e., sand, sand-gravel, rocky). In general, the detected benthic organisms in the study area are widespread species in Mediterranean and Aegean waters, especially in clean waters.

According to the field study and information obtained from literature, there are 200 benthic species belonging to 8 divisions in the study area (Table 8 of Annex J-II). Among these species, 11 belong to *Cnidaria*, 1 belongs to *Echiura*, 124 belong to *Mollusca*, 16 belong to *Arthropoda*, 34 belong to *Annelida*, 11 belong to *Bryozoa*, 2 belong to *Echinodermata* and 1 belongs to *Chordata* groups. The *Mollusca* group, which is the most widespread group in the study area, is mostly composed of crustaceans and are easily detected at the sampling location in the shore. Four of the *Mollusca* species (i.e. *Erosaria spurca*, *Tonna galea*, *Lithophaga lithophaga* and *Pholas dactylus*) are in Annex II of Barcelona Convention (i.e. List of endangered or threatened species). Accordingly, the contracting parties of the Convention are required to avoid or mitigate any changes in the living environment for those species or prepare action plans for their reproduction.

In the study area, *Mollusca* and *Crustacea* have been mostly observed in sandy areas where macroalgae dominate; in comparison, *Polychaeta* were mostly found in muddy sediments. Samples collected in the shore contain higher diversity in terms of number and density of species compared to deep-sea samples. This is attributed to the suitability of littoral (i.e., shore) environments for benthic growth in terms of a number of factors such as temperature, light, nutrients and dissolved oxygen.

In general, when the study area is evaluated in terms of benthic organisms, it can be concluded that the area is not under pressure due to contamination and can be defined as an undisturbed ecosystem. Although the construction activities may have impacts on the benthic organisms, these will be temporary and the environment is expected to return to its original state upon completion of the activities. No impacts are envisaged during operation stage.

Marine Vertebrates: Fish are important biological components of the marine ecosystem, occupying the upper levels of the food chain through feeding on algae, zooplankton and benthic organisms.

In the study by Turan et.al., 2020, fish as well as a number of marine mammal species are evaluated in the study area. In addition, marine turtles and Mediterranean monk seal are assessed and the results are shared in Section 12.4.2 and 12.4.3, respectively. The study area was not found to provide suitable habitat conditions for nesting for marine vertebrates, but was determined to be suitable for feeding. From the literature study and observations made at the study area and its surroundings, a total of 76 fish species and 3 marine mammal species belonging to 2 families were identified, among which 25 were observed during the site study (Table 9 of Annex J-II). The list of these species together with their conservation statuses as well as photographs showing observed fish species are given in Annex J.

As a result of the sampling and literature reviews of additional field studies, 82 fish species and 3 marine mammal species belonging to 2 families and a total of 85 marine vertebrate species records are reported in the project area and its immediate surroundings. Details of additional field studies is given in Annex-T.

Accordingly, 5 species are characterised as CR, 3 species as NT, 3 species as EN, 11 species as VU, 51 species as LC, 2 species as NE and 9 species as DD according to IUCN Red List. Similarly, 4 species are listed in Annex II and 4 species in Annex III of Bern Convention. Moreover, 2 species are in CITES Annex I and 3 species in CITES Annex II.

Most of the identified species in the study area have economic importance. While the study area does not cover areas often used by fish for feeding, nesting and sheltering, its surroundings contain such areas. Nevertheless, the study area is rich in terms of fish species that are common species for the Mediterranean Sea.

The marine vertebrates have the ability to move quickly and change their location in case negative conditions occur such as turbidity and change in water temperature. It is understood that the identified species use the study area mostly for feeding. In that sense, no negative impacts from the Project activities are anticipated.

Threatened Species in the Study Area

Among the identified species in the study area, 7 species are listed in the IUCN Red List of Threatened Species as CR or EN as given in Table 12-4. These species are widespread in the Mediterranean Sea and thus these species have alternative living environments along the southern and western coastlines of Turkey (i.e., Mediterranean and Aegean coasts) as shown in Figure 12-19. In the study by Turan et.al., 2020, the impact area of the Project activities is considered to be the Project site as well as an extra 1 km from the Project components (i.e., Jetties). Although these species are anticipated to be affected by the Project activities, all the Mediterranean shoreline can be considered as an alternative habitat location for them.

Table 12-4. Species in the study area which are characterised as CR and EN according to IUCN Red List

Family	Species	IUCN Red List
Anguillidae	<i>Anguilla anguilla</i>	CR
Myliobatidae	<i>Aetomylaeus bovinus</i>	CR
Epinephelidae	<i>Epinephelus marginatus</i>	EN
Gymnuridae	<i>Gymnura altavela</i>	CR
Rajidae	<i>Raja radula</i>	EN
Rhinobatidae	<i>Rhinobatos rhinobatos</i>	EN
Phocidae	<i>Monachus monachus</i>	CR



Figure 12-19. Alternative living environments for critical species identified in the study area

Habitat Assessment

A number of activities conducted at the shoreline, namely shore protection programs, marina developments, and urban and tourism infrastructure have the potential to alter the hydrographic conditions of the marine environment. Spread of invasive species of algae such as *Caulerpa racemose* and loss of seagrass (i.e. *Posidonia*) due to trawling activities are significant challenges for marine habitats. Furthermore, agricultural discharges lead to eutrophication while climate change puts pressure on the habitats. All these factors are considered as significant threats for benthic habitats in the Mediterranean Sea.

Table 12-5 summarises the Threatened marine habitats in the Mediterranean Sea according to EU28 and EU28+ categories. The mostly threatened habitats are at infralittoral and mediolittoral environments; these include algal dominated communities in infralittoral sediments, mussel and oyster beds as well as sublittoral sediments and rocks.

Table 12-5. Threatened marine habitats in the Mediterranean Sea (Source: Turan et.al., 2020)

EUNIS Code	Habitat Type
EN – EU28, EU28+	
A2.31	Polychaete/bivalve-dominated mid-estuarine Atlantic littoral mud
A3.13*	Photophilic communities with canopy-forming algae in Mediterranean infralittoral and upper circalittoral rock
A5.52B	Algal dominated communities in the Mediterranean infralittoral sediment
A5.6v	Mediterranean infralittoral mussel beds
A5.6w	Mediterranean infralittoral oyster beds
VU	
A2.25	Communities of Mediterranean mediolittoral sands
A2.33	Communities of Mediterranean mediolittoral mud
A2.7x	Biogenic habitats of Mediterranean mediolittoral rock
A3.23	Photophilic communities dominated by calcareous, habitat-forming algae
A3.36	Communities of Mediterranean estuarine rock
A4.23	Communities of Mediterranean soft circalittoral rock
A5.27	Communities of Mediterranean lower circalittoral sand
A5.32	Communities of Mediterranean sublittoral estuarine sediments
A5.38	Communities of Mediterranean infralittoral muddy detritic bottoms
A5.535	Posidonia beds in the Mediterranean infralittoral zone

* Only with respect to EU28 category

Near the Project site, the initial 400-600 m from the shoreline is *sandy-bottom* habitat where the terrestrial section of the shoreline is composed of rocks and can be defined as *shallow shore* (as illustrated in Figure 12-20). The habitat type can be defined as *muddy-bottom* 3 km away from the shoreline at 14 metre depth.

When threatened marine habitats are considered, the Project site can be defined within the “A2.25 Communities of Mediterranean mediolittoral sands” habitat. The literature survey suggests that in the last 50 years almost 30% of this habitat type has been lost in Spain, France, Italy and Greece. When continuous coastal developments and associated pressure is considered, a further 30-40% loss is anticipated. Therefore, this habitat type is considered as VU in accordance with EU28 and EU28+ categorisation. The marine habitats observed at the Project site are listed in Table 12-6 and these habitats are further explained below.



Figure 12-20. Shoreline at the Project site

Table 12-6. Habitats observed at the Project site

EUNIS Code	Habitat Type	EU 28 Category	EU 28+ Category
A1.23	Communities of moderately exposed Mediterranean lower mediolittoral rock	DD	DD
A1.34	Communities of sheltered Mediterranean lower mediolittoral rock	LC	DD
A1.41	Communities of Mediterranean mediolittoral rockpools	DD	DD
A2.25	Communities of Mediterranean mediolittoral sands	VU	VU
A3.1x	Photophilic communities without canopy-forming algae in Mediterranean infralittoral and upper circalittoral rock	DD	DD
A5.23	Faunal communities of Mediterranean infralittoral fine sands	DD	DD
A5.28	Faunal communities of sheltered Mediterranean infralittoral muddy sands	DD	DD

Communities of moderately exposed Mediterranean lower mediolittoral rock (EUNIS Code: A1.23): This habitat is composed of rock and stone components at the mediolittoral Mediterranean shoreline. The common species are crab, snail and marine minerals at upper parts and algae at lower parts. The habitat is illustrated in Figure 12-21 as observed at the Project site. This habitat is dominant at the shoreline of the Project site. Although this habitat

type is not protected in general, there are a number of locations where it is under protection along the Mediterranean shoreline.



Figure 12-21. Rocks at the shoreline in the Project site (Source: Turan et. Al., 2020)

Communities of sheltered Mediterranean lower mediolittoral rock (EUNIS Code: A1.34): This habitat is protected from waves as it is composed of lower rocks (see. Figure 12-22) that are mostly covered with algae depending on the local conditions. Red algae are seen especially on inclined surfaces, brown algae is dominant on smooth surfaces with low-medium wave activity and the *Ulva* species of green algae dominates where the environment is rich in terms of nutrients. A1.34 habitat type is commonly observed along the Mediterranean shoreline and there is no reported case claiming loss of this habitat type.



Figure 12-22. Rocks above sea level at the Project site (Source: Turan et. Al., 2020)

Communities of Mediterranean mediolittoral rockpools (EUNIS Code: A1.41): The habitat is formed of a series of complex physical and biological factors which shape the rockpools. As the rockpools are located at the sea-land interface, they are significantly affected by pollution caused by terrestrial activities and developments. Similarly, macroalgal formations in the rockpools are affected by climate change as well as the combined impacts of high CO₂ concentrations and high temperatures. The most effective protection measures for this type of habitat is to ensure controlled terrestrial development and reduced contamination. Furthermore, a variety of benthic species and small fry (fish) are commonly observed in the rockpools. The rockpools formed at the Project site are illustrated in Figure 12-23.



Figure 12-23. Pools formed at the Project site between the rocks at the shore
(Source: Turan et. Al., 2020)

Communities of Mediterranean mediolittoral sands (EUNIS Code: A2.25): This habitat is present between almost-dry supralittoral sands and sub-sea infralittoral sands (see. Figure 12-24). The sand particles are coarser at the shores with high wave activity; whereas they are finer when the wave impact is less. Depending on the sediment characteristics in these areas, Polychaeta, Oligochaetes, Amphipods and Bivalvia can be dominant. Erosion is common in this habitat and mostly occurs due to anthropogenic impacts such as shore developments (e.g., marinas, industrial developments, tourism, etc.), increase in sea level due to climate change, dams, quarries, changes in the land use patterns, harbours and shore protection structures. It is anticipated that climate change will play an important role in future loss of this habitat type. Some countries have identified measures to protect this habitat type including limitations for dredging.



Figure 12-24. Sands affected by waves at the Project site just above sea level
(Source: Turan et. al., 2020)

Photophilic communities without canopy-forming algae in Mediterranean infralittoral and upper circalittoral rock (EUNIS Code: A3.1x): This habitat is composed of rocks covered with vertical macroalgae and is very common in shallow Mediterranean waters as shown in Figure 12-25. Certain fish species and sea urchin may be important for alterations in the habitat conditions. Threats for the A3.1x habitat type include temperature increase, contamination, invasive species, sedimentation, overfishing and coastal developments. On the other hand, this habitat is very flexible to changes and can easily adapt to new conditions.

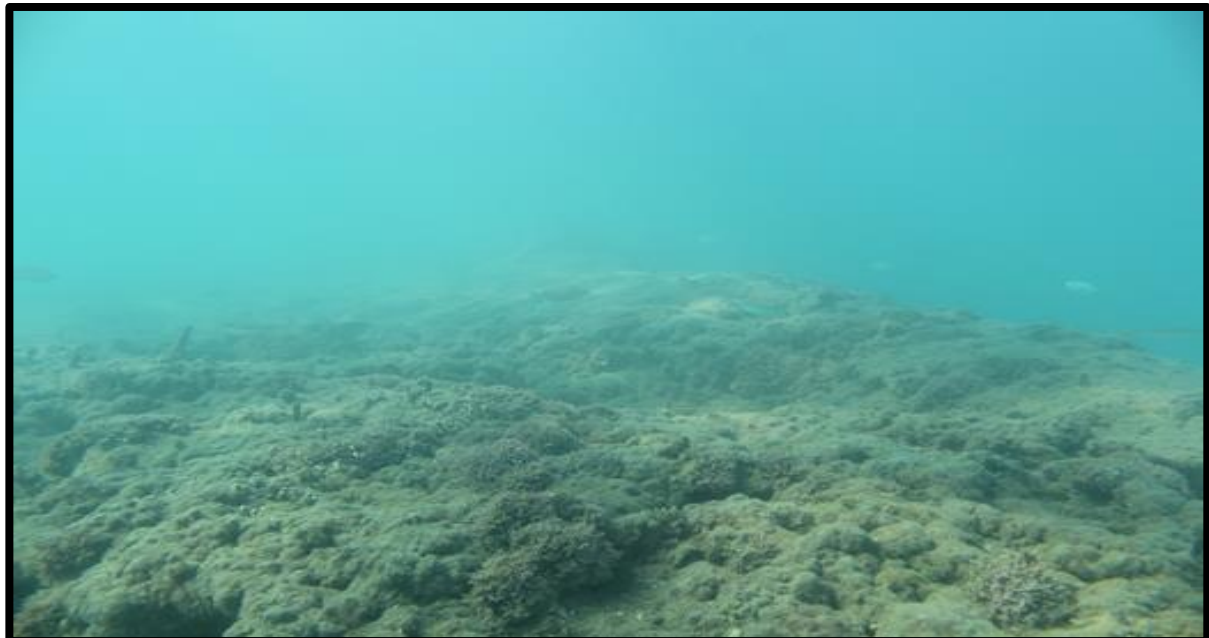


Figure 12-25. Algae at the bottom of the sea at the Project site (Source: Turan et. al., 2020)

Faunal communities of Mediterranean infralittoral fine sands (EUNIS Code: A5.23): Infralittoral fine sands are important to preserve the ecological balance of the beaches. This habitat (see Figure 12-26) is rich in terms of infauna and epifauna and is suitable for commercial Crustacean growth. Organic loads from natural and anthropogenic sources may alter the type and number of species. Similarly, impacts resulting from fishing activities such as sediment extraction, siltation, and removal of aggregates also negatively affects the habitat. Invertebrates in this habitat are known as Littoral Fine Sand Communities. The habitat usually does not involve significant algal or seagrass species.



Figure 12-26. Fine sands at the bottom of the sea and faunal communities using the sand
(Source: Turan et. al., 2020)

Faunal communities of sheltered Mediterranean infralittoral muddy sands (EUNIS Code: A5.28): This habitat type is mostly observed in closed or semi-closed polyhaline lagoons, estuaries and bays. Although little is known about its distribution in the eastern Mediterranean, it is widespread in general in the Mediterranean Sea (see. Figure 12-27). Wildlife in this habitat is characterized by fauna and flora species which are resistant for high organic loads. This habitat is mostly affected by human activities such as construction and discharges as well as changes in chemical composition, benthic dredging and fishing activities. Quality of the habitat is reportedly affected in some parts of the Mediterranean due to contamination. There are currently no protection action plan defined for this habitat. This habitat is mostly observed in 1-15 m depths with low hydrodynamic regimes in the form of sludge-sand sediment with benthic organisms. Algae and seagrass can also be observed, and when they are not present the dominant organisms are Polychaeta.

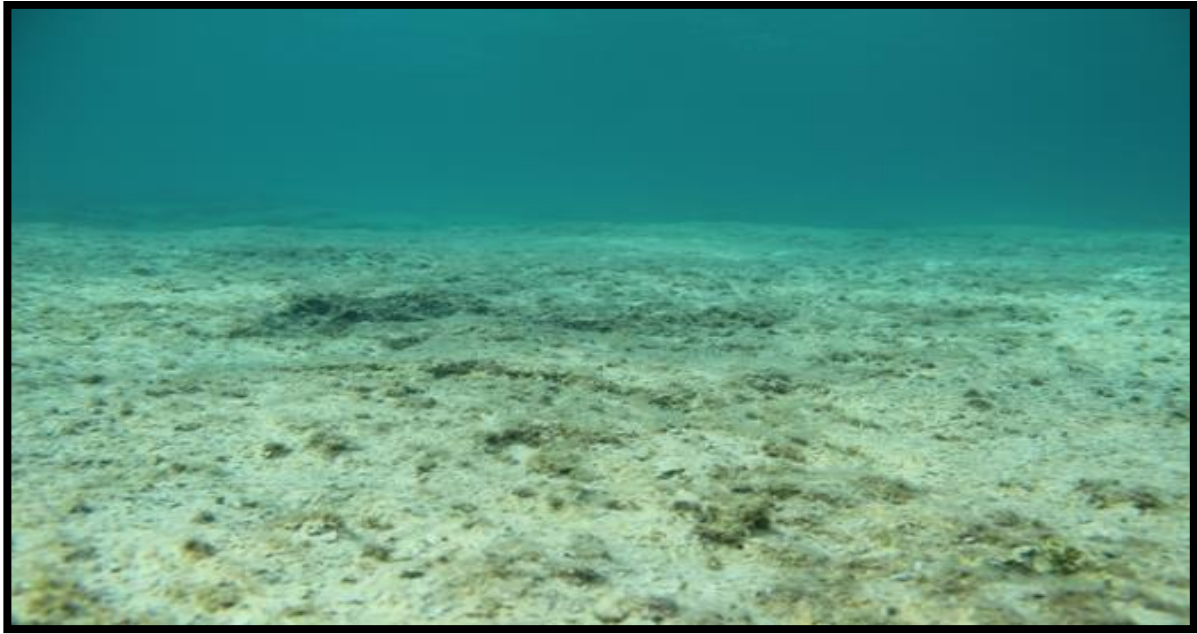


Figure 12-27. Faunal communities of sheltered Mediterranean infralittoral muddy sands at the Project site (Source: Turan et. al., 2020)

Critical Habitat Assessment

According to the marine ecosystem studies conducted for the Project site, 7 species are listed in IUCN Red List of Threatened Species as CR or EN as given in Table 12-4. Accordingly, *Anguilla Anguilla*, *Aetomylaeus bovinus*, *Gymnura altavela* and *Monachus monachus* species are characterized in CR whereas, *Epinephelus marginatus*, *Raja radula* and *Rhinobatos rhinobatos* species are characterized in EN status. All these species utilise the Project site for feeding but the site is not suitable for nesting. A detailed Critical Habitat Assessment is given in Annex K.

Although the piles of the jetty have the potential to impact the seabed conditions, no negative impacts are anticipated for the population of species using the area for feeding only. Biodiversity conservation measures are defined in the next section in line with best practices.

Impacts on Marine Ecosystem

In general, the marine habitat at the Project site does not have unique characteristics that differentiate it from other surrounding habitats in terms of presence of algae, planktonic organisms (phytoplanktonic and zooplanktonic organisms), benthic fauna and fish species.

The findings of the marine ecosystem studies suggest that diversity of species is relatively high at the study area. Most of the identified species are cosmopolitan species with a very wide distribution. Some of the species identified in the study area and its surroundings are listed in the annexes of Bern and CITES conventions, and will need to be preserved in line with the provisions of relevant international agreements.

Given that water quality in the study area and its surrounding was found to be high and the currents in the region are relatively strong, algal bloom is not observed in the region. Zooplanktonic organisms, which are in the second level of the marine food chain, are similar in number and diversity in the study area compared to surrounding habitats. When the benthic fauna is considered, it is possible to observe some *Mollusca* and *Annelida* species especially at the near-shore sections of the study area.

As stated above, the habitat at the CPIR Port Project site is typical of the near shore habitat structures observed in the eastern Mediterranean. Although the area is important for fishing activities, it does not present unique characteristics. The CPIR Port Project activities, in particular filling, dredging and jetty construction, will be conducted at a relatively limited area in a limited time period (i.e., the construction time period). Although these activities will result in habitat loss for macro and micro algae, planktonic organisms, benthic fauna and fish species, the habitat is envisaged to quickly return to its original state. Dredging activities are not part of the Ceyhan PDH-PP Project, however the impact area of the dredging activities to be conducted as part of CPIR Port covers the Ceyhan PDH-PP Project site; as such the associated impacts are also evaluated as part of this impact assessment report to a limited extent.

Impacts related to sediment movements

The filling and dredging activities have the potential to impact the benthic flora and fauna present within and on the sediments at the study area; i.e., with the removal of sediment, the benthic organisms will also be removed from the site. The benthic organisms in nearby areas may also be affected by the sediment clouds likely to be formed during these activities. However, mobile types of benthic organisms will potentially relocate to other areas that are not affected by the Project activities.

Impacts due to waste generation

Waste generation both in the terrestrial section and during vessel movements in the marine section may have negative impacts on the marine ecosystem if the wastes are not properly managed, particularly during the Project's operation phase. The fact that the currents in the port areas are generally not strong makes it advantageous in terms of management of the solid and liquid wastes in line with the provisions of national waste management legislation and international standards, since spread of waste is limited by low current strength.

Impacts related with dredging activities

As stated above, no dredging activity will be conducted for the jetty construction. However, the impact area of the dredging activities to be conducted as part of CPIR Port also covers the Ceyhan PDH-PP Project site. As such the associated impacts are also evaluated as part of this impact assessment report to a limited extent. The impacts discussed here associated with

dredging activities are obtained from the impact assessment and mitigation discussions provided by Turan et. al. (2020).

Dredging is conducted in order to provide sufficient water depth for high tonnage vessels that will approach the port area. The impacts related with dredging activities are associated with movement of the sediments and are listed as follows:

- Alteration of the chemical and physical characteristics of the sediment after mixing with water as a result of dredging activity;
- Damage to the living environment of organisms present in the sediment;
- Increase in suspended solids concentration, thus increasing turbidity;
- Spread of contaminants within the sediment, if any, into the water phase;
- Sedimentation of suspended solids onto the living organisms at the sea bed after the dredging activity is completed.

Seagrasses are important areas for marine species as spawning and feeding grounds and dredging activities have a major impact on the surfaces covered with seagrass. However, seagrass has not been identified at the Project site during the marine studies.

The habitat restoration following finalisation of the dredging activity depends on the characteristics of the new sediment medium as well as the organisms colonised in the area. Softer mediums such as estuary sediments are restored relatively faster than harder mediums (e.g., sand and gravel). As the sea bed at the study area is composed of sediment and sand, it is expected that the habitat restoration will occur within 1 year after completion of dredging activities.

Impacts related with construction of the Jetty

During construction of the jetty, it is expected that the sea bed characteristics will be affected. These impacts will be temporary during construction and once the Project moves into operation, the habitats will be restored.

Construction activities will also have an impact on the benthic organisms and macro algae at the sea bottom. It was observed during the site study that in areas where filling and excavation will be undertaken, sand habitat dominates with the limited presence of algal communities. Filling activities will have an impact on the ecosystem, however the biodiversity of benthic organisms is relatively low and mostly dominated by Mollusca and Annelida species, among which no endangered or rare species are identified in the study area. Therefore, the impacts are identified as temporary and occurring in a limited area.

12.4.2 Marine Turtles

Background

The Project site itself does not incorporate any beaches; however, several beaches that serve as nesting locations for marine turtles are located in the vicinity: Incirli beach located to the western boundary, Holland and Botaş beaches 1.8 km to the west, and Burnaz beach is located 4 km to the east as illustrated in Figure 12-28.

In accordance with the provisions of Communiqué on Protection of Marine Turtles (2009/10), Sugözü Beaches, consisting of Holland Beach, Botaş Beach, Sugözü Beach and Akkum Beach from east to west, extending along the west of the Project site, are recognized as important nesting areas for green turtle (*Chelonia mydas*) species. Incirli and Burnaz Beaches are not designated nesting areas for the same species.

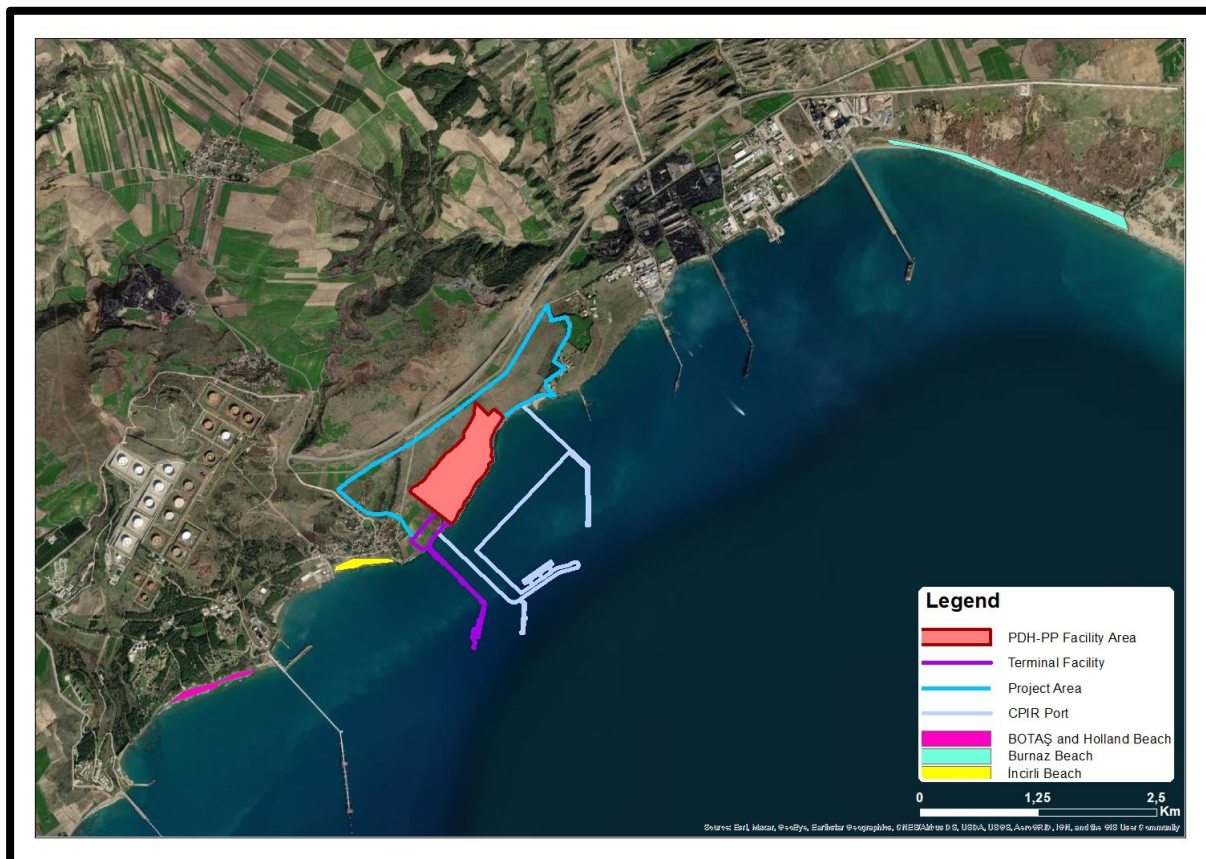


Figure 12-28. Beaches around the Project site where marine turtle nesting was observed

Marine turtle species have been studied within the scope of EIA conducted for the CIPR Port Project in order to identify presence of *Caretta caretta* (Loggerhead sea turtle), *Chelonia mydas* (green turtle) and *Trionyx triunguis* (African softshell turtle) in and around the Project site. The results of the study were reported by Turan et.al. (2020). The purpose of this study was to assess impacts of the Project on marine turtles and further determine necessary mitigation measures.

The mating season for marine turtles is usually between April and May and the nesting season extends until the end of July. Hatchlings usually emerge from their nest in September. Therefore, the nesting period for the marine turtles lasts from April to September.

Findings

The site studies were conducted on 26-27 June 2020 within the high nesting season for all three species. During the site studies, two nests in Incirli beach, two nests in Holland beach and three nests in Burnaz beach belonging to *Chelonia mydas* (green turtle) were identified. In addition, a number of trails were observed at Burnaz beach that are believed to belong to *Caretta caretta* (Loggerhead sea turtle) and *Trionyx triunguis* (African softshell turtle). These findings suggest that the Project site's surroundings are intensely used by these marine turtle species. The findings in Incirli beach are shown in Figure 12-29 and the findings in Burnaz beach are shown in Figure 12-30.



Figure 12-29. Findings of marine turtle studies in Incirli beach (picture of a *Chelonia mydas* (green turtle) egg at the bottom right)



Figure 12-30. Findings of marine turtle studies in Burnaz beach (picture of a *Chelonia mydas* (green turtle) egg at the bottom right)

Impacts on Marine Turtles

The below table summarises the protection status for three marine turtle species that were identified in the vicinity of the Project site. As can be seen from Table 12-7, all three species are under protection by national standards and international conventions both at the global and regional scale. Furthermore, some beaches are protected as NATURA 2000 sites under different statuses, especially those used as spawning grounds for the Green Sea Turtle (*Chelonia mydas*) and Loggerhead Sea Turtle (*Caretta Caretta*).

Table 12-7. Protection status for three marine turtle species

Species	Protection status
<i>Caretta caretta</i> (Loggerhead sea turtle)	<ul style="list-style-type: none"> • IUCN Red List VU in global scale, LC in the Mediterranean • BERN Convention Annex II (i.e., Strictly Protected Fauna Species) • In line with categorisation by former Ministry of Forestry and Water Works: Annex I (i.e., wild animals) and Annex III (wild animals under protection)¹²
<i>Chelonia mydas</i> (green turtle)	<ul style="list-style-type: none"> • IUCN Red List EN in both global scale and in the Mediterranean • BERN Convention Annex II (i.e., Strictly Protected Fauna Species) • In line with categorisation by former Ministry of Forestry and Water Works: Annex I (i.e., wild animals) and Annex III (wild animals under protection)
<i>Trionyx triunguis</i> (African softshell turtle)	<ul style="list-style-type: none"> • IUCN Red List CR • BERN Convention Annex II (i.e., Strictly Protected Fauna Species) • In line with categorisation by former Ministry of Forestry and Water Works: Annex I (i.e., wild animals) and Annex III (wild animals under protection)

Among the seven marine turtle species present on Earth, five of the species are present in the Mediterranean and two of them use the Mediterranean coasts for nesting: *Caretta caretta* (Loggerhead sea turtle) and *Chelonia mydas* (green turtle). Usual nesting locations for *Caretta caretta* (Loggerhead sea turtle) involve Greece, Turkey, Libya and Cyprus, and for *Chelonia mydas* (green turtle) Turkey and Cyprus.

Egg predation by fox, dogs, pigs, badger, jackal and land crabs is common. Other factors that might impact eggs are wind erosion, wave erosion, sand extraction and vehicle movements. After the eggs hatch, the most significant threats include animals (e.g., crabs, birds, fish etc.) as well as misleading beach illumination. Therefore, as also identified in Communiqué on Protection of Marine Turtles (2009/10), construction activities are not allowed for the period between 1st of May – 30th of September in officially classified nesting beaches. The Project site is not among these nesting beaches and is not located within their impact area, and thus is not included in the provisions of the Communiqué.

However, a number of nests were identified in Incirli beach which necessitates the application of a number of mitigation measures during development of the Project. Both Incirli beach and Holland beach (i.e., one of the nesting beaches for marine turtles as defined in Communiqué on Protection of Marine Turtles (2009/10)) are situated in the area that may potentially be affected by Project activities. While the terrestrial activities might impact the *Chelonia mydas* (green turtle), in the marine section it is also highly probable that *Caretta caretta* (Loggerhead sea turtle) and *Chelonia mydas* (green turtle) are encountered.

In Chapter 10, noise and vibration issues that will occur during construction and operation are evaluated.

According to the noise model, it can be seen that the noise levels are insignificant considering the sea turtle nesting beaches.

¹² <https://www.resmigazete.gov.tr/eskiler/2015/04/20150429-5-1.pdf>

Vibration calculations reveal the safe distance before vibration level reach 1 mm/s level is 65 meters for construction activities (i.e., pile driving). Thus; no impact is expected from constructional vibration as long as necessary precautions are taken and proper warnings are given as there are no receptors identified closer than 65 meters from the Project Site.

The blasting model was made by considering the antique waterway, which is the closest sensitive receiver to the project site and located at a distance of 30 m. Accordingly, the impact from the explosion on the turtle nesting areas located at a distance of 2.5 km is insignificant.

Since there will be no activity at night and especially during the nesting period of sea turtles, it can be concluded that this effect will be even lower in real terms.

12.4.3 Mediterranean Monk Seal (*Monachus monachus*)

Background

The Mediterranean Monk Seal (*Monachus monachus*) has long been seen in a wide geographic range including not only the Mediterranean Sea but also Marmara and Black Sea and Atlantic coast of Africa. However, following a significant population reduction in the 20th century, it has not been observed in France, Spain, Italy, Egypt, Israel and Lebanon coasts within the last 100 years. Today, with its population of less than 600 individuals, the Mediterranean Monk Seal (*Monachus monachus*) is classified as CR in IUCN Red List and is a part of Annex I of CITES (i.e., species that are the most endangered among CITES-listed animals and plants). The CR status of Mediterranean Monk Seal (*Monachus monachus*) is also recognized by Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals), Bern Convention (Conservation of European Wildlife and Natural Habitats) and EU Habitats Directive.

The Mediterranean Monk Seal (*Monachus monachus*) usually uses caves away from human activities as they shelter and feed around those caves. They might also be rarely seen in sandy beaches and estuaries. They mostly prefer reclusive habitats, away from populated and narrow environments. The most densely populated area exists in the Aegean Sea, where around 100 individuals were observed on the Turkish coasts.

Scientific studies on this species were initiated in 1960s in Turkey. Currently, several universities promote collective efforts including protection studies. In addition to individual studies, regional and national action and strategy plans have been prepared for protection of the species, with the National Mediterranean Monk Seal Committee formed of key experts.

The species is usually found solitary and rarely seen in colonies of 2-4 or 7-8. As the female members are more commonly observed, they are known to be situated in and around their caves during breeding seasons. The gestation period is 10-11 months and they breed either each year or once every two years; for that reason, their reproduction rate is known to be low.

The Mediterranean Monk Seal (*Monachus monachus*) is a carnivore and usually feeds on fish, octopus and lobster.

Most important threats for their existence are as follows:

- Degradation of their living environments;
- Deliberate kills;
- Entanglement in fishing gear;
- Caves being disturbed by external factors;
- Decreasing fish populations;
- Sea pollution; and
- Increase in marine traffic.

Findings

As stated in the official letter by MoAF, General Directorate of Nature Conservation and National Parks dated 09.06.2020, received within the scope of official consultations conducted for EIA process conducted for CPIR Port Project, a field study was conducted in order to determine the potential use of the Project site by the Mediterranean Monk Seal (*Monachus monachus*) on 29th June 2020. An additional field study was conducted on and 27th-28th November 2021. The results of the study were reported by Turan et.al. (2020). During the field study, a coastal line of 5.3 km from Botas to Toros Agri Industry has been assessed as shown in Figure 12-31 in order to determine potential suitable habitat for the species.

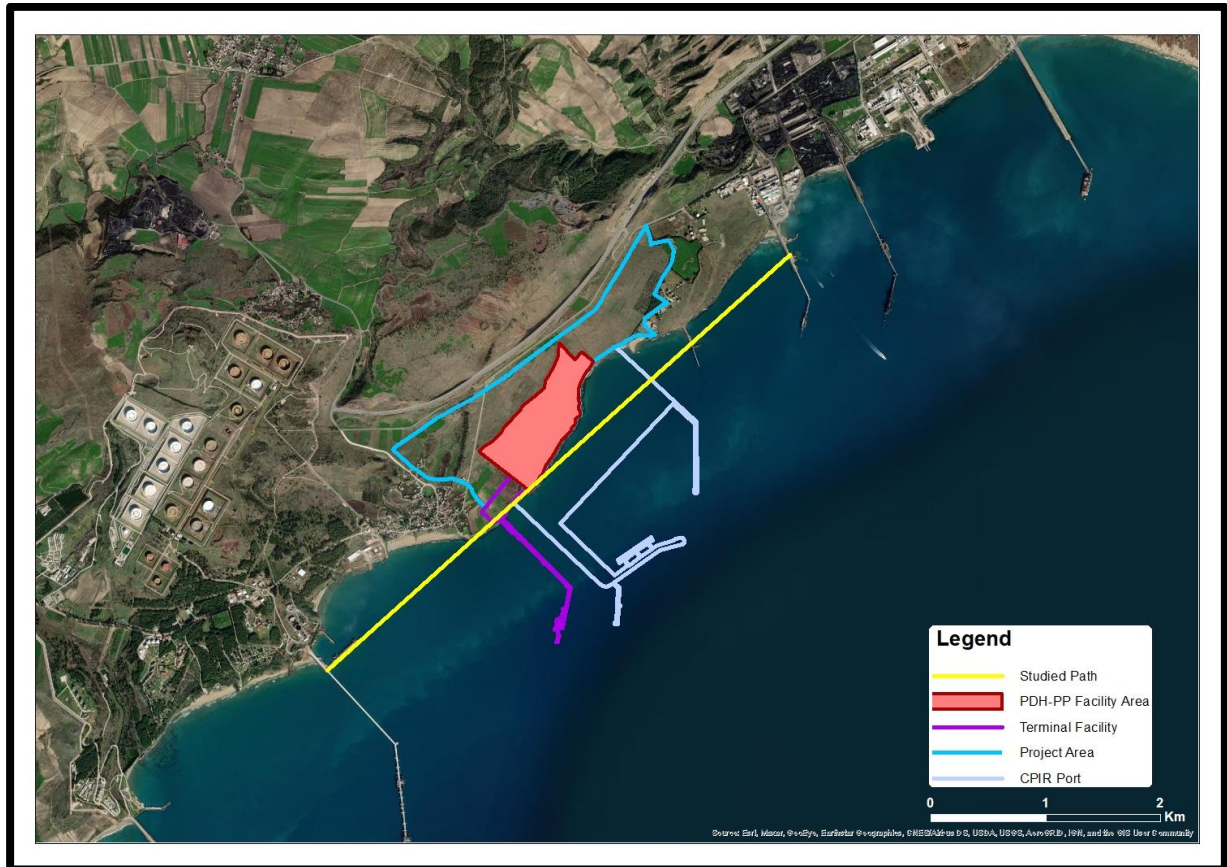


Figure 12-31. Study area for the Mediterranean Monk Seal (*Monachus monachus*)

In the field study, habitat structures and conditions were evaluated and macro biodiversity was identified through the use of UVS. As a result, it was determined that the coastal structure mostly comprises *shallow shore* composed of rock, especially at the Project site, although there are some sandy beaches in the close vicinity of the site. At some parts of the study area, the rock structure includes a few cavities but these are not considered as suitable for breeding and nesting. The rocky formation at the Project site is illustrated in Figure 12-32.



Figure 12-32. Rocky coastal formation at the Project site

On the marine side of the study area, different types of sea bed structures and associated biological formations were observed. Closer to the shore, the dominant habitat type is sandy bottom (i.e., first 400-600 m of 5-6 m depth), which turns into muddy bottom at approximately 3 km away from the shore with 14 m water depth.

The diversity of benthic fauna is of importance for the feeding and reproduction of monk seals. Similarly, fish are also among the main food supply for monk seals. In the field study, it was also determined that the rocky habitat increases the biological diversity and constitutes a suitable hunting ground for the monk seals. As a result, although the Project site is not a suitable nesting and breeding ground for the Mediterranean Monk Seal (*Monachus monachus*), it is an area where the species may hunt and feed.

Impacts on Mediterranean Monk Seal

The region around the Project site, which includes important nesting and breeding areas for Mediterranean Monk Seal (*Monachus monachus*), is currently under the pressure of several industrial developments that have similar potential impacts as the Ceyhan PDH-PP Project.

As a result of the field study conducted within and around the Project site at a coastal path of 5.3 km, no cave or similar structure which constitutes suitable conditions for breeding and nesting of Mediterranean Monk Seal (*Monachus monachus*) could be observed; however, the site is found to be suitable as a feeding area mainly due to the diversity of food supply (e.g., fish, benthic organisms, etc.).

No seal individuals were found in the observation study made from the boat. In these studies, interviews were held with 3 fishermen who were on their boats in terms of the availability of seals. As a result of the interviews, the fishermen, that were determined to have been hunting in the region for more than 10 years, that are professional, and go out hunting every day when the weather is suitable (at least 180 days/year) did not observe any seals in the project area (between Botaş Ceyhan Pier and Toros Ceyhan Pier) in the last 5 years.

12.5 Protected Sites and Other Sites in the Vicinity of the Project site

The World Database of KBA managed by the KBA Partnership (comprising 11 founding partners and served by the KBA secretariat hosted jointly by BirdLife International and IUCN) provides KBAs including Important Bird and Biodiversity Areas on a global and regional scale. As listed in the database, there are four KBAs located in the vicinity of the Project site as shown in Figure 12-33, namely Ceyhan Delta and Sugözü Akkum to the southwest, Yılanlıkale Hills to the northwest, and Burnaz Dunes and Amanos Mountains to the east.



Figure 12-33. Key Biodiversity Areas (KBAs) around the Project Site (World Database of KBAs, 2020)

According to “Key Biodiversity Areas of Turkey”¹³ published by Doğa Derneği (Nature Society) in cooperation with the Turkish Ministry of Environment and Forestry¹⁴, Burnaz Dunes KBA, which is also classified as an archaeological protected site, is located approximately 2.5 km to the east of the Project site. The KBA contains dune plains, sand dunes, ponds formed by accumulation of stormwater or groundwater, reed fields around the ponds and orchards as well as agricultural fields. The ponds are often used by the migratory birds during stopover periods. Notably, Burnaz Dunes KBA is the only area in Turkey that is known to be hosting endangered terrestrial fauna species *Acanthodactylus schreiberi*.

Sugözü Akkum KBA consists of sand dunes and small agricultural lands and is located approximately 2.5 km to the southwest of the Project site. A creek flows in the middle of the KBA and discharges into the Mediterranean Sea, creating a wetland in its close vicinity. Sugözü Akkum KBA is a breeding ground for the endangered loggerhead sea turtle (*Caretta caretta*) and green turtle (*Chelonia mydas*) species. Turkey’s second largest population of the

¹³ Eken, G., Bozdoğan, M., İsfendiyoğlu, S., Kılıç, D.T., Lise, Y. (2006), Key Biodiversity Areas of Turkey. Doğa Derneği, Ankara.

¹⁴ Former Ministry, afterward restructured as MoEUCC

green sea turtle breeds in this area. As previously mentioned in above sections, Sugözü Akkum KBA does not have any importance for bird populations.

The presence of protected areas around the Project site was investigated by using Geodata visual database, to identify the recognized natural and ecological values. Accordingly, the Wild Life Breeding Area (for *partridge*) is located approximately 17 km to the northwest, Yumurtalık Lagoon Wetland and Natural Park is located approximately 26 km to the southwest, Şahin Tepesi Natural Park is located approximately 25 km to the east, Osmaniye Zorkun Plateau is located approximately 25 km to the northeast and Tekkoz Kengerlidüz Natural Conservation Area is located approximately 30 km to the east of the Project site. The protected areas near the Project site are shown in Figure 12-34 below.

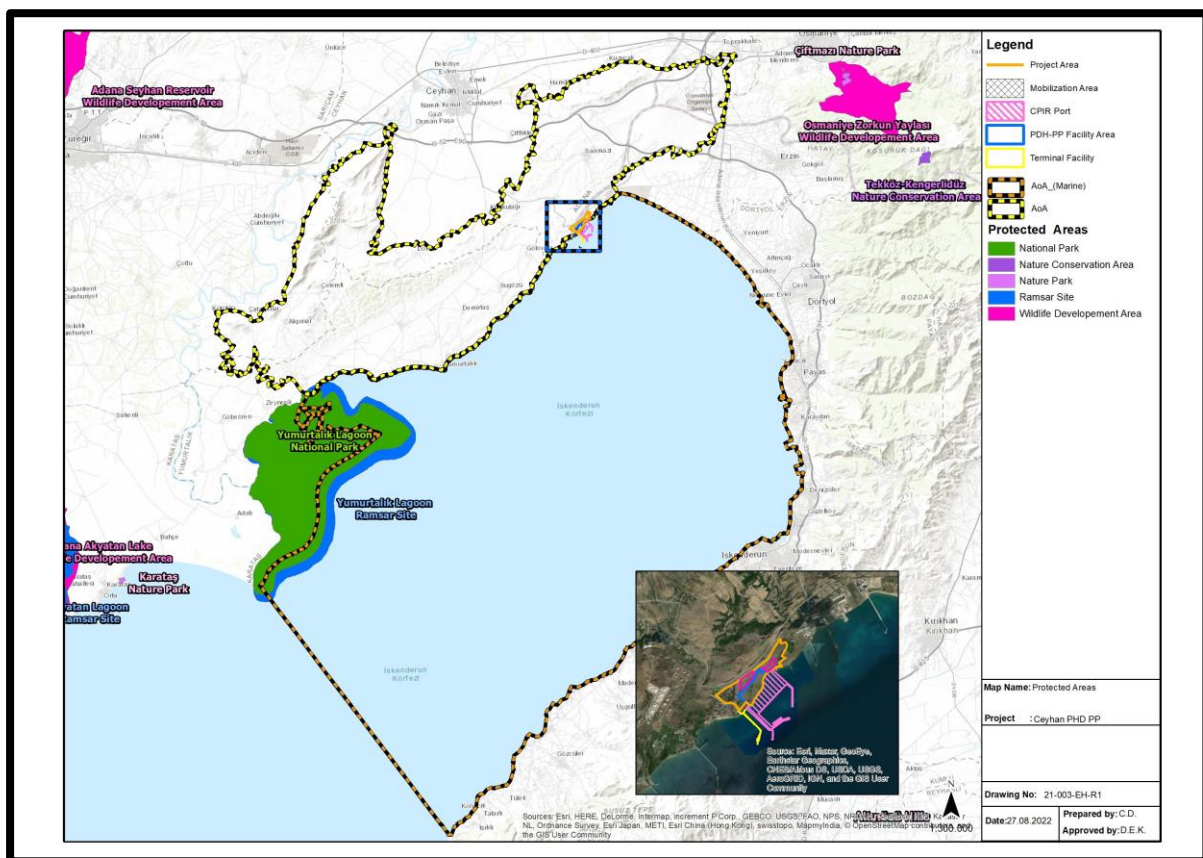


Figure 12-34. Protected areas near the Project site (Geodata, 2019)

Yumurtalık Lagoons, which is among 14 sites designated as Wetlands of International Importance (i.e., Ramsar Sites), is located approximately 26 km to the southwest of the Project site and is registered as a natural protected area of 1st degree. In accordance with the information obtained from Ramsar Sites Information Service and MoAF General Directorate of Nature Conservation and National Parks, Yumurtalık Lagoons cover an alluvial delta formed by rivers in the eastern Mediterranean Sea with a broad range of freshwater and coastal habitats supporting sand dune vegetation, salt marsh vegetation, stream bank vegetation, and ruderal vegetation of roadsides and field margins. Similar to the nearest KBAs, threatened sea turtles (*Caretta caretta*) and green turtles (*Chelonia mydas*) are supported in the Yumurtalık

Lagoons. Yumurtalık Bay is also the only known wintering area of the green turtle in the Mediterranean region. The site is also deemed as an important area for fish breeding and migratory birds. Migratory birds on the Palaearctic-Africa route use the site as both a stopover and wintering site.^{15,16}

Another Ramsar site close to the Project site is Akyatan Lagoon, located approximately 60 km to the southwest of the site, which is surrounded by brackish marshes, sandy shores, freshwater pools, wet meadows, and dunes. The area was registered as a wildlife protection area hosting globally threatened species, including spawning of marine turtles, and supports internationally important numbers of numerous species of migrating, wintering and breeding water birds.¹⁷ Yumurtalık Lagoons and Akyatan Lagoon are among the 6 IBAs (i.e., Aladağlar, Tuzla Lake, Akyatan Lake, Ağyatan Lake, Yumurtalık Lagoons and Gavur Lake) located within the Seyhan & Ceyhan Basin. IBAs provide key importance for the conservation of avifauna as well as biodiversity of a country. An overview of the IBAs near the Project site is provided in Table 12-8 while their locations are illustrated in Figure 12-35.

Table 12-8. IBAs near the Project site¹⁸

Name of IBA	Area	Distance to border of the Project site	Description	Site qualifies for criteria
Yumurtalık Lagoons	16,430 ha	~ 30 km	Lagoons, salt marsh	<ul style="list-style-type: none"> • ≥1% biogeographic water bird population • ≥20,000 water birds or ≥10,000 seabirds • ≥1% flyaway/distinct water bird population • Species of European Conservation Concern Category 1, 2 or 3
Ağyatan Lake	2,200 ha	~ 50 km	Lagoons, dunes	<ul style="list-style-type: none"> • Globally threatened species • ≥1% biogeographic water bird population • ≥20,000 water birds or ≥10,000 seabirds • ≥1% flyaway/distinct water bird population • ≥5000 storks or ≥3,000 raptors • Species of European Conservation Concern Category 1, 2 or 3
Akyatan Lagoon	14,000 ha	~ 60 km	Lagoons, dunes	<ul style="list-style-type: none"> • Globally threatened species • ≥1% biogeographic water bird population • ≥20,000 water birds or ≥10,000 seabirds • ≥1% flyaway/distinct water bird population • Species of European Conservation Concern Category 1, 2 or 3

¹⁵ <http://yumurtaliklagunu.tabiat.gov.tr/>

¹⁶ <https://rsis Ramsar.org/ris/1619>

¹⁷ <https://rsis Ramsar.org/ris/943>

¹⁸ Magnin, G. and Yazar, M., (1997) Important Bird Areas in Turkey, the Society for the Protection of Nature, Istanbul, Turkey.

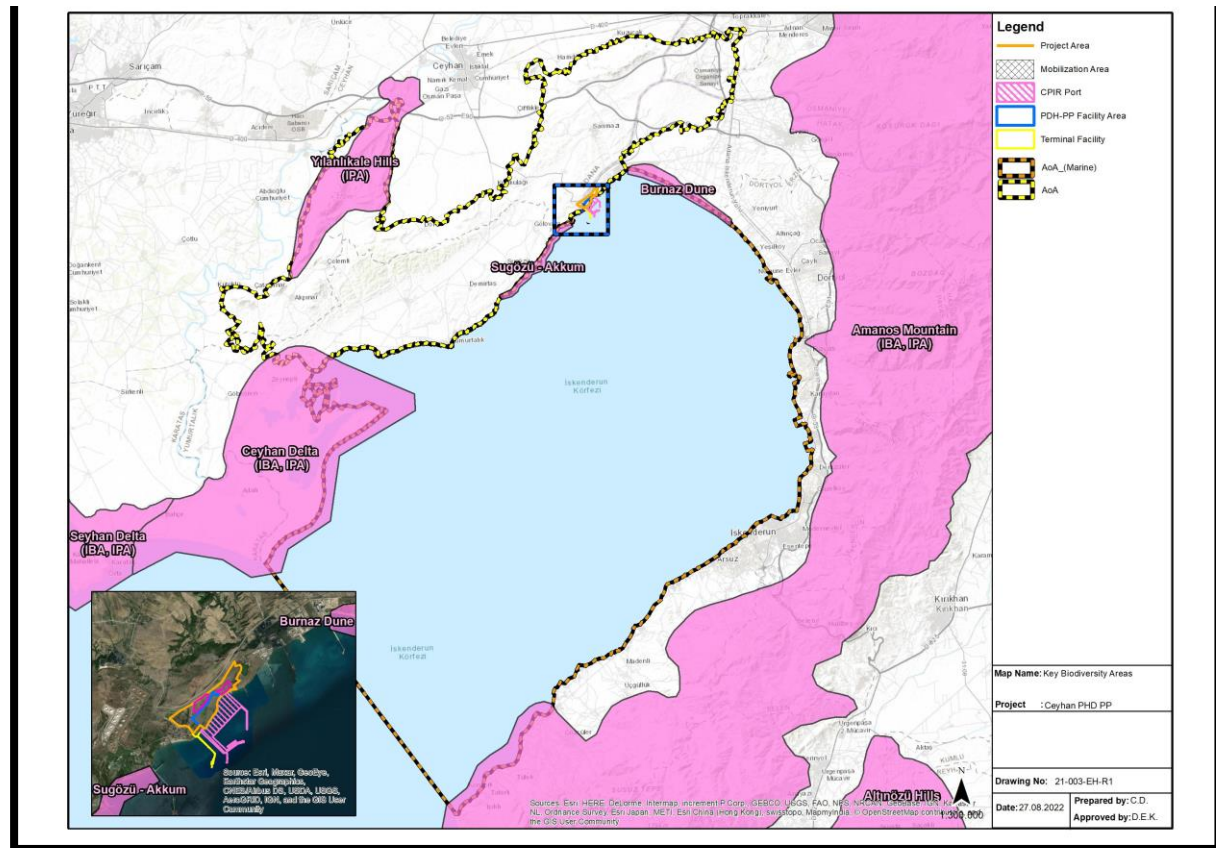


Figure 12-35. IBAs near the Project site (Geodata, 2019)

In the far surroundings of the Project site, there are also two Ramsar sites: Yumurtalik Lagoons, which is among the 14 sites designated as Wetlands of International Importance (i.e. Ramsar Sites) and Akyatan Lagoon, which is located approximately 60 km to the southwest of the Project site and registered as a wildlife protection area hosting several globally threatened species.

The Project has no direct or indirect relation with Yumurtalik Lagoons, and is located beyond the distance within which it would be subject to Project impacts.

It is not anticipated that the Project will have an direct impact on the further above mentioned protected areas as the impacts do not extend to associated distances.

However, it may be exposed to indirect effects due to oil/chemical spill. In this context, it will apply to the mitigation measures given in Chapter 8.

12.6 Ecosystem Services

The assessment of the ecosystem services provided by a site is important in the scope of IFC PS 6. Ecosystem services are defined as the benefits that people, including businesses, derive from ecosystems. Accordingly, IFC defines four ecosystem services that are evaluated in the content of this report :

- provisioning services, which are the products people obtain from ecosystems;
- regulating services, which are the benefits people obtain from the regulation of ecosystem processes;
- cultural services, which are the nonmaterial benefits people obtain from ecosystems; and
- supporting services, which are the natural processes that maintain the other services.

Furthermore, IFC requires the client to conduct a systematic review to identify priority ecosystem services. This review is regarded as Ecosystem Service Review. The priority ecosystem services are two-fold in line with the purposes of PS6 and :

- **Type I:** Provisioning, regulating, cultural and supporting ecosystem services, over which the client has direct management control or significant influence, and where impacts on such services may adversely affect communities.
- **Type II:** Provisioning, regulating, cultural and supporting ecosystem services, over which the client has direct management control or significant influence, and on which the project directly depends for its operations.

Where a project is likely to have an impact on ecosystem services, the Ecosystem Service Review should screen for all Type I and Type II ecosystem services in the project site and its area of influence and prioritize ecosystem services based on the following: (i) the project's likelihood to have an impact on the service; and (ii) the project's direct management control or significant influence over that service.

Type I ecosystem services will be considered priority, under the following circumstance:

- Project operations are likely to result in a significant impact on the ecosystem service;
- The impact will result in a direct adverse impact on Affected Communities' livelihood, health, safety and/or cultural heritage; and
- The project has direct management control or significant influence over the service.

On the other hand, Type II ecosystem services will be considered priority under the following circumstance:

- The project directly depends on the service for its primary operations; and,
- The project has direct management control or significant influence over the service

The ecosystem services, i.e., the benefits from natural resources including habitats and species in the Project site are summarised below:

a) Provisioning services (provided goods):

- Agricultural areas and fruit orchards provide services for both consumption and livelihoods.

- *Zizyphus lotus* (jujube) and *Arum dioscoridis* of the dry Mediterranean lands with unpalatable non-vernal herbaceous vegetation are consumed by local people (Figure 12-36).
- Some of the households around the Project site conduct fishery activities to support their livelihood
- The dry Mediterranean lands with unpalatable non-vernal herbaceous vegetation is used for grazing purpose by local people serving small and large horticulture (Figure 12-1).
- Natural habitats are also used by a number of birds, mammal, reptile and insect species for feeding, sheltering and breeding purposes.

b) Regulatory services (ecological functions):

- Trees and other vegetation in the area function as carbon sinks.
- Natural vegetation also helps preventing erosion and flooding.
- Natural vegetation also helps in recharge of groundwater resources and decreasing the sediment transport into lakes and sea through excess rainfall.

c) Cultural services (non-monetary services):

- Natural woodlands are utilised for recreational purposes by people and provide a pleasant scenery and landscape.
- Natural habitats are important for maintaining species populations.
- Natural habitats holding *Cyclamen persicum* populations also function as genetic reserves.



Figure 12-36. *Arum disocoridis* leaves which are consumed by local people

Ecosystem services which were identified in the project impact area are presented in terms of "replaceability" and "importance".

- Replaceability is dependent upon the existence of alternatives, as well as accessibility, sustainability, cost and appropriateness (for example in relation to cultural views and preferences) of such alternatives.
- Importance of an ecosystem service can be determined by considering the intensity and scope of use, degree of dependence, and stakeholder, cultural and historical importance.

Based on this approach, the ecosystem services identified in the Project Aol are assessed according to the framework illustrated in Figure 12-37.

		Replaceability of Ecosystem Service			
		Easy (many viable alternatives present in area)	Moderate (some viable alternatives present in area)	Difficult (irreplaceable or few viable alternatives present in area)	
Importance of Ecosystem Service	(i) An ecosystem service upon which vulnerable groups are dependent for their livelihood or wellbeing (e.g. drinking water, fuel for heating), or an ecosystem service identified as a priority service by local communities through stakeholder engagement activities; or (ii) An ecosystem service on which the Project is dependent and cannot function without	High	Priority	Priority	Priority
	(i) An ecosystem service upon which over 50% of the local community are dependent for their livelihood or elements of their wellbeing; or (ii) An ecosystem service which is utilised by the Project but upon which the project is not dependent	Medium	Medium	Priority	Priority
	(i) An ecosystem service upon which 10-50% of the local community are dependent for their livelihood or elements of their wellbeing	Low	Low	Medium	Priority
	(i) An ecosystem service upon which less than 10% of the local community are dependent for their livelihood or elements of their wellbeing	Very Low	Low	Low	Medium

Figure 12-37. Ecosystem Services Assessment Framework

Ecosystem services identified in the Project Aol are assessed in Table 12-9.

Table 12-9. Ecosystem Services Assessment

Ecosystem Service	Replaceability	Importance of Ecosystem Service	Priority ES
Provisioning services (provided goods)			
Agricultural areas and fruit orchards provide services for both consumption and livelihoods	Easy Agricultural activities are mainly carried out outside the project affected area	Low Food Production and agricultural activities in the Aol is not a intense livelihood activity (%39,9 of the local community are dependent for their livelihood)	Low Non-Priority
<i>Zizyphus lotus</i> (jujube) and <i>Arum dioscoridis</i> of the dry Mediterranean lands with unpalatable non-vernal herbaceous vegetation are consumed by local people	Easy <i>Zizyphus lotus</i> (jujube) and <i>Arum dioscoridis</i> also exist outside the project affected area.	Very Low <i>Zizyphus lotus</i> (jujube) and <i>Arum dioscoridis</i> does not constitute the primary food source of the local people.	Low Non-Priority
Some of the households around the Project site conduct fishery activities to support their livelihood	Easy There are alternative areas for fishing activities and fishing is more concentrated in the alternative areas in the region	Very low Sea Fishing in the Gulf of Iskenderun is not a intense livelihood activity (%5.4 of the local community are dependent for their livelihood)	Low Non-Priority
The dry Mediterranean lands with unpalatable non-vernal herbaceous vegetation is used for grazing purpose by local people serving small and large horticulture	Easy There are alternative areas for grazing purpose and grazing is more concentrated in the alternative areas in the region	Very low The interviewees indicated that animal husbandry in the region has come to an end, making livestock owners sell their animals	Low Non-Priority
Natural habitats are also used by a number of birds, mammal, reptile	Easy There are alternative natural habitats are also	Low The natural habitats distributed in the project	Low Non-Priority

Chapter 12: Terrestrial and Marine Ecology

Ecosystem Service	Replaceability	Importance of Ecosystem Service	Priority ES
and insect species for feeding, sheltering and breeding purposes	used by a number of birds, mammal, reptile and insect species for feeding, sheltering and breeding purposes	area have a distribution of less than 50%.	
Regulatory services (ecological functions)			
Trees and other vegetation in the area function as carbon sinks.	Medium There are alternative habitats that contains trees and vegetation. However, trees and vegetation will be replaced to a certain extent together with landscaping works.	Low The natural habitats distributed in the project area have a distribution of less than 50%.	Low Non-Priority
Natural vegetation also helps preventing erosion and flooding.	Medium There are alternative natural habitats. However, natural habitats will be replaced to a certain extent together with landscaping works	Low The natural habitats distributed in the project area have a distribution of less than 50%. According to the Chapter-7 Hydrology and Hydrogeology, the region is not within 100-years flood risk areas of any major rivers, the risk of flooding is found to be significantly low	Low Non-Priority
Natural vegetation also helps in recharge of groundwater resources and decreasing the sediment transport into lakes and sea through excess rainfall.	Medium There are alternative natural habitats. However, natural habitats will be replaced to a certain extent together with landscaping works	Low The natural habitats distributed in the project area have a distribution of less than 50%.	Low Non-Priority
Cultural services (non-monetary services)			
Natural woodlands are utilised for recreational purposes by people and provide a pleasant scenery and landscape.	Easy Natural woodlands within the project area are quite limited. Natural woodlands are more concentrated in the alternative areas in the region approximately 1.5 km distance to the north	Low The natural woodlands distributed in the project area have a distribution of less than 50%.	Low Non-Priority
Natural habitats are important for maintaining species populations.	Medium There are alternative natural habitats. However, natural habitats will be replaced to a certain extent together with landscaping works	Low The natural habitats distributed in the project area have a distribution of less than 50%.	Low Non-Priority
Natural habitats holding <i>Cyclamen persicum</i> populations also function as genetic reserves.	Low There are alternative natural habitats holding <i>Cyclamen persicum</i> populations. However, <i>Cyclamen persicum</i> individuals has been already translocated outside the affected area.	Low The natural habitats distributed in the project area have a distribution of less than 50%.	Low Non-Priority

Based on the evaluation of possible priority ecosystem services, it was concluded that there are no priority ecosystem services within the scope of the project. Therefore, priority Type I and Type II ecosystem service identification is not required.

12.7 Impacts

The impact assessment process predicts and describes impacts that are expected to occur for different phases of the Project. Where possible, impacts are quantified to the extent practicable, which may include size of habitat lost; fauna collision, etc. For each impact, its significance is evaluated by defining and evaluating two key aspects:

- The magnitude of the impact; and
- The sensitivity of the feature or receptor that will be impacted.

The sensitivity/vulnerability/importance designations themselves are universally consistent, but the definitions for these designations will vary on a resource/receptor basis. The universal sensitivity/vulnerability/importance designations are:

- Low;
- Medium; and
- High.

Receptor sensitivity definitions are provided in Table 12-10

Table 12-10. Terrestrial and Marine Ecology sensitivity/vulnerability/importance

Value	Description
Low	Species and/or population has high capacity to absorb or adapt to change (i.e. has capacity to move away from or adapt to the project impact), and is potentially unaffected or marginally affected; Modified and artificial habitats
Medium	Internationally threatened species /protected area within the area impacted by the project activities outside of period of high sensitivity or during routine or reliably predictable peak presence; Species and/or population which has moderate capacity to absorb or adapt to change (i.e. has capacity to move away from or adapt to the project impact), leading to potential temporary but sustainable effect which does not substantially alter character or result in significant loss of ecological functionality; Natural habitats that are less likely to be inhabited by species of elevated conservation concern
High	Internationally threatened species /protected area within the area impacted by the project activities during period of high sensitivity (e.g. during breeding, spawning or nesting) and during routine or reliably predictable peak presence; Species and/or population which has little or no capacity to absorb or adapt to change (i.e. little or no capacity to move away from or adapt to the project impact), leading to potential for substantial change of character and/or loss of ecological functionality; IUCN Red List or endangered habitats or unique habitats or highly threatened and/or unique habitats

12.7.1 Impacts on Terrestrial Ecology During Construction

Based on baseline conditions of the Project Area, an evaluation of the potential impact on Terrestrial Ecology from land preparation and construction activities is summarised in the following table.

Table 12-11. Summary of Impact Significances of the Receptors for the Construction Phase(Terrestrial)

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
		Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
Impacts related to Habitat Loss	Negative Direct and Indirect	<p>The main form of damage to be caused to natural habitats is decrease in vegetation, littering of the logging area, and enhanced fire risk. Felling and mechanical damage of trees and shrubs, compaction of the soil with grass vegetation, destruction of the forest undergrowth affect the crown cover density and result in compaction of the topsoil layer.</p> <p>Potential impact on vegetation will be directly and indirectly related to the construction activities. The direct impact is immediate destruction or damage of vegetation in the course of construction. The indirect impact is a change in the plant communities' growth conditions induced by the construction activities.</p> <p>The greatest impacts on natural habitats in the Project area will include:</p> <ul style="list-style-type: none"> • deforestation of the Project site areas; • loss of plant resources; • reduction of valuable plant resources; • loss of endangered plant species, including those listed in the Turkish Red Data Books • damage of vegetation at the boundaries of construction sites and temporary roads; • inhibition of plant growth due to emissions of dust from construction activities and harmful substances; • increased fire risk in the area. 	Habitat loss will be in the project site and its impact will be in the project site	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to Habitat Loss is within legal standards or accepted practices and is likely to result in tangible changes	-	Habitat loss will occur due to the construction works to be carried out.	In addition to the natural processes, with proper restoration potential impacts during construction is expected to be reversible in the Mid term.
		Score	Project Site	Long	Medium	N/A	Probable	Mid-term
		Value	1	4	3	-	5	3
		Impact Magnitude (G+D+I+F (or L)) x R		39				

Chapter 12: Terrestrial and Marine Ecology

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to plant species	Negative Direct	Vegetation clearing during the construction phase may result in the destruction of floral species of conservation concern. Four species of conservation concern have been recorded in the Project Area, <i>Pancratium maritimum</i> , as EN and <i>Cyclamen persicum</i> , <i>Sternbergia pulchella</i> and <i>Crocus vitellinus</i> as VU	Impacts on plant species will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	The impact on plant species is within legal standards or accepted practices and is likely to result in tangible changes	.	Loss of plant species will occur due to the construction works to be carried out.	Potential impacts related to plant species are expected to be reversible in the short to medium term.
		Score	Local	Long	Medium	-	Likely	Short/mid-term
		Value	2	4	3	-	3	2
	Impact Magnitude (G+D+I+F (or L)) x R		24					

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
		Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
Impacts related to fauna species	Negative Direct	<p>Small and less mobile species can become trapped, injured and killed during vegetation clearing and earth works.</p> <p>Fauna of particular concern in this context include:</p> <ul style="list-style-type: none"> Fossorial mammals (e.g. moles, rodents); Nesting birds (ground and tree nesting); and Reptiles and amphibians. <p>Other common causes of fauna injury, death or disturbance during the construction include:</p> <ul style="list-style-type: none"> Vehicle-wildlife collisions access roads; Hunting, trapping and poisoning of larger fauna by construction workers and contractors; and Fauna trapped/caught in infrastructure, such as fences and excavations <p>Four species of conservation concern have been recorded in the Project Area, <i>Neophron percnopterus</i> and <i>Oxyura leucocephala</i> as EN and <i>Testudo graeca</i>, <i>Trionyx triunguis</i>, <i>Rhinolophus mehelyi</i>, <i>Myotis capaccinii</i>, <i>Vormela peregusna</i>, <i>Aythya farina</i> and <i>Streptopelia turtur</i> as VU</p>	Impacts on fauna species will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	The impact on fauna species is within legal standards or accepted practices and is likely to result in tangible changes	.	Loss of fauna species unlikely to occur due to the construction works to be carried out.	Potential impacts related to fauna species are expected to be reversible in the short to medium term.
		Score	Local	Long	Medium	-	Unlikely	Short/mid-term
		Value	2	4	3	-	1	2
		Impact Magnitude (G+D+I+F (or L)) x R		20				

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
		Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)		
Impacts related to noise, visual nuisance and vibration	Negative Direct	The disturbance and displacement of resident fauna species within the footprint will primarily be caused by light, noise and vibration impacts during construction. Noise, light and vibration disturbances have the potential to influence breeding, roosting or foraging behaviour of fauna. During the construction phase temporary impacts from the Project are expected. Noise will be the primary disturbance of this nature due to vegetation clearing, excavation, movement of materials, drilling and general construction activities. These activities will introduce noise sources to areas not currently exposed to these disturbances. In addition there may be vibration associated with activities and the movement of any vehicles/machinery.	Impacts related to noise, visual nuisance and vibration will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to noise, visual nuisance and vibration is within legal standards or accepted practices and is likely to result in tangible changes	.	Impacts related to noise, visual nuisance and vibration likely to occur due to the construction works to be carried out.	Potential impacts related to fauna species are expected to be reversible in the short term.	
		Score	Local	Long	Medium	-	Likely	Short-term	
	Value	2	4	3	-	3	1		
	Impact Magnitude (G+D+I+F (or L)) x R		12						
Impacts related to dust emission	Negative Direct	Land preparation has the potential to generate dust which may settle on vegetation adjacent to the construction area (including access roads). Excessive dust deposition on flora may act to suppress growth through limiting photosynthesis and the dusted foliage may also become unpalatable to foraging fauna.	Impacts related to dust emission will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to dust emission is impact can be detected or perceived but the effects are unlikely to cause tangible changes	.	Impacts related to dust emission likely to occur due to the construction works to be carried out.	Potential impacts related to fauna species are expected to be reversible in the short term.	
		Score	Local	Long	Low	-	Likely	Short-term	
	Value	2	4	2	-	3	1		
	Impact Magnitude (G+D+I+F (or L)) x R		11						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
Impacts related to Spreading of Alien invasive species	Negative Direct	Clearance of vegetation and disturbances caused by earthworks can create conditions conducive to the establishment and rapid spread of alien invasive vegetation. If left uncontrolled, alien species can spread exponentially, suppressing or replacing native vegetation. This may lead to disruption of ecosystem functioning and loss of biodiversity. Alien invasive plants can potentially be established in all areas where construction activities will disrupt existing vegetation. Recognized alien invasive plant species commonly recorded in the study area that may become problematic include <i>Solanum elaeagnifolium</i>	Impacts related to Spreading of Alien invasive species will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to Spreading of Alien invasive species may result in exceedances of legal standards or accepted practices and/or is likely to cause very serious to catastrophic damage to environmental	.	Spreading of Alien invasive species unlikely to occur due to the construction works to be carried out.	In addition to the natural processes, with proper restoration potential impacts during construction is expected to be reversible in the Mid term.	
		Score	Local	Long	Very High	-	Unlikely	Mid-term	
	Value	2	4	5	-	1	3		
	Impact Magnitude (G+D+I+F (or L)) x R		36						
Impacts related to Ecosystem Services	Negative Direct	Direct damage and loss of habitats supporting Ecosystem services	Impacts related to Ecosystem Services will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to Ecosystem Services may result in exceedances of legal standards or accepted practices and/or is likely to cause very serious to catastrophic damage to environmental	.	Impacts related to Ecosystem Services unlikely to occur due to the construction works to be carried out.	In addition to the natural processes, with proper restoration potential impacts during construction is expected to be reversible in the Mid term.	
		Score	Project Site	Long	Medium	N/A	Unlikely	Mid-term	
	Value	1	4	3	-	1	3		
	Impact Magnitude (G+D+I+F (or L)) x R		27						

Table 12-12. Vulnerabilities and Receptor Sensitivity¹⁹

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Terrestrial Habitats	High	There is no sensitive habitat in the Area of Analysis.	5
	Medium	According to the critical habitat assessment, there is no critical habitat in the Area of Analysis (AoA). However, the distribution of natural habitats is observed. These; (E1) Dry grasslands and (F5.2) Maquis. Hence, the sensitivity is evaluated to be low to medium.	3
	Low	There are modified habitats in the Area of Analysis.	1
Terrestrial Flora	High	<i>Pancretium maritimum</i> , which is in the EN category according to the IUCN red list, may present in the area. Hence, sensitivity is evaluated to be high.	5
	Medium	<i>Cyclamen persicum</i> , <i>Sternbergia pulchella</i> and <i>Crocus vitellinus</i> are in the VU category according to Turkish Red List.	3
	Low	Remaining species are included in this group.	1
Terrestrial Fauna	High	<i>Neophron percnopterus</i> and <i>Oxyura leucocephala</i> which are in the EN category according to the IUCN red list, may present in the area. Hence, sensitivity is evaluated to be high.	5
	Medium	<i>Testudo graeca</i> , <i>Trionyx triunguis</i> , <i>Rhinolophus mehelyi</i> , <i>Myotis capaccinii</i> , <i>Vormela peregusna</i> , <i>Aythya farina</i> and <i>Streptopelia turtur</i> are in the VU and Nannospalax ehrenbergi is in the DD category according to the IUCN Red List and are included in this group.	3
	Low	Remaining species are included in this group.	1

Table 12-13. Impact Significances for Construction Phase

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts related to Habitat Loss	39	3	117	Medium	Potential localised effects on habitats are probable. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.
Impacts related to plant species	24	5	120	Medium	Potential localised effects on plant species are likely, particularly during the construction. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.
Impacts related to fauna species	20	5	100	Medium	Potential localised effects on plant species are unlikely, particularly during the construction. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.

¹⁹ Biodiversity feature with the highest sensitivity was taken into account in the sensitivity assessment.

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts related to noise, visual nuisance and vibration	12	5	60	Low	Potential long-term, localised effects might be likely, during the construction. However, no significant impacts are expected on fauna species.
Impacts related to dust emission	11	5	55	Low	Potential long-term, localised effects might be likely, during the construction. However, no significant impacts are expected on flora and fauna species.
Impacts related to Spreading of Alien invasive species	36	3	108	Medium	Potential localised effects on plant species are unlikely, particularly during the construction. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.
Impacts related to Ecosystem Services	27	3	81	Medium	Potential localised effects on Ecosystem Services are unlikely. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.

Critical habitats are not evaluated in this table, since no habitat meeting the applicable requirements was identified in the area. In addition, protected areas are not evaluated in this table as they will not be exposed to any impacts from the project as explained in Section 12.5.

12.7.2 Impacts on Marine Ecology During Construction

Based on baseline conditions of the Project Area, an evaluation of the potential impact on Marine Ecology from land preparation and construction activities is summarised in the following table.

Table 12-14. Summary of Impact Significances of the Receptors for the Construction Phase(Marine)

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to Marine Habitat Loss	Negative Direct	Direct loss of benthic habitat will occur as a result of jetty construction.	Habitat loss will be in the project site and its impact will be in the project site	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to Habitat Loss is within legal standards or accepted practices and is likely to result in tangible changes	-	Habitat loss will occur due to the construction works to be carried out.	In addition to the natural processes, with proper restoration potential impacts during construction is expected to be reversible in the Mid term.
		Score	Project Site	Long	Medium	N/A	Probable	Mid-term
		Value	1	4	3	-	5	3
	Impact Magnitude (G+D+I+F (or L)) x R		39					
Impacts related to marine species	Negative Direct	<p>Project vessels could collide with marine fauna resulting in superficial injury, serious injury, affecting life functions (e.g. movement and reproduction) and in the most extreme cases, mortality.</p> <p>Disturbance and displacement of marine fauna by underwater noise could occur from pile driving activities, dredging and vessel activities during construction.</p> <p>The context of sound exposure plays a critical and complex role in behavioural responses (Gomez et al. 2016). For example, different species (and different individuals or groups within a species) may respond differently to varying levels of sound depending on their behaviours and motivation at the time (e.g. foraging, socialising, reproduction) and other factors such as the type of sound, duration of exposure, and the suddenness of the onset of the received sound (Gomez et al. 2016). Cetaceans have been observed to exhibit varying behavioural responses to underwater sounds (ranging from, for example, momentary pauses in</p>	Impacts on marine species will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	The impact on marine species is within legal standards or accepted practices and is likely to result in tangible changes	.	Loss of marine species will occur due to the construction works to be carried out.	Potential impacts related to marine species are expected to be reversible in the short to medium term.

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
		Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
		<p>vocalisations and changes in body orientation, to changes in travel direction and behavioural avoidance) between SPLs of 120 and >180 dB re 1 µPa (Southall et al. 2007; Gomez et al. 2016). Higher received levels are not always associated with stronger behavioural responses (Southall et al. 2007; Gomez et al. 2016), but it is reasonable to assume that more significant behavioural responses such as avoidance are more likely to occur in response to higher sound levels. It is important to differentiate minor, biologically insignificant reactions from sustained, and/or biologically meaningful responses that may influence survival (Southall et al. 2007)</p> <p>Avoidance of impulsive sound by sea turtles has also been inferred from field observations of sea turtle behavior during seismic surveys (Holst et al., 2007; Weir, 2007; DeRuiter and Doukara, 2012). Based on the best available data (McCauley et al., 2000; FHWG, 2008; Popper et al., 2104; Finneran et al., 2017), it is assumed that sea turtle behavioral responses to impulsive sound may begin to occur at a received SPLrms of 166 to 175 dB re 1 µPa.</p>						
		Score	Local	Long	Medium	-	Likely	Short/mid-term
		Value	2	4	3	-	3	2
		Impact Magnitude (G+D+I+F (or L)) x R		24				
Impacts related to Turbidity	Negative Direct and Indirect	Increased turbidity in sea water due to dredging activities	Impacts related to Turbidity will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to Turbidity is within legal standards or accepted practices and is likely to result in tangible changes	.	Impacts related to Turbidity will occur due to the construction works to be carried out..	Potential impacts related to Turbidity are expected to be reversible in the short term.
		Score	Local	Long	Medium	-	Likely	Short-term
	Value	2	4	3	-	3	1	

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
		Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
		Impact Magnitude (G+D+I+F (or L)) x R		20				
Impacts related to Waste generation	Negative Direct	Waste generation can cause pollution for marine habitats	Waste generation will be in the project site and its surroundings	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Impacts related to noise, visual nuisance and vibration is within legal standards or accepted practices and is likely to result in tangible changes	.	Impacts related to noise, visual nuisance and vibration likely to occur due to the construction works to be carried out.	Potential impacts related to Waste generation are expected to be reversible in the mid term.
		Score	Regional	Long	Medium	-	Likely	Mid-term
	Value	3	4	3	-	3	3	
			Impact Magnitude (G+D+I+F (or L)) x R		39			

Table 12-15. Vulnerabilities and Receptor Sensitivity²⁰

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Marine Habitats	High	There is no sensitive habitat in the Area of Analysis.	5
	Medium	According to the critical habitat assessment, there is no critical habitat in the Area of Analysis (AoA). However, the distribution of natural habitats is observed. These; (A5.46) Mediterranean biocoenosis of coastal detritic bottoms, (A5.38) Mediterranean biocoenosis of muddy detritic bottoms and (A5.23) Infralittoral fine sands. Hence, the sensitivity is evaluated to be low to medium.	3
	Low	There are modified habitats in the Area of Analysis.	1
Marine Species	High	<i>Anguilla Anguilla</i> , <i>Aetomylaeus bovinus</i> , <i>Epinephelus marginatus</i> , <i>Gymnura altavela</i> , <i>Raja radula</i> , <i>Rhinobatos rhinobatos</i> , <i>Chelonia mydas</i> and <i>Monachus monachus</i> which is in the EN category according to the IUCN red list, may present in the area. Hence, sensitivity is evaluated to be high.	5
	Medium	<i>Mustelus mustelus</i> , <i>Dasyatis pastinaca</i> , <i>Bathytoshia centroura</i> , <i>Dentex dentex</i> , <i>Pomatomus saltatrix</i> , <i>Sciaena umbra</i> , <i>Trachurus trachurus</i> , <i>Umbrina cirrosa</i> , <i>Balistes caprisus</i> , <i>Caretta caretta</i> , <i>Stenella coeruleoalba</i> and <i>Balaenoptera physalus</i> are in the VU category according to the IUCN Red List and are included in this group.	3
	Low	Remaining species are included in this group.	1

Table 12-16. Impact Significances for Construction Phase

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts related to Marine Habitat Loss	39	3	117	Medium	Potential localised impact related to Marine Habitat Loss is likely, particularly during the construction of the Jetty site which is part of the associated Terminal Facility. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction
Impacts related to marine species	24	5	120	Medium	Potential localised effects on marine species are likely, particularly during the construction of the Jetty site which is part of the associated Terminal Facility. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.
Impacts related to Turbidity	20	5	100	Medium	Potential localised impact related to Turbidity is likely, particularly during the construction of the Jetty site which is part of the associated Terminal Facility. However, impacts are expected to be minimised through precautionary and

²⁰ Biodiversity feature with the highest sensitivity was taken into account in the sensitivity assessment.

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
					mitigation measures and good management practices during construction.
Impacts related to Waste generation	39	3	117	Medium	Potential localised Impacts related to Waste generation is likely, particularly during the construction of the Jetty site which is part of the associated Terminal Facility. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.

Critical habitats are not evaluated in this table, since no habitat meeting the applicable requirements was identified in the area. In addition, protected areas are not evaluated in this table as they will not be exposed to any impacts from the project as explained in Section 12.5.

12.7.3 Impacts on Terrestrial Ecology During Operation

Based on baseline conditions of the Project area, an evaluation of the potential impact on Terrestrial Ecology from operation activities is summarised in the following table.

Table 12-17. Summary of Impact Significances of the Receptors for the Operation Phase(Terrestrial)

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to Habitat Loss	Negative Direct	Loss of habitat due to the area covered by the project	Habitat loss will be in the project site and its impact will be in the project site	The operational period will last for 49 years. During this period, Impacts related to Habitat Loss will occur.	Impacts related to Habitat Loss is within legal standards or accepted practices and is likely to result in tangible changes	-	Habitat loss will occur during the operational phase.	In addition to the natural processes, with proper restoration potential impacts is expected to be reversible in the Mid term.
		Score	Project Site	Very Long	Medium	N/A	Probable	Mid-term
		Value	1	5	3	-	5	3
	Impact Magnitude (G+D+I+F (or L)) x R		42					
Impacts related to fauna species	Negative Direct	Vehicle collisions and fauna entering operational sites accidentally or for food where they may be exposed to death/injury. General operational activities may cause disturbances to fauna.	Impacts related to fauna species will be in the project site and its surroundings	The operational period will last for 49 years. During this period, impacts on working conditions may occur.	Impacts related to fauna species can be detected or perceived but the effects are unlikely to cause tangible changes	-	Loss of flora and fauna species may occur due to the operational phase.	Potential impacts related to fauna species are expected to be reversible in the short to medium term.
		Score	Local	Very Long	Low	-	Unlikely	Short/mid-term
		Value	2	5	2	-	1	2
	Impact Magnitude (G+D+I+F (or L)) x R		20					

Table 12-18. Vulnerabilities and Receptor Sensitivity²¹

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Terrestrial Habitats	High	There is no sensitive habitat in the Area of Analysis.	5
	Medium	According to the critical habitat assessment, there is no critical habitat in the Area of Analysis (AoA). However, the distribution of natural habitats is observed. These; (E1) Dry grasslands and (F5.2) Maquis. Hence, the sensitivity is evaluated to be low to medium.	3
	Low	There are modified habitats in the Area of Analysis.	1
Terrestrial Flora	High	<i>Pancratium maritimum</i> , which is in the EN category according to the IUCN red list, may present in the area. Hence, sensitivity is evaluated to be high.	5
	Medium	<i>Cyclamen persicum</i> , <i>Sternbergia pulchella</i> and <i>Crocus vitellinus</i> are in the VU category according to Turkish Red List.	3
	Low	Remaining species are included in this group.	1
Terrestrial Fauna	High	<i>Neophron percnopterus</i> and <i>Oxyura leucocephala</i> which are in the EN category according to the IUCN red list, may present in the area. Hence, sensitivity is evaluated to be high.	5
	Medium	<i>Testudo graeca</i> , <i>Trionyx triunguis</i> , <i>Rhinolophus mehelyi</i> , <i>Myotis capaccinii</i> , <i>Vormela peregusna</i> , <i>Aythya farina</i> and <i>Streptopelia turtur</i> are in the VU and Nannospalax ehrenbergi is in the DD category according to the IUCN Red List and are included in this group.	3
	Low	Remaining species are included in this group.	1

Cyclamen persicum, *Sternbergia pulchella* and *Crocus vitellinus* are other sensitive flora receptors. However *Panocratium maritimum* was evaluated in receptor sensitivity, since *Panocratium maritimum* is the most sensitive species.

Table 12-19. Impact Significances for Operation Phase

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts related to Habitat Loss	42	3	126	Medium	Potential localised effects on habitats are probable. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.
Impacts related to fauna species	20	5	100	Medium	Potential localised effects on habitats are unlikely. However, impacts are expected to be minimised through precautionary and mitigation measures and good management practices during construction.

²¹ Biodiversity feature with the highest sensitivity was taken into account in the sensitivity assessment.

12.7.4 Impacts on Marine Ecology During Operation

Based on baseline conditions of the Project area, an evaluation of the potential impact on Marine Ecology from operation activities is summarised in the following table.

Table 12-20. Summary of Impact Significances of the Receptors for the Operation Phase(Marine)

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to Waste generation	Negative Indirect	Waste generation can cause damage on marine habitats	Damage on marine habitats will be in the project site and its impact will be in the project site	The operational period will last for 49 years. During this period, Impacts related to Waste generation will occur.	Impacts related to Waste generation is within legal standards or accepted practices and is likely to result in tangible changes	-	Waste generation will occur during the operational phase.	In addition to the natural processes, with proper restoration potential impacts is expected to be reversible in the Short/Mid term.
		Score	Project Site	Very Long	Medium	N/A	Likely	Short/Mid-term
		Value	1	5	3	-	3	2
	Impact Magnitude (G+D+I+F (or L)) x R		24					
Impacts related to loss of marine fauna	Negative Direct	Vessels could collide with marine fauna resulting in superficial injury, serious injury, affecting life functions (e.g. movement and reproduction) and in the most extreme cases, mortality.	Impacts related to loss of marine species will be in the project site and its surroundings	The operational period will last for 49 years. During this period, Impacts related to loss of marine species may occur.	Impacts related to loss of marine species can be detected or perceived but the effects are unlikely to cause tangible changes	.	Loss of marine fauna may occur during the operational phase.	Potential impacts related to Loss of marine fauna are expected to be reversible in the short term.
		Score	Local	Very Long	Low	-	Unlikely	Short-term
		Value	2	5	2	-	1	1
	Impact Magnitude (G+D+I+F (or L)) x R		10					

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
		Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)		
Impacts related to Spreading of Alien invasive marine species	Negative Direct	Ballast water can contain thousands of aquatic microbes, plants and animals, which can be spread across the globe as the vessel releases ballast water. Unmanaged ballast water released in foreign ports could potentially introduce a range of invasive marine species. The introduction or spreading of non-indigenous species through hull fouling of (typically slow-moving) vessels can occur, when marine plants and animals that attach and grow on the submerged parts of a vessel like the hull, propellers, anchors, niche areas and fishing gear and are transported to a receiving port and become established. The introduction and spread of marine species through biofouling, or in a ship's ballast water, can harm fisheries, threaten healthy fish habitats and have adverse economic and health effects.	Impacts related to Spreading of Alien invasive marine species will be in the project site and its surroundings	The operational period will last for 49 years. During this period, Impacts related to Spreading of Alien invasive marine species may occur.	Impacts related to Spreading of Alien invasive marine species may result in exceedances of legal standards or accepted practices and/or is likely to cause very serious to catastrophic damage to environmental	.	Spreading of Alien invasive species likely to occur during the operational phase.	Potential impacts related to Loss of marine fauna are expected to be reversible in the short term.	
		Score	Regional	Long	Very High	-	Likely	Short-term	
	Value	3	4	5	-	3	1		
	Impact Magnitude (G+D+I+F (or L)) x R		15						
Impacts related to Ecosystem Services	Negative Direct	Direct damage and loss of habitats supporting Ecosystem services	Impacts related to Ecosystem Services will be in the project site and its surroundings	The operational period will last for 49 years. During this period, Impacts related to Ecosystem Services may occur.	Impacts related to Ecosystem Services can be detected or perceived but the effects are unlikely to cause tangible changes	.	Impacts related to Ecosystem Services unlikely to occur due to the construction works to be carried out.	In addition to the natural processes, with proper restoration potential impacts during construction is expected to be reversible in the short term.	
		Score	Project Site	Long	Low	N/A	Unlikely	Short-term	
	Value	1	4	2	-	1	1		
	Impact Magnitude (G+D+I+F (or L)) x R		8						

Table 12-21. Vulnerabilities and Receptor Sensitivity²²

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Marine Habitats	High	There is no sensitive habitat in the Area of Analysis.	5
	Medium	According to the critical habitat assessment, there is no critical habitat in the Area of Analysis (AoA). However, the distribution of natural habitats is observed. These; (A5.46) Mediterranean biocoenosis of coastal detritic bottoms, (A5.38) Mediterranean biocoenosis of muddy detritic bottoms and (A5.23) Infralittoral fine sands. Hence, the sensitivity is evaluated to be low to medium.	3
	Low	There are modified habitats in the Area of Analysis.	1
Marine Species	High	<i>Anguilla Anguilla</i> , <i>Aetomylaeus bovinus</i> , <i>Epinephelus marginatus</i> , <i>Gymnura altavela</i> , <i>Raja radula</i> , <i>Rhinobatos rhinobatos</i> , <i>Chelonia mydas</i> and <i>Monachus monachus</i> which is in the EN category according to the IUCN red list, may present in the area. Hence, sensitivity is evaluated to be high.	5
	Medium	<i>Mustelus mustelus</i> , <i>Dasyatis pastinaca</i> , <i>Bathytoshia centroura</i> , <i>Dentex dentex</i> , <i>Pomatomus saltatrix</i> , <i>Sciaena umbra</i> , <i>Trachurus trachurus</i> , <i>Umbrina cirrosa</i> , <i>Balistes capricus</i> , <i>Caretta caretta</i> , <i>Stenella coeruleoalba</i> and <i>Balaenoptera physalus</i> are in the VU category according to the IUCN Red List and are included in this group.	3
	Low	Remaining species are included in this group.	1

Table 12-22. Impact Significances for Operation Phase

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts related to Waste generation	24	3	72	Low	Potential long-term, localised effects might be likely, during the operation of the Jetty site which is part of the associated Terminal Facility.. However, no significant impacts are expected related to Waste generation.
Impacts related to loss of marine fauna	10	5	50	Low	Potential impacts are not expected to create a significant impact on the marine fauna, during the operation of the Jetty site which is part of the associated Terminal Facility..
Impacts related to Spreading of Alien invasive marine species	15	3	45	Low	Potential long-term, regional effects might be likely, during the operation of the Jetty site which is part of the associated Terminal Facility.. However, no significant impacts are expected related to Spreading of Alien invasive marine species.
Impacts related to Ecosystem Services	8	3	24	Negligible	The impacts are expected to be negligible during the construction phase by the application of suitable management practices.

²² Biodiversity feature with the highest sensitivity was taken into account in the sensitivity assessment.

12.8 Mitigation Measures

12.8.1 Mitigation of Terrestrial Ecology Impacts

12.8.1.1 Avoidance Measures

Limit the Extent of the Project Footprint

- The clearance of natural vegetation will be limited to the strip of land needed for the occupation of the project and the adjacent working width,
- Avoiding disposal of spoil/excess excavation materials on down-slope or in adjacent areas where it will affect sensitive natural habitats,
- Mobilization area and excavation material temporary storage area will not be located in natural habitats.
- Contractor will be keen on environmental protection matters and prohibit unnecessary disturbance, damage and harm to natural habitats, through clear delineation of the boundaries of the work area to avoid encroachment into any critical, natural or modified habitats.

Avoid Loss of Fauna and Flora during Vegetation Clearing

- Project activities such as tree cutting, plant cleaning, soil stripping, road construction and ground preparing activities may result in some habitat, amphibians, reptiles, and mammal losses. Therefore, it is recommended that all trees and shrubs will be cut and the floor will be cleaned before stripping the surface soil in the construction site to protect and reduce negative impacts on amphibians, reptile and mammal species.
- It would be beneficial to leave some natural areas untouched, to provide space for some species to continue their existence in the area
- Moreover, necessary wildlife warning and information signs will be placed on the construction sites
- Since amphibians and reptiles are not active in winter, conducting construction activities in the winter season may have an impact on latibulized amphibians. The survival of some of the animals is not possible if they are disturbed during winter. Therefore, soil stripping activities conducted prior to construction activities will be performed before winter season. Provided that soil stripping is conducted before winter season, construction activities may continue throughout the winter.
- Particular attention should be given to the vulnerable *Testudo graeca* to prevent loss of individuals due to Project activities. This species will be screened before the commencement of the construction activities in the Project site. If this species is identified in the area, they will be carefully relocated/transported to another safe

location. During the construction activities, relocation works for species will continue.

- Construction activities will cause some habitat loss for birds undoubtedly. Therefore, the following specific mitigation measures will apply for the protection of bird species:
 - Surface clearing and stripping activities will not be implemented in birds' breeding period between February and early June in order to avoid the damage on bird species. In the parts of the Project site where surface clearing and stripping are already in progress, the construction activities may continue to be undertaken. In some parts of the Project site where breeding burrows do not exist, construction activities will be performed during this season between February and early June. If construction activities, especially surface clearing and stripping, are undertaken within the breeding season, it is important to check the breeding activities and presence of any breeding burrows, to be observed by the biologist.
 - All bushes and especially old trees that are important for reproduction and nesting will be protected as much as possible.
 - Some food plants with fruits and/or seeds will be planted and some water sources will be supplied in the area to support birds during the dry seasons from mid-May to late November.
- Birds cannot identify large glass-covered surfaces and striking on glass surfaces is an important cause of bird death. It is recommended that glass-covered buildings shall not be preferred for the design of the Project site.
- Some of the bird species prefer to nest under roofs of buildings. Therefore, roof type and holes under roofs are important; and bird-friendly construction will be preferred specifically for birds and bats.

12.8.1.2 Minimisation Measures

Minimise Loss of Fauna and Flora during Vegetation Clearing

Where vegetation clearing is required, thorough pre-clearing checks for all forms of fauna need to be conducted. A proactive approach will be used to prevent the loss of fauna without obstructing construction activities. The following procedures will be applied:

- After cleaning the ground and transporting the amphibians, reptiles and mammals encountered on the construction site, surface soils will be striped carefully. While stripping, some amphibians, reptiles and mammals may be seen again in excavated soil. All these animals will be collected and transported to a suitable nearby habitat.
- When animals are released to a new area, biologists should observe the area for predators until the animal digs into the soil for protection.
- During surface clearing and stripping activities in the construction phase, two biologists shall be present and accompany the construction team. These biologists will collect all

animals encountered and affected during the construction phase and transfer them to appropriate habitats around the Project site.

- If any active burrows are encountered during the construction phase of the Project, marking tape will be placed on the section/area where the burrow was encountered, and necessary signage will be placed. The construction activities on this section/area will be suspended, while construction activities in other sections of the Project site are continued.
- Creating small puddles or semi-natural ponds in the Project site will enable amphibian species to breed in the area.
- During excavation, soil stripping and ground preparing activities, attention shall be given to the storage of the excavated materials before its reuse and disposal off-site. Visual observation shall be undertaken in the sections where excavation materials will be stored temporarily, and it shall be ensured that the area is free of species and burrows. Once the sections have been observed to ensure that they are free of species and burrows, the area shall be enclosed with marking tape and storage of excavation material will be restricted to the observed sections.
- The seeds/bulbs of the populations of endemic/rare species on the Project area will be collected and some of them will be delivered to the Turkish seed gene bank, and some will be planted in suitable habitats for each species in the periods determined.
 - The population size of the *Cyclamen persicum* at the Project site is approximately 250. Therefore, in order to minimise impacts on this species, tubers of the species will be collected prior to construction (preferably in March-April) and replanted in areas that would not be impacted by the Project activities.
 - Before the start of construction works, a survey will be conducted in the sand dunes in the immediate vicinity where *Pancratium maritimum* will be distributed. In areas likely to be affected, tubers of the species will be collected prior to construction (preferably in March-April) and replanted in areas that would not be impacted by the Project.

Prevent Contamination through Good Chemical Handling

- Implement measures to ensure safe handling of chemicals and fuels, in accordance with the Hazardous Material Management Procedure, with consideration of the following aspects:
 - Regular vehicle and machinery maintenance,
 - Correct storage and adherence to the manufacturer's Material Safety Data Sheets (MSDS) requirements,
 - Controlled access to and accountability in the use,
 - Staff training, induction and awareness programmes,

- Regular auditing to control and account for the use of liquid fuels, oils and chemicals and minimise unintended loss and wastage.
- Stormwater management of construction sites will be planned in advance and implemented to separate clean and dirty water systems to avoid the transport of contaminants into aquatic systems.
- A Method Statement will be developed and implemented that recognises the different forms of waste and guides their disposal in a manner that is not harmful to the local environment.
- Potential contaminated sites, such as fuel and chemical storage areas, heavy equipment parking will be tested for contamination prior to closure and remediated in a manner that addresses all hazardous chemicals identified in the test results.
- Any contaminated sites that develop as a result of accidental spills will be remediated according to a Spill Management and Response Plan that will be developed. Spill response kits will be available at sites where there is a high risk of contamination from fuels, oils and chemicals.
- Waste management measures and facilities that avoid creating opportunities for food scavengers will be developed and implemented.

Develop and Implement Biodiversity Protection Policies

- Strictly prohibit unnecessary destruction of habitats, cutting of trees or vegetation found outside the area absolutely needed for the project.
- Prohibit hunting, trapping and intentional killing of wild animals by the project workers and drivers.
- Faunal protection policies will be developed and enforced that prohibit all forms of hunting, any killing of animals and keeping of pets.

Implement Biodiversity Awareness Programs for Contractors and Communities

- Awareness programs will be developed for staff and contractors to raise the awareness of the diversity of animals present, risks associated with large wildlife and how to react when confronted by different species of large wildlife, and requirements to actively prevent the loss of any animals including snakes and species commonly considered to be vermin.
- Increase the awareness of drivers and equipment operators towards wildlife conservation and encourage them to avoid or minimize animal fatalities.
- The impacts due to poaching and intruders will be minimized through awareness creation among the employees and to the community of the area, setting regulations and employment obligations that prohibit poaching.

- Biodiversity awareness creating measures will be taken both for the construction workers as well as to the surrounding community.
- Training will be delivered to constructions workers prior to the start and during construction works to increase their awareness and responsibilities concerning the surrounding natural values.
- A communication strategy should be developed to provide education and awareness on biodiversity measures with local stakeholders, including project-affected communities and fishermen. This will be led by a team of public relations and social experts to manage local liaison. The aim will be to raise community awareness of local biodiversity values, actions undertaken by project company and its partners for the management of biodiversity impacts, to support local community members who may want to sustain local biodiversity value and ecosystem services.

Enforce Vehicle Speed Limits to Protect Fauna

- Where free-ranging wildlife occurs, vehicle speeds will be reduced through implementation of speed control measures and the regular enforcement.
- Post appropriate signs and apply speed limits for the sections passing through important wildlife areas by setting speed limits to safe levels, (around 30km/h) monitoring and enforcing it.
- Apply good site practices incorporating appropriate mitigation measures that reduce nuisance noise levels.

Reduce Light Contamination at Night

- Lighting for construction and security purposes will be inward and downward facing to minimise light pollution in remote areas, and to minimize the disturbance to nocturnal wildlife, birds, invertebrates and sea turtles.
- Reduce light contamination into natural habitats at night.

12.8.1.3 Rehabilitation and Restoration Measures

Rehabilitate Disturbed Terrestrial Sites

- All areas that have been cleared of vegetation and/or where the soil surface has been disturbed need rehabilitation of the vegetation to minimise the establishment of AIS, with consideration of the following aspects:
 - Revegetation of disturbed sites will be implemented within the same spring season, or within the upcoming spring season for disturbances occurring during the dry season.
 - Only non-invasive species are to be used for rehabilitation. These species will be

native species.

- To monitor success of the newly established *Cyclamen persicum* populations, monitoring studies will be conducted during the flowering season of the species in February-March.
- As the Project site is located within the Mediterranean Region of Turkey, it is suitable for Mediterranean species to grow. Therefore, during the restoration of the areas that will be impacted from the Project activities, it is important to use native plant species in plantations along the roads to prevent erosion and ensure habitat integrity. Some of the tree species that can be used in landscaping include *Pinus brutia*, *Pinus pinea* and *Zizyphus lotus*, a natural shrub species of the region.

Develop and Implement an Alien Invasive Species Control Plan

An Invasive Species Management Plan will be developed and implemented for the Project, which will take cognizance of the following points:

- Labor-intensive manual control of Invasive Alien Plants will be applied in preference to application of herbicides or other chemicals.
- The populations of *Solanum elaeagnifolium* (also newly detected AIS) will be detected and removed from the project site, and follow-up of their development.
- After removing the plants, they will be air dried until dead. If possible, the material will be covered with plastic to speed up decomposition and dispersal will be limited by birds and other animals. Placing material in areas where there is a risk of being swept away by rain or into a waterbody will be avoided.
- During the transportation of material off site, plants will be put in thick, durable plastic bags and will be disposed at licensed landfill. The material will be securely contained to avoid spread during transport.
- Dried plant can be incinerated if suitable incineration sites are available.
- All vehicles leaving the infested area and / or transporting infested soil/materials must be thoroughly pressure-washed in a designated wash-down area before being used for other work.
- Environmental Awareness training will be provided to all personnel to increase awareness about the invasive species.
- Populations and population densities of *Solanum elaeagnifolium* (also newly detected AIS) will be determined by pre-construction surveys and routine inspections.
- The vegetable soil will be stripped and stored prior to construction and the stripped vegetation will be used to make the surrounding natural. The vegetable soil will not be used in any other area. Also will not be stored next to existing alien invasive species infestations.

- Topsoil will not be imported from elsewhere / if importation is necessary this will be from a reputable supplier with certification that the material does not contain AIS. Local species will be used in landscaping/planting studies. Non-native plant species will not be used.
- Invasive species will not be used in replanting/reseeding works to be carried out due to the project. It should be ensured that the species to be used in replanting/reseeding studies are not invasive.
- Source areas such as vehicle parking and mobilization area will be kept clean of invasive species to minimize the presence of seeds that can be dispersed unintentionally.
- Seeds belonging to species that escape the eyes of the researchers, come to the project site by birds, wind or man-made and are thought to be invasive should be removed from the project site and the impact area.
- Live invasive species can be removed from the project site by cutting or uprooting.
- Removal of all invasive species from the project site in the form of uprooting/cutting when the operation phase is started.

12.8.2 Mitigation of Marine Ecology Impacts

Since the Marine section is related to the associated facility, application of measures described in this section are outside the direct control of the Project,. The Project will make efforts to obtain appropriate commitments from parties responsible for managing associated facilities relating to the proposed measures, and will offer support and cooperation through sharing of expertise and information and where possible organising meetings with relevant personnel with management responsibility for associated facilities.

Following the completion of construction activities at the Project site, the main elements of the marine ecosystem will reappear within a very short time. It is envisaged that algal organisms will appear first on the piles of the jetty and rocks to be filled, followed by zooplanktonic and benthic organisms to be fed by these algae. Lastly, fish species will arrive at the site. Within a minimum of one year after the finalisation of the construction activities, with the flora and fauna elements to be appearing at the site together with abiotic factors, the habitat characteristics of the site will be reconstituted, and eventually the area will be used for nesting and feeding by the regional species. In that sense, the materials to be used during filling activities is of great importance. The rocks to be used for filling should be resistant, not to be dissolved in sea water and should not involve toxic heavy metals and certain chemicals. The rocks should be analysed to determine their characteristics.

The turbidity to be generated during filling activities might create unwanted conditions especially for planktonic organisms and fish species. Therefore, it is important to initially set

the boundaries of the filling area, and then perform filling activities within the boundaries in order to minimise turbidity generation. Generation of turbidity has other undesired impacts such as potential release of pollutants from sediment to water, sticking of sediment particles onto the fish gills, negatively affecting their respiratory system, and blocking the sunlight to penetrate to the depths where algal organisms are present. The impact of turbidity generation will be temporary and limited to a relatively small space. Therefore, the species, especially the macro and micro algal organisms are envisaged to survive in the region. Fish species are expected to move away from turbidity, which limits the impacts of sediment clouds on fish. Overall, impacts of sediment clouds and turbidity on marine ecosystem organisms will be very limited and short term.

Pollutants in the sediment medium such as heavy metals, PCB, and pesticides are released into water after dredging activity and taken up by marine organisms and bioaccumulate. However, sediment samples have been analysed in the study area (details are given in *Chapter 6: Geology, Soils, Sediments and Contaminated Land*) and the quality of sediments is found to be suitable and does not contain pollutants above limit concentrations. Therefore, sediment contamination is not considered as a potential impact on the marine organisms at the Project site.

12.8.2.1 Avoidance Measures

Limit the Extent of the Project Footprint

- The filling area should be limited and should not be larger than the actual area that is needed;

Avoid Loss of Marine species

- Spring season (i.e. March, April, May and June) is known as the season when the marine biological activity is at its peak. Therefore, it is important to keep the filling activities at a minimum in that season. Noise, turbidity and mechanical effects might negatively affect the quantity and quality of marine organisms in the spring period. On the contrary, biological activities are minimal during autumn and winter seasons; therefore, these periods might be considered for undertaking the marine construction works to minimise impacts;
- Filling works should not be undertaken during unsuitable wind, current and wave conditions; otherwise, turbidity may be conveyed out of the area.
- Activities to be conducted between April – September should be accompanied by an expert on marine turtles.
- Prior to the commencement of any noise-intensive activity, a marine fauna exclusion zone extending 500 m in all directions from the noise source should be established.
- From one hour prior to the commencement of any noise-intensive activity, vessel based observers (or land-based observers if appropriate) should monitor the exclusion zone

to check for the presence of any important marine fauna species. Activities may only commence if no important marine fauna have been sighted within the exclusion zone 30 minutes prior to the commencement of the activity.

- If any such species are observed within the zone, noise-intensive activities should not commence until the animal is observed to leave the exclusion zone, or until 30 mins of observations have passed since the last sighting and no more important marine fauna have been sighted.
- Activities should only be conducted in daylight conditions and preferably with appropriate sea conditions so that observers have a reasonable probability of sighting any marine fauna incursion into the exclusion zone.
- Suitably experienced personnel should continuously maintain an adequate look-out for the presence of important marine fauna during noise-intensive activities.
- Monitoring studies are conducted at Incirli beach not only during nesting season (May-October) but also on a regular basis throughout the year, such as 3 times a month by the expert.
- The vessels should be used with very low speeds within 1 mile of the shore;
- In case of an accident involving marine turtles at the sea, the initial response should be given by the expert
- No vehicle belonging to the project will be allowed to enter sea turtle nesting areas, especially during nesting periods.
- The seaside will not be blocked in order to ensure the uninterrupted movement of the hatchlings to the sea.
- Avoid preventing the movement of adult turtles to their “nesting areas” with non-permanent structures.
- To avoid underwater and airborne sound effects, first of all, machines with advanced technical features will be used. Hole pile, vibro-pile or gravity pile are less noisy and will likely eliminate the possibility of harmful effects. Any technique that can be used can still cause disturbance to marine life and produce sound levels like ships.

12.8.2.2 Minimisation Measures

Minimise Loss of Marine species

- Training should be given to all ship operators, alerting them to the possible presence of marine species (i.e. sea turtles and Mediterranean monk seal) in the area and should be provided with guidelines for safe ship operation will such species be seen.
- Ships should never deliberately approach, follow, or otherwise come into close contact with sea turtles and Mediterranean monk seal.
- The sightings of sea turtles near ships will be recorded by the ship operators and any

incidents will also be reported

Prevent Contamination through Good Chemical Handling

In order to protect marine ecosystem due to waste generations during construction phase of the Project, the following measures are proposed to be taken:

- The environmental conditions and variations shall be monitored by a specifically structured team of experts who shall prepare environmental policies and procedures in line with relevant legislation and standards;
- Chemicals such as paints and solvents that may pose threat for marine ecosystem should be collected separately and disposed of by licensed companies;
- Solid wastes shall never be dumped into the sea and instead will be collected in a designated area and disposed of by licensed companies or municipalities;
- It should be strictly prohibited to discharge bilge water in the port area or in the close surroundings, which will instead be collected separately;
- Generated wastewater shall never be discharged into the sea without prior treatment;
- Contaminants to be generated during maintenance activities shall not enter the port area to prohibit their potential entrance into the marine environment.

Minimise Turbidity

The suspension time of sediment in the water medium depends on size of the dredging area, dredging methodology, hydrodynamic properties of the region and existing water quality. In port areas, where current movements are limited, impacts of dredging activity do not extend to more distant areas. The impacts of suspended solids are usually short-term (lasting for maximum 1 week after the activity) and limited to a short surface area (within 1 km distance of the activity). In general, the presence of protected species in the near surroundings necessitates applying mitigation measures. It is recommended that certain mitigation measures are taken within the scope of CPIR Port Project;

- Use of silt fences, extending from sea bottom to the surface, around the dredging vessel. In this way, the generated turbidity will be limited within the fence and not affect larger areas.

Implement Biodiversity Awareness Programs for Contractors and Communities

A communication strategy should be developed to provide education and awareness on biodiversity measures with local stakeholders, including project-affected communities and fishermen. This will be led by a team of public relations and social experts to manage local liaison. The aim will be to raise community awareness of local biodiversity values, actions undertaken by project company and its partners for the management of biodiversity impacts,

to support local community members who may want to sustain local biodiversity value and ecosystem services..

Reduce Light Contamination at Night

- Lighting for construction and operation will be inward and downward facing to minimise light pollution in remote areas, and to minimize the disturbance to sea turtles.
- Reduce light contamination into natural habitats at night.

12.8.2.3 Rehabilitation and Restoration Measures

Rehabilitate Disturbed Marine Sites

After completion of the construction activities, the piles of the Jetty and the rocks to be filled will constitute a suitable living, nesting and feeding environment for biological environment. Filling these areas with the excavated materials from the same area should be favoured to the extent possible and the fill materials should not be easily dissolved in sea water.

Develop and Implement an Alien Invasive Species Control Plan

It should be ensured that there is no ballast water discharge in the port area and ballast water should be managed in accordance with the International Convention on the Control and Management of Ship Ballast Water and Sediments (IMO).

12.9 Residual Impacts

For the construction phase, impacts on Terrestrial and Marine Ecology can be effectively mitigated through good management practices and implementation of mitigation measures mentioned above. In addition, the impact significances for the construction phase are given in the Table 12-23 and Table 12-14 below.

Table 12-23. Impact Significances for Construction Phase

Subject	Construction Phase Residual Impact
Impacts related to Habitat Loss	Low
Impacts related to plant species	Low
Impacts related to fauna species	Low
Impacts related to noise, visual nuisance and vibration	Negligible
Impacts related to dust emission	Negligible
Impacts related to Spreading of Alien invasive species	Low
Impacts related to Ecosystem Services	Low

Table 12-24. Impact Significances for Construction Phase

Subject	Construction Phase Residual Impact
Impacts related to Marine Habitat Loss	Low
Impacts related to marine species	Low
Impacts related to Turbidity	Low
Impacts related to Waste generation	Low

For the operation phase, impacts on Terrestrial and Marine Ecology can be effectively mitigated through good management practices and implementation of mitigation measures mentioned above. In addition, the impact significances for the operation phase are given in the Table 12-25 and Table 12-26 below.

Table 12-25. Impact Significances for Operation Phase

Subject	Operation Phase Residual Impact
Impacts related to Habitat Loss	Low
Impacts related to fauna species	Low

Table 12-26. Impact Significances for Operation Phase

Subject	Operation Phase Residual Impact
Impacts related to Waste generation	Negligible
Impacts related to loss of marine fauna	Negligible
Impacts related to Spreading of Alien invasive marine species	Negligible
Impacts related to Ecosystem Services	Negligible

Biodiversity offsets will be necessary to compensate for residual impacts and achieve a no net loss for Natural Habitat (Dry Mediterranean Lands with unpalatable non-vernal herbaceous vegetation (E1.C) and Maquis (F5.2)). An Offset Strategy should be developed to assess the offset options available in collaboration with the Project, specialists, expert stakeholders, and relevant government organizations. Offset options for the Project should be identified based on internationally accepted best practice approaches and using the precautionary principle. The strategy should include high level loss/gain accounting and order of magnitude costs for the priority offset options.

Residual impacts are usually expressed not just in terms of area but also in terms of quality or condition. Adding a measure of quality ensures that when habitat losses are exchanged for gains through restoration and offset activities there is a fair and equivalent exchange. Habitat 'area x condition' metrics or quality hectares (QH), is a common and widely accepted means to account for habitat complexity through a standardised approach (e.g. Parkes et al. (2003); Temple et al. (2012)).

The QH approach uses a combination of two measures: area and condition (or quality). In this metric, a theoretical “benchmark” habitat is considered the highest quality, at 100% condition. A degraded habitat is then considered at a lower percent condition. For example:

- 10 ha of highest possible condition habitat (100% quality) = $10 \times 1 = 10$ QH
- 10 ha of degraded habitat at 50% quality = $10 \times 0.5 = 5$ QH
- 10 ha of highly degraded habitat at 25% quality = $10 \times 0.25 = 2.5$ QH

Natural habitat is under pressure from agricultural, commercial and residential activities. As the natural habitats have long-term degradation, the condition/quality of the habitat is estimated to be 25% of the quality for habitat types.

Biodiversity offset targets to deliver an overall net gain in biodiversity is indicated for the respective habitat types. The residual impacts to, and offset targets for, areas containing Natural Habitat are summarized in Table 12-27.

Table 12-27. Residual Impacts to Habitats and Offset Targets

EUNIS	Total Impact Area (ha)	Residual impact (QH = area × habitat quality)	Offset Target
Project			
PDH-PP			
E1 Dry grasslands	43.6	10.9	Will be equal or greater than 10.9QH
F5.2 Maquis	1.6	0.4	Will be equal or greater than 0.4QH
Excavation Material Temporary Storage Area			
E1 Dry grasslands	22.2	5.6	Will be equal or greater than 5.6QH
Mobilization Area			
E1 Dry grasslands	9.7	2.4	Will be equal or greater than 2.4QH
F5.2 Maquis	2.4	0.6	Will be equal or greater than 0.6QH
Associated Facilities			
Terminal Facility			
F5.2 Maquis	0.8	0.2	Should be equal or greater than 0.2QH
A5.46: Mediterranean biocoenosis of coastal detritic bottoms	0.9	0.2	Should be equal or greater than 0.2QH
A5.38: Mediterranean biocoenosis of muddy detritic bottoms	0.4	0.1	Should be equal or greater than 0.1QH
A5.23: Infralittoral fine sands	0.6	0.2	Should be equal or greater than 0.2QH
Third Party Facilities			
CPIR Port			
E1 Dry grasslands	4.6	1.2	Should be equal or greater than 1.2QH
F5.2 Maquis	1.2	0.3	Should be equal or greater than 0.3QH

EUNIS	Total Impact Area (ha)	Residual impact (QH = area × habitat quality)	Offset Target
A5.46: Mediterranean biocoenosis of coastal detritic bottoms	20.7	5.2	Should be equal or greater than 5.2QH
A5.47: Mediterranean communities of shelf-edge detritic bottoms	9.5	2.4	Should be equal or greater than 2.4QH
A5.23: Infralittoral fine sands	68.6	17.2	Should be equal or greater than 17.2QH

Mitigation will be secured through a Biodiversity Management Plan (BMP). To support this assessment, a BMP has been produced that provides further details on the measures described in this section. BMP is given in Annex-R

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

(CHAPTER-13)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Version	Revision	Date	Prepared By		Quality Management By	Checked By		Approved By
Draft	A.0	March 2021	Açelya Duman (2U1K)		Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Isabelle Kim (RINA)	Elif Doğru (RINA)
	A.1	October 2021	Deniz Kozanlı (2U1K)	Şeyma Nur Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Isabelle Kim (RINA)	Elif Doğru (RINA)
	A.2	December 2021	Deniz Kozanlı (2U1K)	Şeyma Nur Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		
	A.3	December 2022	Şeyma Nur Geyik (2U1K)	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		Ilya Gulakov (RINA)
	A.4	October 2022	Şeyma Nur Geyik (2U1K)	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		Ilya Gulakov (RINA)
Final Draft	B.0	January 2023	Şeyma Nur Geyik (2U1K)	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003

FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
☎: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
13 CULTURAL HERITAGE IMPACT ASSESSMENT REPORT	7
13.1 Introduction	7
13.2 Scope and Objectives	7
13.3 Methodology	8
13.3.1 Approach.....	8
13.3.2 Desktop Study.....	8
13.3.3 Field Research.....	9
13.4 Legal Framework and Relevant Standards	10
13.4.1 Tangible Cultural Heritage.....	10
13.4.2 Intangible Cultural Heritage.....	12
13.5 Terrestrial Archaeology	14
13.5.1 Baseline Studies	14
13.5.2 Cultural Heritage Sites in Adana Province.....	25
13.6 Marine Archaeology	25
13.7 Overall Assessment.....	29
13.7.1 Overall Assessment of Tangible Cultural Heritage	29
13.7.2 Overall Assessment of Intangible Cultural Heritage.....	35
13.7.3 Critical Cultural Heritage	40
13.8 Impacts.....	42
13.8.1 Impacts on Tangible Cultural Heritage	43
13.8.2 Impacts on Intangible Cultural Heritage.....	50
13.9 Mitigation Measures.....	55
13.9.1 Provisions of Implementation Zoning Plan.....	57
13.10 Residual Impacts	59
13.11 References	68

LIST OF TABLES

	<u>Page</u>
Table 13-1. Applicable Requirements of the Law No. 2863	11
Table 13-2. Cultural Heritage Sites Near the Project	22
Table 13-3. List of Immovable Cultural Assets in the Project Area and Its Vicinity	34
Table 13-4. Settlement Information Included in the Study.....	35
Table 13-5. Internationally Recognized Cultural Heritage Areas.....	41
Table 13-6. Construction Phase Impact Magnitude on Tangible Cultural Heritage Assets....	45
Table 13-7 Operation Phase Impact Magnitude on Tangible Cultural Heritage Assets	47
Table 13-8. Vulnerabilities and Receptor Sensitivity for Tangible Cultural Heritage Assets ..	48
Table 13-9. Impact Significances for Construction Phase on Tangible Cultural Assets.....	48
Table 13-10. Impact Significance for Operation Phase on Tangible Cultural Assets.....	49
Table 13-11. Intangible Cultural Heritage Elements of the Provinces Crossed by the Project as Registered in the National Inventory	50
Table 13-12. The Village Basis Defined Intangible Cultural Heritage Elements in the Fieldwork.....	50
Table 13-13. The Defined Common Intangible Cultural Heritage Elements for All Villages in the Fieldwork.....	50
Table 13-14. Construction Phase Impact Significances Impacts on Intangible Cultural Heritage Assets.....	52
Table 13-15. Operation Phase Impact Magnitude on Intangible Cultural Heritage Assets	53
Table 13-16. Vulnerabilities and Receptor Sensitivity for Intangible Cultural Heritage Assets	54
Table 13-17. Impact Significances of Intangible Cultural Heritage Assets.....	54
Table 13-18. Construction Phase Residual Impact Magnitude on Tangible Cultural Heritage Assets	60
Table 13-19. Operation Phase Residual Impact Magnitude on Tangible Cultural Heritage Assets	61
Table 13-20. Residual Impact Significances for Construction Phase on Tangible Cultural Assets	63
Table 13-21. Residual Impact Significance for Operation Phase on Tangible Cultural Assets	64
Table 13-22. Construction Phase Residual Impact Magnitude on Intangible Cultural Heritage Assets	65
Table 13-23. Operation Phase Residual Impact Magnitude on Intangible Cultural Heritage Assets	66
Table 13-24. Residual Impact Significances of Intangible Cultural Heritage Assets.....	67

LIST OF FIGURES

	<u>Page</u>
Figure 13-1 Ceyhan Petrochemical Industrial Zone and Ceyhan Propane Dehydrogenation - Polypropylene Production Project Borders	8
Figure 13-2 The System Created for the Ceyhan PDH-PP Project Archaeological Survey ...	15
Figure 13-3. Project Area Boundaries and View of Cultural Assets – I.....	16
Figure 13-4. Project Area Boundaries and View of Cultural Assets - II	16
Figure 13-5. Project Area Boundaries and View of Cultural Assets – II.....	17
Figure 13-6. Ancient Period Clicia Region	18
Figure 13-7. Cultural Heritage Sites Near the Project Area.....	21
Figure 13-8. Views from Shallow (a) and Deep Sections (b) of the Marine Section of CPIR Port Project Site	26
Figure 13-9. Side Scan Sonar Lines	27
Figure 13-10. Side Scan Sonar Mosaic Map	28
Figure 13-11. Kurtpınar Ancient Waterway Canal.....	30
Figure 13-12. Kurtpınar Ancient Waterway Mortared Wall	30
Figure 13-13. Karanlık Kapı Remains (Karanlık Kapı 1 st and 3 rd Degree Archaeological Site)	31
Figure 13-14 Medieval Turkish Cemetery	32
Figure 13-15. Archaeological Trace-1.....	33
Figure 13-16. Late Roman- Early Byzantine Period Ceramic Pieces	33
Figure 13-17. Archaeological Trace -2.....	33
Figure 13-18. Late Roman- Early Byzantine	33
Figure 13-19. Immovable Cultural Assets in the Project Area and Surrounding Area	35
Figure 13-20. Gölovası Settlement Vineyard House	36
Figure 13-21. Interviews in Turunçlu Settlement Village Coffeehouse	38
Figure 13-22. Internationally Recognized Cultural Heritage Sites	42

GLOSSARY

Alexander the Great	The king of Macedonia, who lived between 356 BC and 323 BC. He established a great empire, stretching from Macedonia to India, and was instrumental in the spread of Ancient Greek civilization to the East.
Ayas (Aigeia)	An important port city in the ancient period in the Cilicia Pedias (Ovalık Kilikya) region, east of Ceyhan (Pyramos) river, west of Iskenderun Bay. The city was named Aigeai in the Hellenistic Period, Aegeae in the Roman Period, Ajazzo or Lajazzo in the Middle Ages and Ayas in the later periods.
Aqueduct	Vaulted or domed buildings that were built to carry water from the water source to the settlement in the ancient periods.
Battle of Issus	The war between Alexander the Great, the King of Macedonia and Darius III, the King of Persia, in 333 BC in the Issus Plain, which is located near Erzin district today.
Byzantine Period	The age of Byzantine Empire. With the division of the Roman (Eastern Roman) empire into two, the Byzantine Empire was established in AD 395 and was destroyed in 1453 by the conquest of Istanbul.
Chalcolithic Period	The period between the years 5500-3200 BC in Anatolia that copper as well as stone tools were used.
Cilicia Region	The name given to the area covering present-day Mersin, Adana, Hatay and Osmaniye in Antiquity.
Darius III	A famous Persian emperor who lived between 380 BC and 330 BC.
Epiphaneia	The city located 7 km west of Erzin district and founded by the Macedonian commander of Alexander the Great, Seleukos Nikator.
Genoese	The people who established trade colonies in the Mediterranean, Black Sea, Atlantic Ocean between the 11th and 15th centuries, who are known for their maritime activities.
Hellenistic Period	The period between the death of Alexander the Great and the Roman capture of Egypt (332-30 BC). It is divided into 3 sections as Early (323 BC-230 BC), High (230-150 BC), Late (150 BC-30 BC) Hellenistic Period.
Hittite State	The state that ruled in Anatolia and Northern Syria approximately between 1900 and 1200 BC.
Huyuk	A flat hill, which is formed by the accumulation of ruins in the settlement areas that have been destroyed for various reasons throughout the history and where the building remains are buried.
Necropolis	Literally, the city of the dead. Used for ancient cemeteries.
Neolithic Period	New stone age (9600-5500 BC). In the history of humanity, the period that started with the transition of people to settled life for the first time together with food production is called Neolithic Age. The Neolithic Period is divided into two sub-phases: Pre-Pottery Neolithic (9500- 7000 BC) and Pottery Neolithic (7000- 5500 BC).

Persian Period	The period under the rule of Persians in Iran and Anatolia between 533 BC and 334 BC.
Rome	The civilization that was born from the city of Rome, which was established in the Italian Peninsula in the 9th century BC and became an empire by surrounding the entire Mediterranean. In 395 AD, it was divided into two by Eastern Rome (Byzantine) and Western Rome by Theodosius. The Byzantine (Eastern Roman) Period continued until the conquest of Istanbul in 1453.

ABBREVIATIONS

AD	After Christ, The Common Era
BC	Before Christ
Ceyhan PP A.Ş.	Ceyhan Polipropilen Üretim A.Ş.
CPIR	Ceyhan Petrochemical Industrial Region or Ceyhan Energy Specialized Industrial Zone
CPIR Port	Raw Material Supply, Storage and Port Facility Project
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
ICH	Intangible Cultural Heritage
ICOMOS	International Council on Monuments and Sites
IFC	International Finance Corporation
MoCT	Ministry of Culture and Tourism
O.G.	Official Gazette
PDH	Propane Dehydrogenation
PP	Polypropylene
PR	Performance Requirements
PS	Performance Standards
Terminal Facility	Jetty and Propane Storage Tank
UNESCO	United Nations Educational, Scientific, and Cultural Organization

13 CULTURAL HERITAGE IMPACT ASSESSMENT REPORT

13.1 Introduction

This report is to identify the potential tangible and intangible cultural heritage within the Project Area of the “Ceyhan Propane Dehydrogenation (PDH) and Polypropylene (PP)” Project (the Project) and Terminal Facility (associated facility) planned within Adana Province, Ceyhan District and to evaluate the possible impacts of the Project and Project’s associated facility activities on these cultural assets.

For the Project and associated facilities two field studies have been conducted. Initial fieldwork was carried out by REGIO Consulting Inc. on 9-10 January 2020, however, as there was a change and expansion in the layout of the Project during the ESIA, a second field study was conducted by REGIO Consulting Inc. on 8-10 November 2021. In the second field study, studies were carried out by including intangible cultural assets and the findings of both studies are included in this report.

The report has been prepared in accordance with the European Bank for Reconstruction and Development (EBRD) Performance Requirement 8 (PR 8) and International Finance Corporation (IFC) Performance Standard 8 (PS 8).

13.2 Scope and Objectives

The geographical scope of the study is the area where the PDH-PP units and the main campuses and associated facility (terminal facility) are located (see Figure 13-1). This section is focused on the Project and associated facilities as described in Chapter 2 and does not cover issues related to cultural heritage impacts of the broader CPIR area. However, considering that cultural heritage impacts of the Project and the broader CPIR area will be similar in nature, relevant recommendations with regard to the CPIR area are provided as part of mitigation measures.

The evaluation of the Project impact on tangible and intangible cultural heritage assets in the facility area and its vicinity constitutes the thematic scope of this study.

The main objectives of this evaluation report are as follows:

- Determination of the current status and geographical distribution of the tangible heritage assets and intangible cultural heritage that may be affected by the construction and operation activities of the Project and associated facilities;
- Identifying the negative effects that may pose due to the Project on tangible and intangible cultural heritage;
- Determining the necessary measures to minimize potential negative effects on tangible and intangible cultural heritage through the activities of the Project and associated facility.

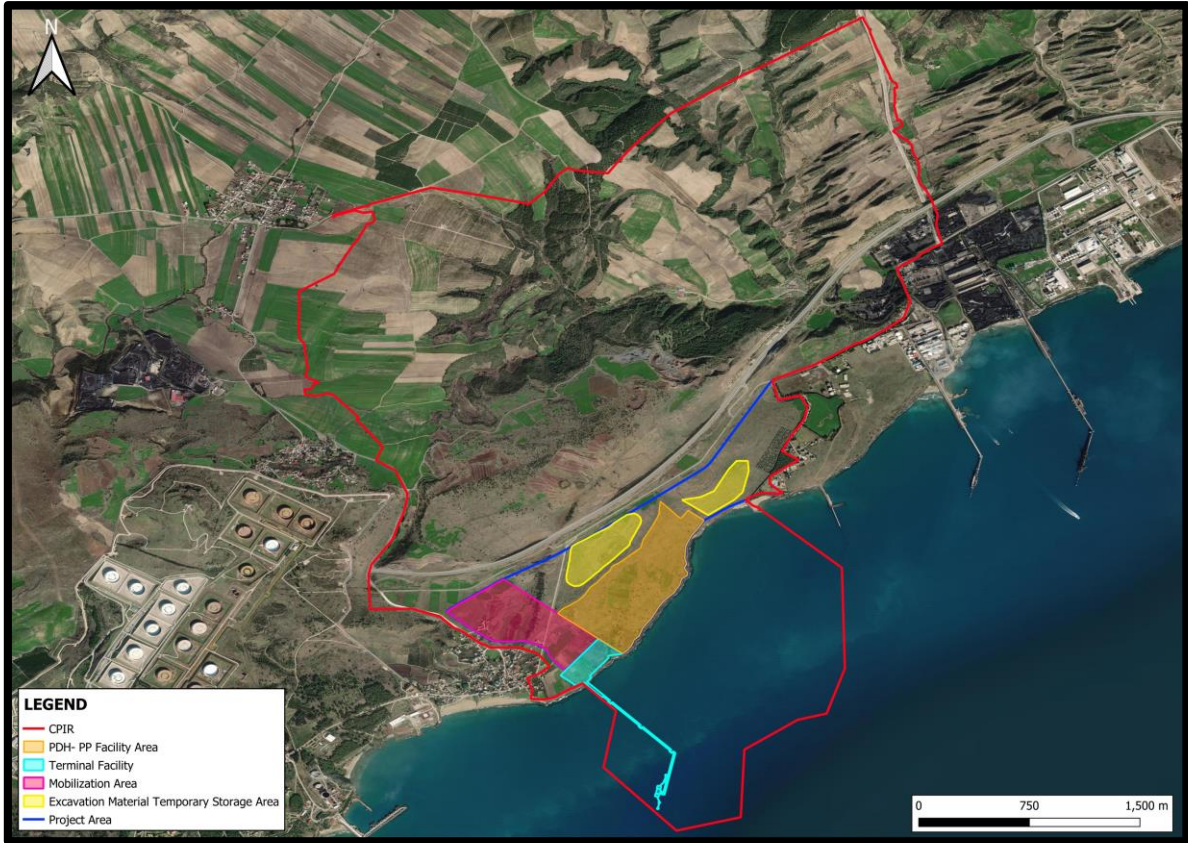


Figure 13-1 Ceyhan Petrochemical Industrial Zone and Ceyhan Propane Dehydrogenation - Polypropylene Production Project Borders

Source: (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş., 2021)

13.3 Methodology

13.3.1 Approach

Four different methods have been used in evaluating the present status of tangible and intangible cultural heritage assets for the Project. These methods are as follows:

- Desktop Study;
- Field Research – Walkover survey;
- Impact Assessment;
- Reporting.

13.3.2 Desktop Study

Publications on tangible and intangible cultural heritage related to the field of study and its immediate vicinity have been performed in order to determine the cultural heritage potential of the Project and its associated facility.

The Project Area is studied, whether there is an existence of archaeological or cultural heritage, which has already been recorded in the study area or in the nearby area, by interviewing Adana Regional Council for the Conservation of Cultural Property.

The resources used during the desk study for the research of tangible and intangible cultural heritage are as follows:

- Academic Publications on Tangible and Intangible Cultural Heritage;
- Historical Maps;
- Previous Cultural Heritage Studies and Surface Survey Results Reports;
- Inventory Records of the Ministry of Culture and Tourism¹;
- Ceyhan PDH-PP Project Archaeological Heritage Baseline Report prepared by REGIO Danışmanlık Inc (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş). dated 24.04.2020;
- An opinion letter and a marine archaeology investigation study report prepared by Bodrum Museum of Underwater Archaeology on 03.07.2020;
- 1/100,000 scaled Mersin – Adana Planning Region Environmental Plan No: O35;
- 1/1,000 scaled implementation zoning plan for Adana Ceyhan Energy Specialized Industrial Zone;
- Investigation and Explanation Report” of the Adana Ceyhan Energy Specialized Industrial Zone 1/5,000 scaled zoning plan and 1/1,000 implementation zoning plan²;
- Ceyhan Raw Material Supply, Storage and Port Facility EIA Final report prepared by Dolfen Consulting Engineering Inc. dated 14.07.2021; and
- Ceyhan PDH-PP Project Archaeological Heritage Baseline Report prepared by REGIO Danışmanlık Inc. dated 25.11.2021.

13.3.3 Field Research

Within the scope of the initial field study the archaeological walkover survey was conducted within the Project site and its vicinity on 9-11th January 2020. The assessment study was conducted by the Cultural Heritage Assessment Team³ from REGIO Danışmanlık Inc. As a

¹ Decision No 11159 dated 26.04.2019 of the Directorate of Adana Regional Councils for Protection of Cultural Property,

*Letter No E-26571867-165.99-1486096 dated 25.06.2021 of the Directorate of Adana Regional Councils for Protection of Cultural Property.

² Approved by the authority decision date/number: 12.07.2019 (UIP38413- NİP38412) and amended with the authority decision date/number: 31.10.2019 (UIP38413,1-NİP38412,1

³ Senior Archaeologist H. Uğur Dağ, Senior Archaeologist Serkan Akdemir

result of the studies, an Archaeological Heritage Baseline Report was prepared dated 24.04.2020 and presented in Annex I.

In the second field survey, the field surveys on tangible and intangible cultural heritage have been conducted separately. The surveys were carried on the Project and its vicinity between 8-10 November 2021 by REGIO Cultural Heritage Field Team⁴.

13.4 Legal Framework and Relevant Standards

13.4.1 Tangible Cultural Heritage

In Turkey, movable and immovable cultural and natural assets are protected and should be conserved as per the “Law on Preservation of Cultural and Natural Assets”, 2863 (amended by law numbered 3386), published in the Official Gazette numbered 18113 and dated 23 July 1983. According to the Law, essential assets which are identified as cultural and natural heritage under legal protection are defined as follows:

- Natural and immovable cultural assets belonging to 19th Century and before;
- Any immovable cultural asset constructed after the end of the 19th Century but categorized as “a significant asset which requires preservation” by the Ministry of Culture and Tourism;
- Immovable cultural assets located within the Protection Sites (in the Law, Protection Sites are defined as ancient sites and ruins which reflect the main social, economic or architectural characteristics of their era. Protection Sites may also be locations where fundamental historical events took place or areas containing considerable natural or cultural assets with natural or cultural features requiring preservation); structures, buildings or places that have witnessed significant historical events during the Turkish Independence War or the foundation of the Turkish Republic, regardless of time and registration; and all dwellings and buildings that have been used by Mustafa Kemal ATATURK without considering their time of construction or status of registration.

The relevant requirements of the Law on Conservation of Cultural and Natural Property (No. 2863, 1983) applicable to the Project construction works are listed in Table 13-1.

⁴ Senior Archaeologist H. Uğur Dağ, Senior Archaeologist Halim ÖZATAY, Senior Archaeologist Seray AYAZ and Senior Archaeologist Serkan AKDEMİR.

Table 13-1. Applicable Requirements of the Law No. 2863

Article	Provision
Article 4 – Obligation to Notify	<p>Persons that discover movable and immovable cultural and natural property, owners, proprietors or occupants that know or have recently found out about the existence of cultural and natural property on the land they own or use shall be obliged to notify the nearest museum directorship or the village headman or the local administrators of other places within at the latest three days.</p> <p>If such property is in military garrisons and restricted areas, the relevant command levels shall be notified in line with the relevant procedure.</p> <p>The village headman, the local administrator receiving such notification or the relevant authorities that are directly notified of such property shall take the necessary measures to protect and secure such property. The village headman shall notify the nearest local administrator as of the situation and the measures taken on the same day. The local administrator and other authorities shall notify in writing the MoCT and the nearest museum directorship within ten days.</p> <p>Upon receiving this notification, the Ministry and Museum Director shall instigate due proceedings as soon as possible in line with the provisions of this law.</p>
Article 5 – Quality of state property	<p>Immovable property belonging to the state, public institutions and organizations and movable and immovable cultural and natural property to be protected that is known to exist or will be discovered on an immovable property owned by real and legal persons subject to civil law shall have the quality of state property.</p> <p>Registered and annexed foundation property subject to a separate status due to its special qualities shall not be covered by this provision.</p>
Article 25 – Transfer to Museums	<p>MoCT shall classify and register based on scientific principles movable cultural and natural property declared to MoCT according to article four and movable cultural and natural property to be protected as specified in article 23. Antiquities that need to be conserved in state museums shall be duly transferred to museums.</p> <p>The criteria, procedures and principles for classification, registration and transfer to museums of movable cultural and natural property to be protected shall be specified in a regulation.</p> <p>The historical features of all kind of weapons and materials concerning Turkish military history</p>

In addition to the Law on Preservation of Cultural and Natural Assets, some regulations govern the procedures about the protection and preservation of cultural and natural assets. The most predominant one being the Principle Decision (No. 658, issued 5 November 1999) which states that all archaeological sites need to be classified and protected according to their significant features. Three main categories are determined relevant to archaeological sites as:

- **1st Degree Archaeological Sites:** Areas requiring highest level of protection. They should be preserved except for scientific excavations. The area should be free of any type of buildings and construction. All kinds of construction, excavation, and modification activities are prohibited. However, for exceptional cases such as the necessity for essential infrastructure construction, Regional Council for Protection of Cultural Property may permit such activities based on the approval of the relevant museum and the head of the scientific excavation team;
- **2nd Degree Archaeological Sites:** They should be preserved based on the conditions of protection and utilization set by the Regional Council for Protection of Cultural Property. Additional construction is prohibited. As the 1st Degree Sites, for exceptional cases such as necessity for infrastructure construction among others,

Regional Council for Protection of Cultural Property may permit such activities based on the approval of the relevant museum and the head of the scientific excavation team;

- **3rd Degree Archaeological Sites:** Lowest level of protection area. Construction is permitted based on the decisions of Regional Council for Protection of Cultural Property. Before applying for a construction permit, test pit excavations should be conducted, and the outcomes of these excavations should be reviewed by the relevant museum and, if present, the head of the scientific excavation team. Reviews should be submitted to Regional Council for Protection of Cultural Property. The Boards may ask for extension of the coverage of test pits before taking any decision.

13.4.2 Intangible Cultural Heritage

United Nations Educational, Scientific, and Cultural Organization (UNESCO) put into effect the “Convention for the Safeguarding of the Intangible Cultural Heritage” in the 32nd General Conference held in Paris between September 29th and October 17th, 2003. The convention was officially accepted by the Republic of Turkey with the “Law No. 5448 Regarding the Approval of the Convention of Safeguarding of Intangible Cultural Heritage on January 19th, 2006”. The intangible cultural heritage legally safeguarded by the relevant law was defined as follows:

- Cultural products and production processes such as oral narratives and oral traditions created by the folk in oral culture environments and included in folklore studies, performance arts, social practices, rituals and festivals, folklore, practices related to the universe and nature, handcraft traditions.

In addition to the laws and regulations described above, the guidelines given below, and the guiding principles of international organizations have been taken into consideration during the work carried out:

- International Finance Corporation - IFC Performance Standard 8 (PS 8): Cultural Heritage, 2012.

In the field of Cultural Heritage, IFC Performance Standard 8 mentions the necessity of preserving cultural heritage for today and for the future. This Performance Standard aims to protect cultural heritage from the negative impacts that may arise from activities at every stage of the Project and to ensure equal use of existing cultural heritage.

According to Performance Standard 8, “cultural heritage refers to (i) tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; (ii) unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and (iii) certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as

cultural knowledge, innovations, and practices of communities embodying traditional lifestyles”.

- The EBRD, Environmental and Social Policy, Performance Requirement 8 (PR 8): Cultural Heritage.

The EBRD specifies the implementation of Performance Requirements 8 (PR8) Cultural Heritage guidelines in order to understand the conservation and importance of cultural heritage. The EBRD emphasizes the importance of protecting cultural heritage for present and future generations. Both tangible and intangible cultural heritage are important assets and are an integral part of the continuity of cultural identity and practices. The PR8 requirement states that all parties, at the Project implementation level, to respect the laws, regulations, and obligations under relevant international treaties and agreements ratified by host countries. These laws and regulations may cover cultural heritage or antiquities, planning or building permits, conservation areas, protected areas, built heritage, or the protection of cultures of indigenous peoples (refer to the guidance on PR7).

The main objectives of Performance Requirement 8 are as follows:

- identify and assess potentially significant, existing and future, adverse environmental and social impacts associated with the Client’s current operations and the Project;
- assess compliance with applicable laws and EBRD’s Environmental and Social Policy (2019);
- determine the measures needed to prevent or minimise and mitigate the adverse impacts;
- identify potential environmental and social opportunities, including those that would improve the environmental and social sustainability of the Project and the current operations.

According to the EBRD PR8, tangible cultural heritage refers to movable or immovable objects, sites, groups of structures as well as cultural or sacred spaces associated therewith, and natural features and landscapes that have archaeological, ethnological, paleontological, historical, architectural, religious, aesthetic or other cultural significance. Intangible cultural heritage refers to practices, representations, expressions, knowledge and skills that communities, groups and, in some cases, individuals recognize as part of their cultural heritage and which are transmitted from generation to generation.

On the other hand, Turkey has ratified the following key international conventions regarding the cultural heritage, which are applicable to the Project:

- UNESCO, Convention on the Protection and Promotion of the Diversity of Cultural Expressions. Paris, 20 October 2005;

Chapter 13: Cultural Heritage

- UNESCO, Convention for the Safeguarding of the Intangible Cultural Heritage. Paris, 17 October 2003;
- UNESCO, Convention on the Protection of World Cultural and Natural Heritage. Paris, 16 November 1972;
- UNESCO, Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property. Paris, 14 November 1970;
- Convention for the Safeguarding of the Intangible. Cultural Heritage. Paris, 17 October 2003.

In addition, the “Guidance on Heritage Impact Assessments for Cultural World Heritage Properties, ICOMOS 2011” has been taken into consideration.

13.5 Terrestrial Archaeology

13.5.1 Baseline Studies

The baseline studies conducted initially for the Project site and associated facility covered an initial assessment which was based on desk-based research, literature review and archaeological walkover survey.

Within the scope of the first field study the archaeological walkover survey was conducted within the Project site, associated facility, and its vicinity on 9-11th January 2020. The assessment study was conducted by the Cultural Heritage Assessment Team⁵ from REGIO Danışmanlık Inc. As a result of the studies, an Archaeological Heritage Baseline Report was prepared dated 24.04.2020 and presented in Annex I.

In the second field survey, the field surveys on tangible and intangible cultural heritage have been conducted separately. The surveys were carried on the Project and its vicinity between 8-10 November 2021 by REGIO Cultural Heritage Field Team⁶. Details and findings of the studies are provided in this Section.

During the field research, registered and unregistered Tangible Cultural Heritage assets that can be included in the Project and its vicinity were examined. In addition, the registration records of the Adana Cultural Heritage Preservation Regional Board to which the area is affiliated and the surface studies previously conducted for archaeological purposes in the region were examined to determine the possible effects to the cultural assets in the area and its immediate vicinity.

In order to prevent possible confusion in data collection and documentation during fieldwork due to geographical factors and existing vegetation, prior to fieldwork for the archaeological assessment of the site; the Project Area was divided into sections by using GIS and the

⁵ Senior Archaeologist H. Uğur Dağ, Senior Archaeologist Serkan Akdemir

⁶ Senior Archaeologist H. Uğur Dağ, Senior Archaeologist Halim ÖZATAY, Senior Archaeologist Seray AYAZ and Senior Archaeologist Serkan AKDEMİR.

working area was divided into parcels. Thus, it was possible document in detail and assign codes to archaeological remains to be identified in the field. In this system, rectangles with a width of approximately 250 meters were created in the direction of "East-West" by taking boundaries of the area into account. The coding of the parcels follows consecutive numbers (i.e., 1, 2, 3, 4, 5.) from north to south (see. Figure 13-2)

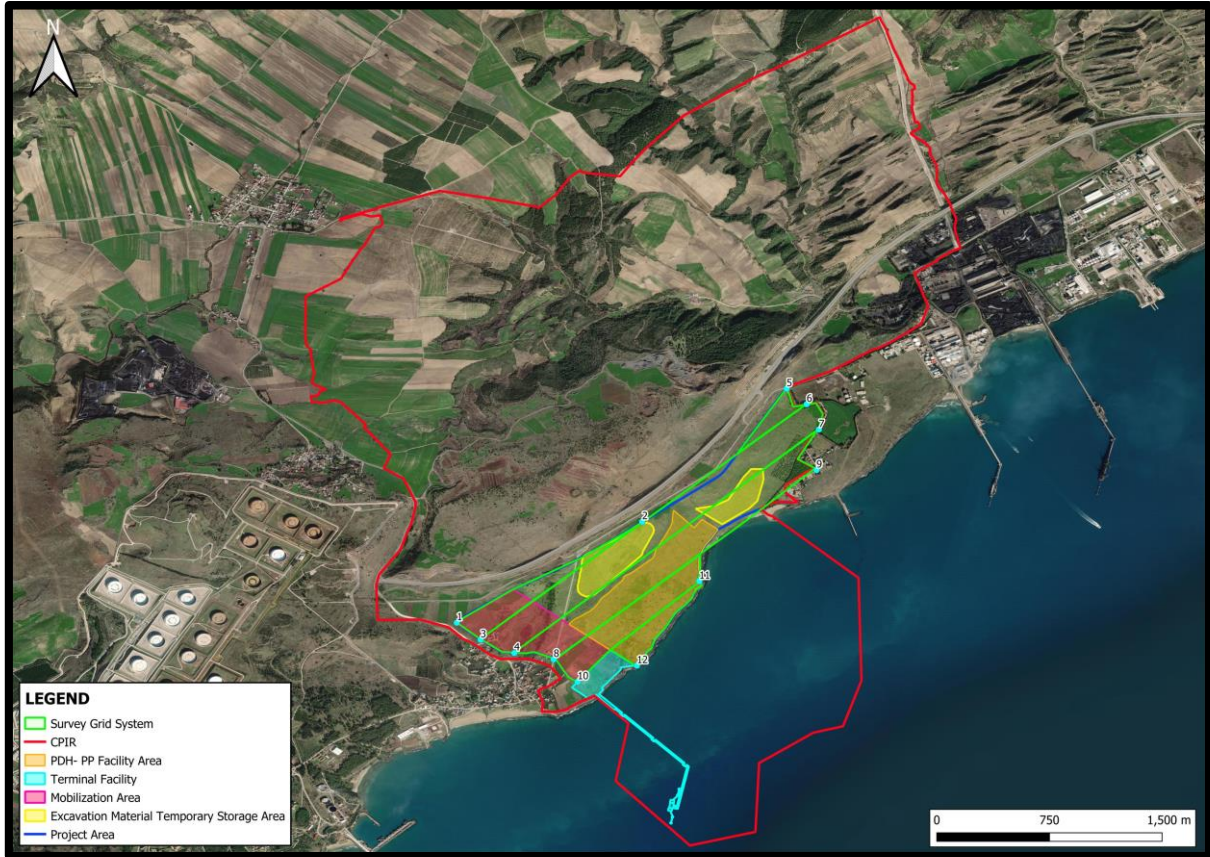


Figure 13-2 The System Created for the Ceyhan PDH-PP Project Archaeological Survey

Source: (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş., 2021)

The entire area was screened by a walkover survey conducted by the archaeological team. Moreover, in order to determine the archaeological and cultural heritage assets that may be under the vegetation in the area, flights have been coordinated from a height of 100 meters on the area with an unmanned aerial vehicle (Drone). The obtained data were processed in a mapping and analysis platform for determining the possible impacts of the Project within the site boundaries. A visual impact assessment study has been carried out to understand the interaction of the Project boundaries and cultural assets (see Figure 13-3, Figure 13-4 and Figure 13-5).



Source: (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş., 2021)

Figure 13-3. Project Area Boundaries and View of Cultural Assets – I



Source: (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş., 2021)

Figure 13-4. Project Area Boundaries and View of Cultural Assets - II



Source: (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş., 2021)

Figure 13-5. Project Area Boundaries and View of Cultural Assets – II

Field works for intangible cultural heritage were conducted using qualitative interview method at 7 settlements in the vicinity of the Project. No restriction was implemented during the interviews and participants were able to provide their own answers. Interviews aimed to make participants convey their own cultural structures and behaviors and experiences that make up those structures. Other than the mentioned profile, people who have commanding knowledge about the region's history, customs and traditions as well as its geography were also interviewed. In addition, observations made during the study were also used as a part of the field works on intangible cultural heritage.

13.5.1.1 Background for Tangible Cultural Heritage

Çukurova, formed by the widest and most fertile plains of Anatolia, forms the southern part of the Neogene Adana Basin. Surrounded by the Taurus Mountains in the north, Amanos Mountains in the east and the Mediterranean in the south, the western border of the region is determined by the Ecemiş fault line⁷. The plain formed by the common delta of the Tarsus (Cydnus), Seyhan (Sarus) and Ceyhan (Pyramus) rivers and named as the Aeolian⁸ plain in ancient sources is located in the southwest of the region. The southern part of the basin, which is entirely called the Adana Plain, is called Çukurova, while the northern part is called Yukarı

⁷ Şenyurt vd. 2006:12; Gürbüz 1992:212.

⁸ Şenyurt vd. 2006:12; Magie 1950: 271.

Ova (Anavarza). The Misis (Eyeliner) Mountains separate the two plains. This topography was called Ovalık Kilikya (Cilicia Pedias or Campestris⁹) in ancient times.

Ovalık Kilikya, which has the appearance of a closed basin at first due to the mountains surrounding it, breaks this closed basin appearance as it is located on important roads connecting Central Anatolia to Syria and Mesopotamia. One of the most important of these roads is the road that descends from Taurus Mountains to Tarsus via Gülek Passage (Pylai Kilikias¹⁰), reaches to Kinet Huyuk, which was localized as the ancient Issus (Epiphaneia)¹¹ through Misis (Mopsuestia), and connects to Syria and Mesopotamia through the Belen Pass (Syriai Pylai) 12in Amanos Mountains (see. Figure 13-6) This aforementioned road has a route crossing the protected archaeological sites such as Karanlık Kapı 1st and 3rd Degree Archaeological Site which is located close to Project Area and Muttalip Huyuk located in Toros Tarım premises (see. Figure 13-7 and Table 13-2).



Source: (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş., 2021)

Figure 13-6. Ancient Period Cilicia Region

Starting from the ancient city of Soli / Pompeiopolis¹³ to the foothills of the Amanos Mountains, Ovalık Kilikya has attracted human communities from prehistoric¹⁴ times thanks to its fertile soil and water resources.

⁹ Strabon XIV: 5.1.

¹⁰ Şenyurt vd. 2006:16; Hild-Hellenkemper 1990: 387.

¹¹ Şenyurt vd. 2006:16; Gates 1999: 304.

¹² Strabon XIV: V.1; Erzen 1940:14-16,27

¹³ Strabon XIV: V.1; Erzen 1940:14-16,27-29.

¹⁴ Şenyurt vd. 2006:12; Garstang 1953: 15.

The Neolithic Period is the period seen in Anatolia between 9500 BC and 5500 BC and is called the "New Stone Age". Important residential areas of this period close to the Project site are Tarmil (Tırmıl), Tatarlı, Şamsı, Tömük (Elvanlı), Kabarsa ve Çavuşlu Huyuks¹⁵.

The Chalcolithic Period (5500 BC- 3200 BC) was experienced after the Neolithic period in Ovalık Kilikya¹⁶. Anazarbos (Anazarva), Aigaea (Yumurtalık), Hierapolis-Kastabala (Osmaniye), Mopsuestia-Misis (Yakapınar), Domuz Tepe, Sirkeli Huyuk, Tülek Huyuk, Boyalı Huyuk, Tatarlı Huyuk ve Muttalip Huyuk in Toros Gübre can be listed among the important settlements of this period, close to the Project site limits (see. Figure 13-7 and Table 13-2).

After the Chalcolithic Period, Bronze Age was experienced in Anatolia (3200 BC-1200 BC). It is known from the excavations and field surveys that large settlements were established in Ovalık Kilikya, as in other parts of Anatolia. In this period bronze which is obtained by mixing tin and copper, began to be used in metal tool making. Yarım Huyuk, Tülek Huyuk, Boyalı Huyuk, Maltepe Huyuk, Sirkeli Huyuk, Çatalhöyük, Sarı Huyuk, Kameroğlu Huyuk, Muttalip Huyuk and Kinet Huyuk can be listed among the Bronze Age settlements close to the Project area (see. Figure 13-7 and Table 13-2).

In the middle of the 2nd Millennium BC, the Kizzuwatna Kingdom dominated the region, and until it was annexed to the Hittite Empire in the 1350s BC, it emerged as an independent kingdom between Hittite and Mitanni which was a Hurri kingdom. Among the important settlements in the region belonging to this period are; Karatepe-Aslantaş Huyuk, Pasgüden Huyuk, Hacılar Huyuk, Yarım Huyuk, Adatepe, Bakırlı Çiftlik Huyuk, Bozhöyük, Muttalip Huyuk, Sirkeli Huyuk and Ertekin Bey Huyuk (see. Figure 13-7 and Table 13-2).

The first millennium BC is known as the "Iron Age". In this period when iron became widespread in making tools, the effects of the Late Assyrian Empire (858 BC-612 BC) and the New Babylonian State (626 BC-539 BC) are observed while the existence of city states belonging to the Late Hittite period is also known. Karatepe, Sirkeli Huyuk, Tatarlı Huyuk, Tülek Huyuk, Boyalı Huyuk, Maltepe Huyuk, Muttalip Huyuk and Botaş Huyuk are among the most important settlements of this period (see. Figure 13-7 and Table 13-2).

The region also hosted events that changed the course of history. Important settlements and necropolises¹⁷ from the Hellenistic and Roman periods are also known in the region which witnessed the Battle of Issus¹⁸ in 333 BC, between Alexander the Great, the king Macedonia and Persian King Darius III. Yüceören, Hierapolis-Kastabala, Anavarza (Anazarbos), Flaviopolis (Kadirli), Domuztepe, Neronias/Irenopolis (Düziçi), Sarımazı OSB, Babilik, Misis-Yakapınar (Mopsouhestia), Kurtkulağı Ölçü Tepesi, Maltepe Huyuk, Kabaktepe, Botaş Huyuk, Muttalip Huyuk, Tülek Höyük, Boyalı, Gökdere, Kurtpınarı, Yumurtalık (Aegeai), Karanlık Kapı,

¹⁵ Kurt 2006:60; Ünal-Girginer 2007: 50. 109.

¹⁶ Harmankaya-Tanırdı 1998. 3 (TAY).

¹⁷ Ancient Cemetery

¹⁸ It took place on the plain 7 km west of present-day Erzincan District of Hatay Province.

Erzin (Epiphaneai), Baias (Payas) are some of these settlements (see Figure 13-7 and Table 13-2).

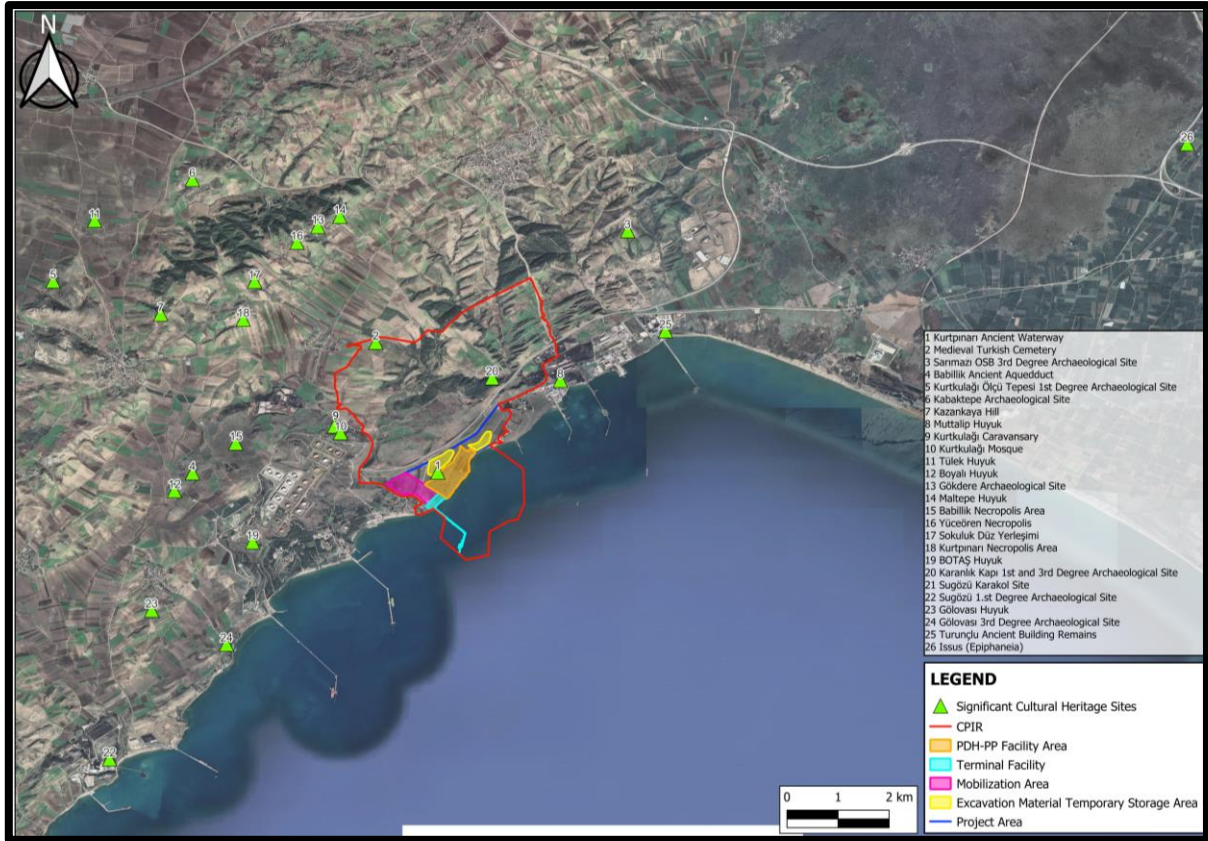
Many settlements¹⁹ in the region were rebuilt during the Roman period. Sarımazı OSB, Babilik, Kurtkulağı Ölçü Tepesi, Kabaktepe, Tülek Huyuk, Muttalip Huyuk, Boyalı Huyuk, Gökdere, Yüceören, Sokuluk, Kurtpınarı, Botaş Huyuk, Su Gözü, Gölovası, Turunçlu Building Ruins belong to some of these settlements (see. Figure 13-7 and Table 13-2). Roads connecting these settlements to the inner regions were also built during the Roman period. One of these roads is Aleppean Road. The road is partly within the borders of Ceyhan Petrochemical Industrial Zone. It is known that, after crossing the southern shore of Pyramos (Ceyhan River) from the ancient bridge in Misis (Yakapınar), the road reaches Tardequieia, which was established as a road station 15 Roman miles away and localized in the village of Kurtkulağı, and from there to Muttalip Huyuk via Karanlıkapı.

In this period, besides the roads, it is known that important aqueducts were built to meet the water needs of the increasing population in the Roman period. Fresh water from the water source in the Amanos Mountains was brought from Epiphaneia to the Genoese port city on the seafront in Burnaz and, as it was brought to to Ayas (Yumurtalik) due to another claim. The known length of the waterway on a land of volcanic basalt stones reaches 30 km. One branch of the mentioned Ancient waterway is considered to be the Kurtpınar Ancient Waterway within the Project Area.

After the Roman Empire was divided into two in 375, the Cilicia Region remained under the rule of Eastern Rome. Throughout the Middle Ages the region was ruled by Byzantines, Arabs, Thessalonians, Armenians, Mamluk State, Ramazanoğulları, respectively. The region came under Ottoman rule in 1517.

There are many historical buildings and settlements belonging to these periods in the region. Medieval Turkish Cemetery, Kazankaya Tepesi, Kurtkulağı Mosque, Kurtkulağı Caravanserai, Yılan Kale, Sirkeli Huyuk and Yumurtalik Kalesi are among them(see Figure 13-7 and Table 13-2). After a short time remaining in the French occupation zone during the Turkish War of Independence, the region first became a sovereign state and annexed to the Republic of Turkey on 23 June 1939.

¹⁹ *Karanlık Kapı, Yılankale, Yıkık Kilise, Burhanlı, Su gözü, Adatepe Necropolis, Hamdilli-Altıkara-Elmagölü necropolis' etc.*



Source: (Regio Kültürel Miras Yönetim Danışmanlığı ve Eğitim A.Ş., 2021)

Figure 13-7. Cultural Heritage Sites Near the Project Area

Table 13-2. Cultural Heritage Sites Near the Project

NO	Name of the Archaeological / Immovable Cultural Heritage	Province	District	Closest Distance to the Project Area (km)	HISTORICAL PERIODS												
					Paleolithic	Neolithic Period	Chalcolithic Period	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Hittite Period	Iron Age	Hellenistic Period	Roman Period	Byzantine Period	Ottoman Period	Early Republican Period
1	Kurtpınarı Ancient Waterway	Adana	Ceyhan	0													
2	Medieval Turkish Cemetery	Adana	Ceyhan	3													
3	Sarımazı OSB 3rd Degree Archaeological Site	Adana	Ceyhan	4.8													
4	Babilik Ancient Aqueduct	Adana	Ceyhan	3.7													
5	Kurtkulağı Ölçü Tepesi 1st Degree Archaeological Site	Adana	Ceyhan	8.1													
6	Kabaktepe Archaeological Site	Adana	Ceyhan	8													
7	Kazankaya Hill	Adana	Ceyhan	6													
8	Muttalıp Huyuk	Adana	Ceyhan	1.2													
9	Kurtkulağı Caravansary	Adana	Ceyhan	6													
10	Kurtkulağı Mosque	Adana	Ceyhan	5													
11	Tülek Huyuk	Adana	Ceyhan	8													
12	Boyalı Huyuk	Adana	Ceyhan	4													
13	Gökdere Archaeological Site	Adana	Ceyhan	6													
14	Maltepe Huyuk	Adana	Ceyhan	5.8													
15	Babilik Necropolis Area	Adana	Ceyhan	2.7													
16	Yüceören Necropolis	Adana	Ceyhan	5.7													
17	Sokuluk Düz Yerleşimi	Adana	Ceyhan	5.4													
18	Kurtpınarı Necropolis Area	Adana	Ceyhan	4.8													
19	BOTAŞ Huyuk	Adana	Ceyhan	3.3													
20	Karanlık Kapı 1st and 3rd Degree Archaeological Site	Adana	Ceyhan	0.5													
21	Sugözü Karakol Site	Adana	Yumurtalık	11.3													
22	Sugözü 1.st Degree Archaeological Site	Adana	Yumurtalık	8.9													

Chapter 13: Cultural Heritage

NO	Name of the Archaeological / Immovable Cultural Heritage	Province	District	Closest Distance to the Project Area (km)	HISTORICAL PERIODS												
					Paleolithic	Neolithic Period	Chalcolithic Period	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Hittite Period	Iron Age	Hellenistic Period	Roman Period	Byzantine Period	Ottoman Period	Early Republican Period
23	Gölovası Huyuk	Adana	Yumurtalık	5.9													
24	Gölovası 3rd Degree Archaeological Site	Adana	Yumurtalık	4.8													
25	Turuçlu Ancient Building Remains	Hatay	Erzin	4.8													
26	Issus (Epiphaneia)	Hatay	Erzin	16													

13.5.1.2 Background for Intangible Cultural Heritage

UNESCO defines intangible cultural heritage as traditions or life experiences such as oral traditions, performing arts, social practices, rituals, celebration events, knowledge and practices about nature and the universe, or knowledge and skills related to the production of traditional arts, which we inherit from our ancestors and will pass on to our future generations.

Most of the local people living at the Project area are Yoruk. Turkmens living in nomadic life in Anatolia and Thrace were called "Yoruk". Yoruks are nomadic Turkmens who live in plateaus in summer, "güzlük" in fall and "kışlak" in winter, as groups of small and large by dealing with animal husbandry. The settlement of the Turkmens to present-day Çukurova took place after 1800s²⁰. Turkmen tribes living intensely in the region are Avşarlar, Ceritler, Karakoyunlu, Karahacılı, Tekeli, Aydınlı, Tecirli, Bozdoğanlar, Honamlı etc. Today, Yoruks continue to cultivate their own culture, despite the transition from nomadic to settled lifestyle. However, the developments in the field of science and technology in the last century and the effect of the established culture have led to the gradual forgetting of the Yoruk culture. Apart from the Yoruks, Abazins and Crete immigrants were also found in the settlements in the study area. It is also known that Noghais, Tatars and Balkan immigrants live in the region.

After the 1877-78 Russian War, the Crimea, Abazins and Papaks started to come to the region and were placed in Çukurova by the Ottoman State during the Balkan War^{21,22}. On the other hand, the Nogai settled in the region after the Russian pressures following the Crimean War of 1853-1856²³. At the end of the 19th century, many Yoruk tribes settled on the plains and established villages²⁴. When the demography of the region is analyzed, the majority of Yoruk population is prominent²⁵. This broad cultural quality is reflected in traditions, dances and food.

The traditions of the people living around the Project is visible in the rituals of birth, circumcision, farewell rituals for military service, marriage and death, which are the transition periods of life. These stages, which are important for people, are integrated with the local culture of the region. In Turkish folk culture, tombs, grand trees, springs are sacred according to the Ancestor Cult. These places have been holy places in search of solutions to problems encountered in life²⁶. In our research area, it was determined that places which are considered sacred are visited, vows are made, and animals are sacrificed in order to have children. Hosting dinners called "toy" and the loud announcement of the gifts the boy's house purchased while marrying; giving gifts called "okuntu" along with invitation cards before circumcision ceremonies and weddings; and attaching a red flag to tombstones are examples of these traditions.

²⁰ Cin, Firdevs, *Ceyhan Yörüklerinde Halk Kültürü Araştırmaları, Çukurova Üniversitesi Sosyal Bilimler Enstitüsü, Adana, 2004:8.*

²¹ October 8, 1912- Jul 18, 1913

²² Muradiye Malı. Sirkeli, Yassıca

²³ Mangit, Mercimek, Toktamış Villages

²⁴ Karakayalı, Burhaniye, Köşreli, Dokuztekné, Sanmazı tribes

²⁵ Adana City Yearbook, 1991: p. 25

²⁶ Ocak, 1992: 11

The transition periods of life, which starts with birth and ends with death, have local customs in the region. The protection and survival of festivals, agriculture, animal husbandry, historical buildings and the natural environment are the issues that the local people pay attention to.

Finally, the cultural qualities of the region are as remarkable as its natural structure and history. The multicultural character of the region, as Greek, Christian, Turkish and Muslim customs are intertwined over time, is reflected in life, such as traditions, dances, food and the transition periods of life.

13.5.2 Cultural Heritage Sites in Adana Province

There are 434 archaeological sites, 19 monumental trees and seven (7) natural protected sites located in Adana Province. The list of natural protected sites located in Adana province are given below^{27,28}. These sites will be defined in *Chapter 12: Ecology* in more detail:

- Yumurtalık Nature Reserve/Lagoons (1st degree natural protected site);
- Akyatan Lagoon (1st and 2nd degree natural protected site);
- Tuzla Lagoon (1st degree natural protected site);
- Ağyatan Lake (1st degree natural protected site);
- Yerköprü Nature Reserve (1st degree natural protected site);
- Şekerpinarı Nature Reserve (2nd degree natural protected site);
- Tatarlı Village Nature Reserve (1st degree natural and archaeological protected site).

13.6 Marine Archaeology

The Adana Regional Board Directorate of Cultural Assets Protection has provided their opinion within the scope of Environmental Impact Assessment (EIA) for the Raw Material Supply, Storage and Port Facility Project (CPIR Port) dated 03.06.2020. Accordingly, it is required that a marine archaeological investigation study is undertaken by the Bodrum Museum of Underwater Archaeology in line with the provisions of Law on Preservation of the Cultural and Natural Assets (No: 2863)²⁹.

Accordingly, a marine archaeological investigation study was undertaken by the Bodrum Museum of Underwater Archaeology in line with the provisions of Law on Preservation of the Cultural and Natural Assets (No: 2863) between 29.06.2020 to 02.07.2020 for the marine section of the CPIR Port Project.

²⁷Adana Environmental Status Report, 2018

²⁸ Official website of Ministry of Culture and Tourism, Adana Regional Directorate of Cultural Heritage Preservation (Access Date: 11.05.2020)

²⁹ O.G. date/no: 23.07.1983/18113

Subsequently, Bodrum Museum of Underwater Archaeology provided an opinion letter and a report on 03.07.2020. CPIR Port Project is not in the areas where diving is prohibited within the scope of Article 35 of Law No. 863.³⁰ The deepest point within the marine section of CPIR Port Project was measured as 13 m. No cultural assets that are required to be preserved within the scope of Law on Preservation of the Cultural and Natural Assets (No: 2863) were encountered during the study. However, implementation of Chance Finds Procedure for the marine areas is deemed necessary.

In case any cultural assets are encountered during Project and Project's associated facility activities, the report requires stoppage of the works/activities in the area and notification of the closest Museum Directorate shall be notified. The illustrative photos from the CPIR Port Project site are presented below Figure 13-8.

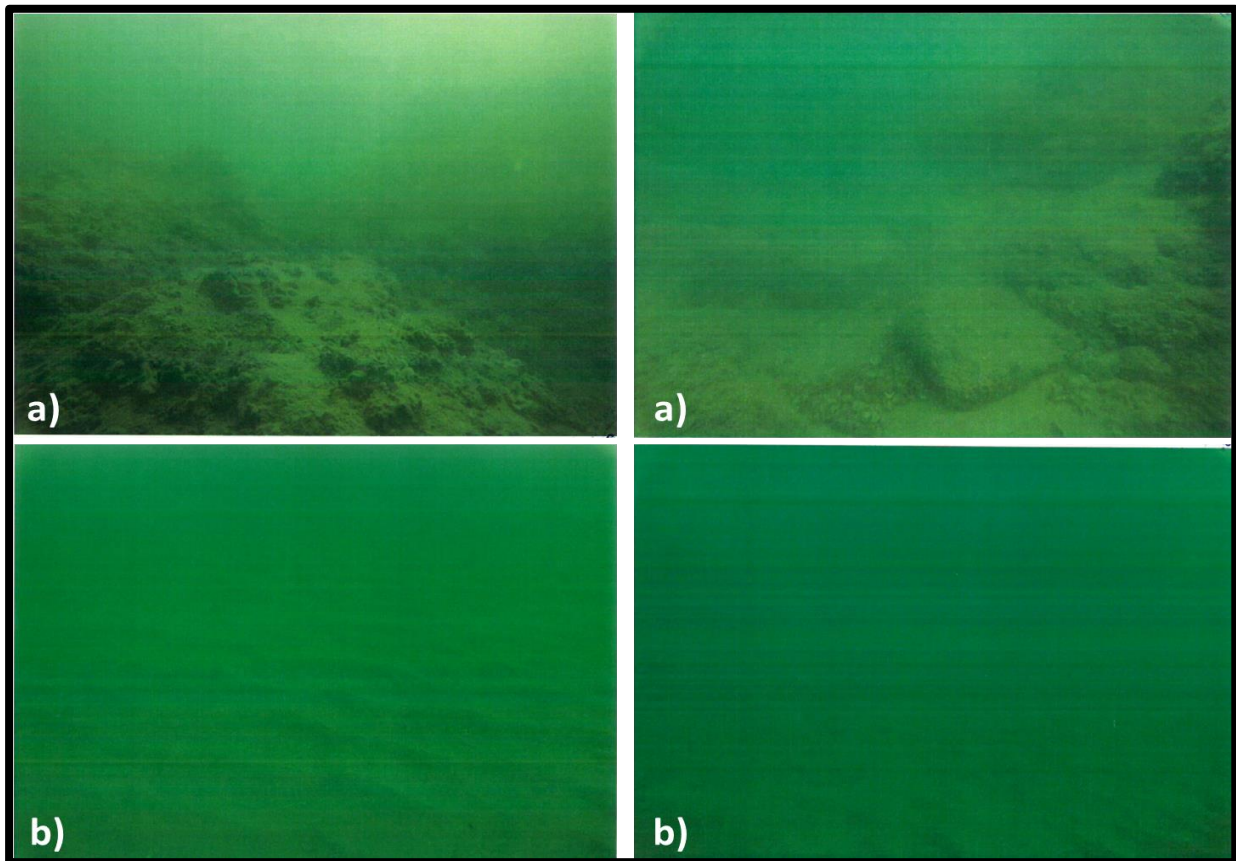


Figure 13-8. Views from Shallow (a) and Deep Sections (b) of the Marine Section of CPIR Port Project Site

As discussed in *Chapter 6: Geology, Soils, Sediments and Contaminated Land*, a side scan sonar study was performed to identify the seabed's surface characteristics and natural and unnatural structures by means of the Imagenex Yellowfin side scan sonar system.

³⁰ As stated in O.G. dated: 20.05.2016 which has been published with Council Decision Decrees No: 2016/8743 pursuant to official letter of MoCT (date/number: 09.03.2016/47054).

A total of 26 side scan sonar profiles perpendicular to the shoreline with a 95-105 m profile interval and 260 kHz frequency were taken on a 250 m sea surface. The study found that the seabed is generally in good condition and there are no unnatural structures identified in the investigation area. The illustrative pictures showing the side scan sonar study and side scan sonar mosaic map are shown in Figure 13-9 and Figure 13-10.

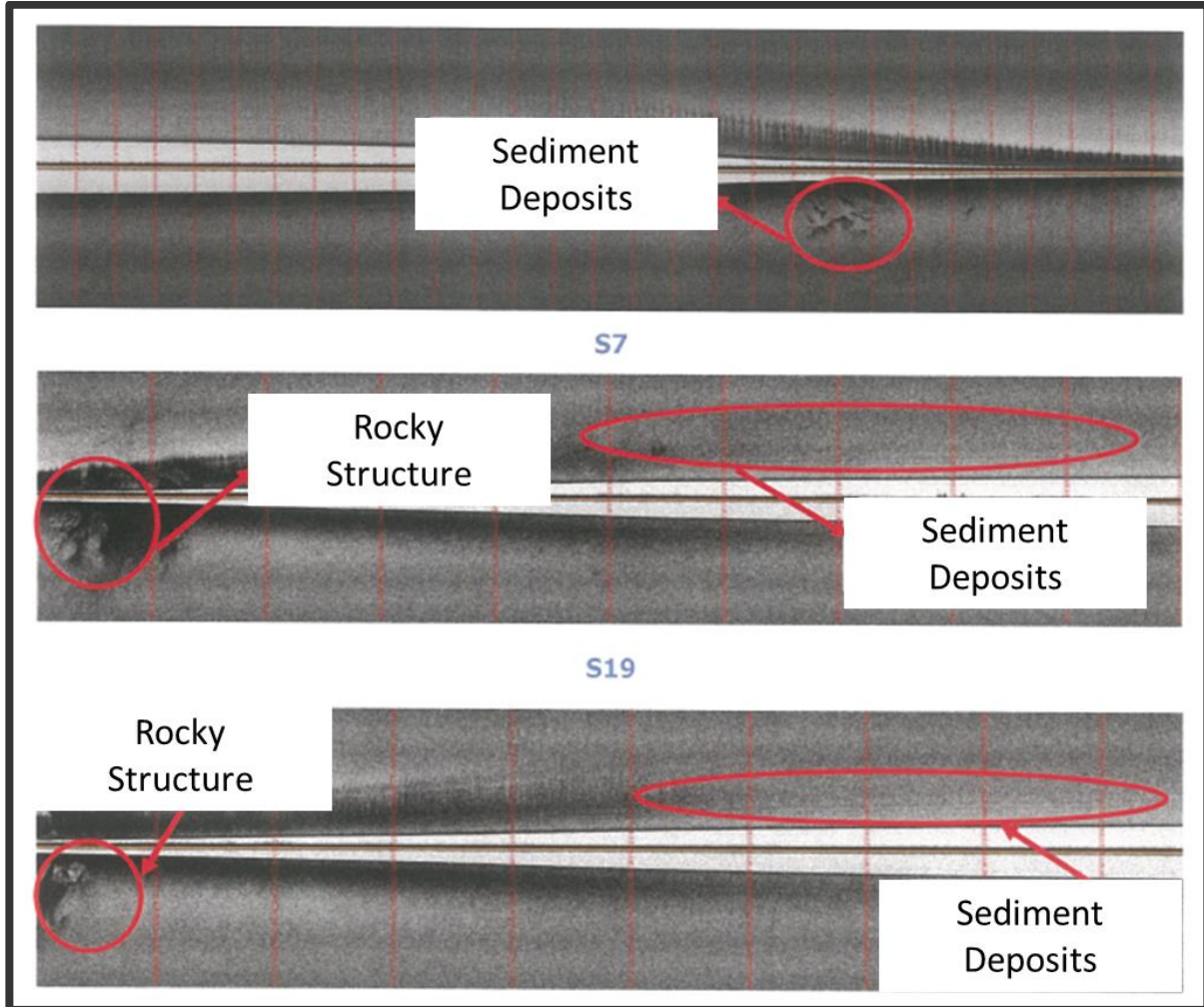


Figure 13-9. Side Scan Sonar Lines

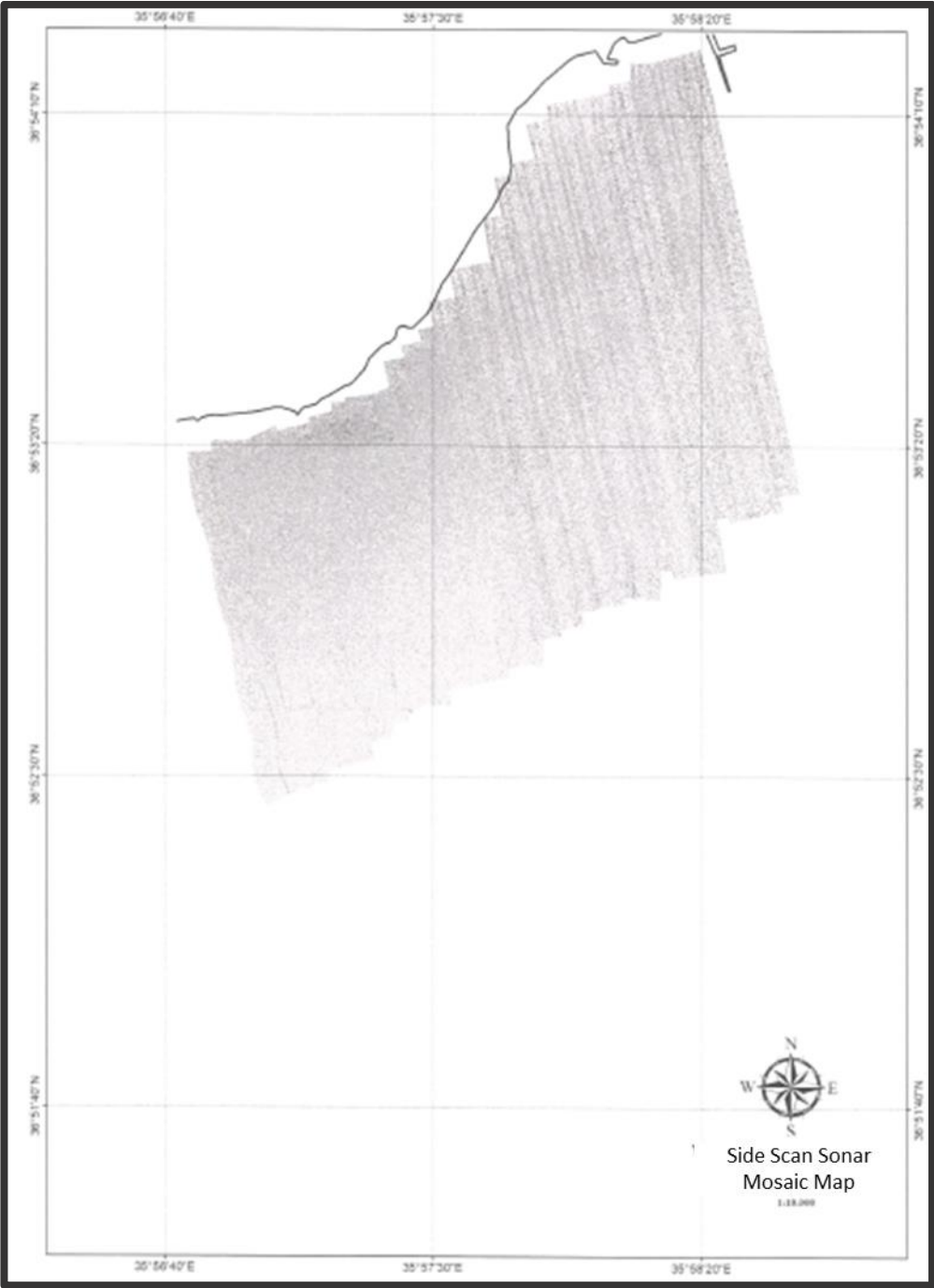


Figure 13-10. Side Scan Sonar Mosaic Map

13.7 Overall Assessment

13.7.1 Overall Assessment of Tangible Cultural Heritage

During the desk study, it was understood that there was one registered archaeological remains³¹ in the Project Area (see Figure 13-3, Figure 13-4 and Figure 13-5). This remains is Kurtpınar Ancient Waterway. The general material of the architectural structure is mortar and rough stones which contain volcanic natural soil. The use of the water system consisting of these mortared stone walls is quite common in the Roman states. In order to seal the walls, the inner parts of the channel that are in contact with water were plastered with mortar (see Figure 13-11. and Figure 13-12). It is possible to see this mortar in the part of the waterway remaining in the Project Area. Although they dry late, the materials with this structural feature have a very high strength³². In patches, the waterway remains reaches 2 meters and its width reaches about 1.5 meters. There is an aqueduct remaining (with an arch) in the northwest section of the Project Area. The aqueduct was designed as part of the waterway so that it can cross a small valley.

Due to the topographic structure, the canal was carved on the bedrock in certain places, but depending on the slope of the land, the mortar-walled canal was built in non-bedrock places. The part of the waterway that remains in the Project Area was made with a mortar-walled canal system. Since such ducts are usually made on slopes that are not too steep, they are covered with plate stones or mortar mesh systems in accordance with the elevation of the slope. Against natural disasters such as landslides, the elevation was adapted to the slope to prevent the accumulation of soil or stones on the channel.

³¹Current borders are determined by the decision of Adana Regional Councils for the Conservation of Cultural Property, dated 27.01.2012 and numbered 542.

³² Vann 1976, 169.



Figure 13-11. Kurtpinar Ancient Waterway Canal



Figure 13-12. Kurtpinar Ancient Waterway Mortared Wall

In addition, based on Adana Regional Council for the Conservation of Cultural Property data; there are 2 registered archaeological sites outside the Project Area but within the borders of the Ceyhan Petrochemical Industrial Zone. These sites are Karanlık Kapı Remains 1st and 3rd Degree Archaeological Site³³ and Medieval Turkish Cemetery³⁴. Karanlık Kapı Remains is 500 m far from the Project site. Here, a gate was made of local volcanic basalt stones, and there is an ancient road lined with the same material. The gate is also considered the southern gate of the ancient Cilicia Region. It is understood that the gate point of the door is vaulted. However, this vault has not survived to the present day. The walls facing the road are preserved. Except for the outward facing surface, other parts were built using brick and khorasan mortar. The road can be followed for a short distance. It is thought that it may have been used as a waterway because it is located in a narrow valley. The area also has the characteristics of the Roman Period Road architecture (see Figure 13-13).



Figure 13-13. Karanlık Kapı Remains (Karanlık Kapı 1st and 3rd Degree Archaeological Site)

³³ It was registered with the Adana Regional Councils for the Conservation of Cultural Property's decision dated 04.04.1996 and numbered 2445.

³⁴ It was registered with the Adana Regional Councils for the Conservation of Cultural Property's decision dated 26.04.2019 and numbered 11158.

The Medieval Turkish Cemetery (see Figure 13-14) is 3 km far from the Project Area; located to the north. The east-west oriented graves are surrounded by local stones.



Figure 13-14 Medieval Turkish Cemetery

Another registered archaeological site located to the east of the Project Area is Muttalip Huyuk, which remains in the Toros Tarım Facility today³⁵. There are also remains of mortared walls made of rubble stones on the Huyuk, which is about 40 meters high and was settled since the Chalcolithic period.

In the field studies carried out within the scope of the Project, archaeological traces were observed at two different locations, one inside the Project Area and the other one is outside the Project Area (see Figure 13-19)³⁶.

The first of these areas is named as "Archaeological Trace-1". The area is located in the southern part of the Project Area, near the seafront (see Figure 13-15). There are illicit digging pits opened by treasure hunters in the northeastern part of this site. In the western part of the illicit digging pit, possible base remains formed with large irregular stones were observed.

³⁵The area was declared as the 1st Degree Archaeological Site with the decision of Adana Regional Council for the Conservation of Cultural Property.

³⁶ The Project Company will apply to the Adana Regional Council for the Conservation of Cultural Property to obtain official decisions regarding these areas in line with Article 4 of the Law on the Conservation of Cultural and Natural Property No. 2863.

Ceramic pieces thought to belong to the Late Roman and Early Byzantine Periods were also found on the surface of the area, which is approximately 150 meters away from the sea. The intensity of the archaeological trace in the area is low corresponding to 1-5 pieces in each 10mx10m. There is a chance that these materials are carried from another archaeological site as the result of agricultural activities, erosion etc. in the area (see Figure 13-16).



Figure 13-15. Archaeological Trace-1



Figure 13-16. Late Roman- Early Byzantine Period Ceramic Pieces

The other site, where the archaeological traces were observed named “Archaeological Trace-2”, is located within the borders of the Ceyhan Petrochemical Industrial Zone, outside the Project Area (see. Figure 13-17). This area is approximately 1 km northeast of the Project Area. Ceramic pieces thought to belong to the Late Roman and Early Byzantine Periods were found on the surface of the area (see. Figure 13-17, Figure 13-18 and Table 13-3).



Figure 13-17. Archaeological Trace -2



Figure 13-18. Late Roman- Early Byzantine Period Ceramic Pieces

As a result of desk and field studies, it is determined that there is one registered cultural asset that is required to be protected within the Project Area and the Ceyhan Petrochemical Industrial Zone. In addition, it has been determined by field study archaeological traces exist in the Project site and its vicinity (see. Table 13-3).

Table 13-3. List of Immovable Cultural Assets in the Project Area and Its Vicinity

No	Name of the Area	Province	District/Neighborhood	Distance to the Project Area (km)	Registration Decision
1	Kurtpınar Ancient Waterway	Adana	Ceyhan/Kurtpınar	0	Adana Regional Council for the Conservation of Cultural Property's decision dated 27.01.2012 numbered 542
2	Karanlık Kapı Remains 1st and 3rd. Degree Archaeological Site	Adana	Ceyhan/Kurtpınar	0.5	Adana Regional Council for the Conservation of Cultural Property's decision dated 24.04.1996 and numbered 2445
3	Medieval Turkish Cemetery	Adana	Ceyhan/Kurtpınar	3	Adana Regional Council for the Conservation of Cultural Property's decision dated 26.04.2019 and numbered 11158
4	Muttalip Huyuk	Adana	Ceyhan/Sarımazı	1.2	Adana Regional Council for the Conservation of Cultural Property's Decision 1220
5	Archaeological Trace 1	Adana	Ceyhan/Kurtpınar	0	No Registration
6	Archaeological Trace 2	Adana	Ceyhan/Kurtpınar	1	No Registration

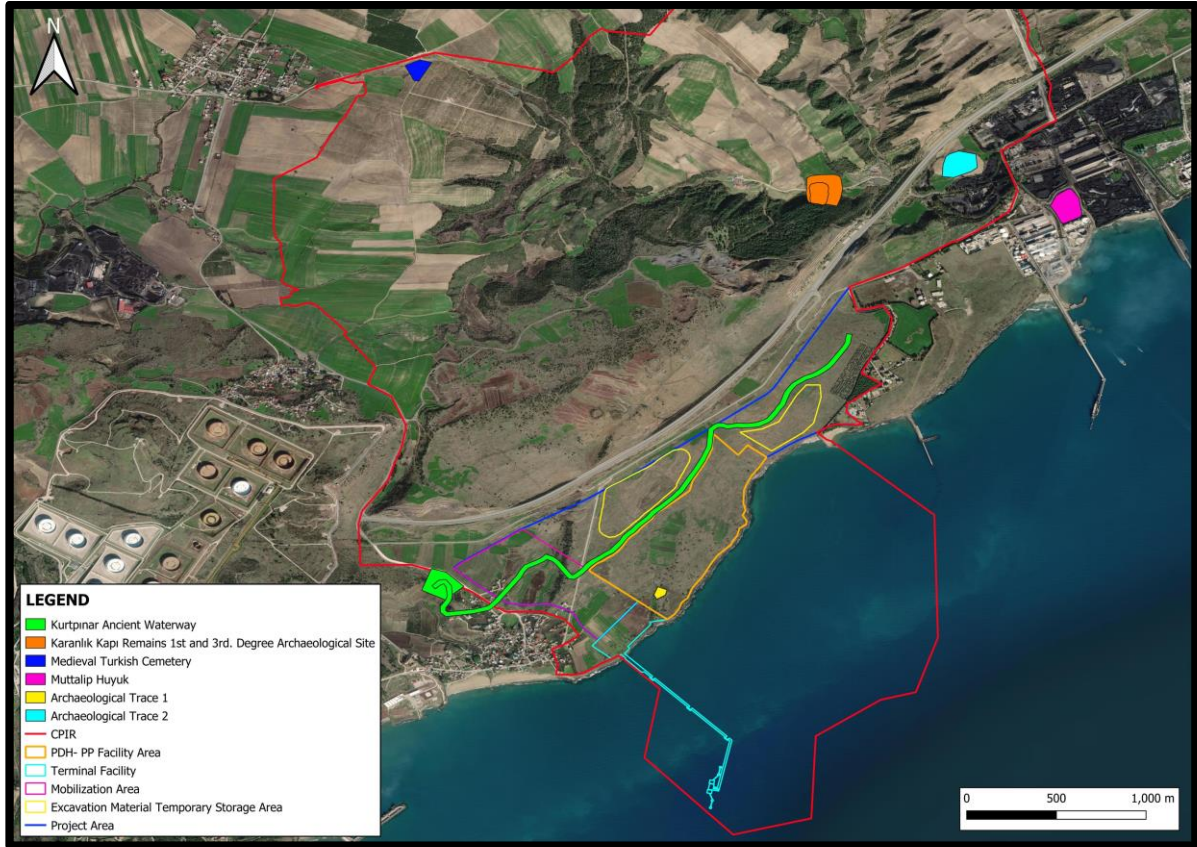


Figure 13-19. Immovable Cultural Assets in the Project Area and Surrounding Area

13.7.2 Overall Assessment of Intangible Cultural Heritage

Field studies for intangible cultural heritage have been carried out with qualitative interview technique in 7 settlements in the immediate vicinity of the Project. 38 people were interviewed within the scope of the study. Of these participants, 1 person lives in Kurtpınarı, 2 persons live in İncirli, 1 person in Gölovası, 10 persons in Kurtkulağı, 4 persons in Sarımazı, 4 persons in Yukarıburnaz, 4 persons in Aşağıburnaz, and 12 persons in Turunçlu (Table 13-4, Figure 13-20 and Figure 13-21). Relevant consultations with regard to intangible cultural heritage issue have been conducted with Incirli Mukhtar (head of community).

The distances from the neighborhoods/communities to the Project Site are given in Table 13-4.

Table 13-4. Settlement Information Included in the Study

Province	District	Neighborhood	Distance to Project Area (km)
Adana	Ceyhan	Kurtpınarı	3.5
Adana	Ceyhan	İncirli	0.2
Adana	Ceyhan	Kurtkulağı	5.8
Adana	Ceyhan	Gölovası	5
Adana	Ceyhan	Sarımazı	5.7
Hatay	Erzin	Yukarıburnaz	9.2
Hatay	Erzin	Aşağıburnaz	9
Hatay	Erzin	Turunçlu	7.3



Figure 13-20. Gölovası Settlement Vineyard House

Gölovası, Kurtpınarı, İncirli, Kurtkulağı, Sarımazi, Yukarıburnaz and Aşağıburnaz settlements located at a close distance to the Project are inhabited by Yoruks. Unlike all these settlements, Cretan immigrants live in Turunçlu settlement. All the local people living in the region speak Turkish, but Turunçlu people also speak Crete among themselves. Except for the Turunçlu people, residents of all other settlements are Sunni Muslims. The people of Turunçlu are Bektashi.

Within the scope of oral traditions passed from generation to generation, the people of the five settlements in the field of study know the stories of their ancestors who went to the Battle of Çanakkale, and the heroic stories of the militia who defended the national independence against the French occupation during the Turkish War of Independence. It was also informed by the local people that in Kurtkulağı Village there is a mansion that was seized and turned into a French Hospital. In Turunclu settlement, people know the stories of their ancestors migrating from Crete. Apart from heroic and immigration stories, other oral traditions (such as fairy tales, lullabies, legends, beliefs, idioms, proverbs, folk songs, poems, etc.) are maintained.

In the interviews, it was determined that some customs belonging to the turning points of life (birth, circumcision, military service, wedding, and death) still live in the region. These are briefly composed of the following traditions and practices:

- **Birth:** In pre-natal traditions, warm soil (or heated pot / heated cere or heated tile) is wrapped around the abdomen and groin to eliminate the infertility of women without children. When the time of birth is approaching the bed for the mother to lie down; clothes and the crib for the baby are prepared. The umbilical cord is cut, the honey with salt is prepared and the whole body of the baby is soaked in saltwater for a brief period and the baby is immediately washed with warm water and powdered. Salting is done more carefully in the mouth, armpits and feet, it is believed that when these parts are well salted, they will not smell when the baby grows up. After the baby's umbilical cord is cut, it is buried in places such as schools, hospitals etc. depending on the profession expected for the baby. When babies are born, a white lamp is lit in the room where the mother and baby sleep and a yellow muslin is covered over the cradle to prevent the baby from infant jaundice;
- **Circumcision:** While circumcision was formerly made by circumcisers and celebrated with circumcision feasts in the village, circumcision is performed in hospitals today. The circumcised child is guided by a car convoy and a special circumcision suit is dressed. Care is taken that the child is circumcised before starting primary school;
- **Military Service:** A little entertainment is organized for those who will go to the military. A flag is hung on the candidate soldier's house and henna is applied in his hands. In order for the soldier not to forget his home and to return safely, he is asked to lick the pacifier which he used as a baby and to bite a bagel. The pacifier and the bagel are hung on the wall and they remain there until he returns home. The candidate for the military is sent with a convoy on his journey;
- **Wedding:** Marriages in the region are arranged with advice of the elderly (matchmaking). Love marriages are also allowed. It is preferred for girls to marry from the age of 18 and for men from the age of 20-22. Generally, the age limit for marriage is considered to be 30. Betrothal ceremony is called "küçük tatlı" ("small dessert"). Today, there is no tradition of bride wealth. In the past, carpets were woven as dowry in Sarımazı, but today young people do not continue this tradition. Traditional handicrafts such as cross stitch crochet of cotton or wool still continued to be made. Prior to the wedding, together with the invitation cards, gifts called "okuntu" such as shalwars, carpets, muslins and socks are given to the guests according to their degree of closeness. During the wedding, a flag is hung on the wedding house. The flag is hung after the prayer on Friday, one day before the wedding, after eating the so-called "ağız tadı" (gusto which also means, enjoyment, harmony). Weddings take 3 days. Before the wedding, the animals are butchered and the main wedding dishes such as soup, tandoor kebab, analı kızılı (kind of soup made of meat and wheat), mantı (kind of ravioli), beans, rice pilaf, and ashura are prepared. Neighbors and relatives help with cooking. In addition to these traditions, some of which have disappeared in time, local folk dances are played in weddings in the region, such as oyun havası (traditional dance music) and çiftetelli (a folk dance performed in Turkey and the Balkan countries)

etc. Musical instruments such as traditional drums and flutes (davul&zurna) are among the main traditional musical instruments used in weddings;

- **Death:** The chin and toes of the deceased are tied. An iron knife is put on the abdomen after bathing of the dead is completed. The obituary is announced to the neighbors by the relatives through the mosque. Condolence reception takes 7 days. Food is brought to the funeral home by relatives and neighbors for seven days and shared with visitors.



Figure 13-21. Interviews in Turunçlu Settlement Village Coffeehouse

In addition to the traditions of the turning points of life mentioned above, it was determined that some customs were also kept alive in the celebration of religious feasts in the region. Preparations for religious feasts begin on the day of Arefe when cemetery visits are made, and refreshments are prepared for the guests coming during the feast. Generally, kömbe for the feasts is made, and holiday clothes are purchased for everyone, especially children. After the feast prayer, neighbors, relatives and friends pay visits to see each other. Newroz Festival is also celebrated in the region to meet the arrival of spring. While Newroz used to be celebrated collectively with a picnic at the seaside as festive, it has lost its former importance today. The “Cretan Festival” is held in the first week of September in Turunçlu settlement.

In addition, within the scope of traditional folk beliefs; vows are made to entombed saints. These sacred areas are visited for requests such as recovery from illness, having a job or child, having fortune, a safe return from the military. For this purpose, mostly “Topçu Dede Türbesi” (Topçu Dede Tomb) is visited. Topçu Dede Türbesi is located on Esbak Mountain in Kurtkulağı settlement. Its distance to the Project is about 4.86 km. It was determined that the tomb would not be affected by the construction activities of the Project. People living in Kurtkulağı and Kurtpınar go to the nearby Kazankaya Hill and tie cloth to the wish trees. The

hill in the Kurtkulağı District is approximately 2.75 km from the Project. It has been determined that the hill will not be affected by the construction activities of the Project. There is no wish tree tradition in other settlements. It has been observed that customs such as evil eye beads and pouring lead to repel evil eye continue. In Sarımazı settlement, large and small cattle skull sare hung on fences which indicates the garden boundary in order not to touch the evil eye, which have been seen in Anatolia since the Neolithic period.

As part of traditional medicine and healing practices, gentian is collected from the nearby mountains in all settlements. Yellow centaury oil, which is formed by dipping in olive oil, is applied to wounds, burns and rashes. In traditional folk medicine, bonesetters and healers, for umbilical hernia, are visited. It is believed that skin eruption³⁷ treatment passes by praying. Healers continue their tradition by lending a hand to one of their relatives before they die. Also, the people of the region stated that they took precautions by spreading salt which was chanted by a healer called "Yılançı Hacı" living in Hatay/Dörtyol in order to keep snakes and scorpions away from their homes until the healer's death in 2009. In diseases such as flu and pneumonia, cupping treatment is still preferred. In Turunçlu settlement, healers are called "sınıkçı".

The public economy based on local production and consumption, which is followed by local people to maintain their lives, in animal husbandry and agriculture performed traditionally based on the knowledge obtained from ancestors. As an agricultural product, wheat, sunflower, corn, peanut, watermelon, tangerine, orange are produced in most of the farms. In addition to these products, olive cultivation is made in Sarımazı settlement. There are Agricultural Credit Cooperative branches for farmers in all settlements.

During the interviews, it was found that traditional games such as tipcat, hide-and-seek, a sound, marble and leapfrogging were widely played by children in the past but today, these games were mostly replaced by computer games.

Within the scope of traditional handicrafts, cross stitch crochet of cotton and wool still continue. In addition, sewing courses are opened periodically in some settlements. According to the traditional architecture of the region, houses built using stone, wood and adobe together are no longer built. Single or double story buildings, mostly made of reinforced concrete, form today's architecture.

Traditional culinary culture consists of kömbe, börek (a general name for filled pastries in various shapes), bayram çöreği (a sweet pastry), analı kızılı (a kind of soup made of wheat and meat), sıkma (pastry filled with inced tomatoes and onions and served for breakfast), tırşik (soup of a local herb - arum maculatum), kebab, semolina halva, tulumba and hamur kızartma tatlısı (syrup-soaked pastries) çökelek (cottage cheese), tomato paste, pepper, jam and butter are made for the winter. Bringing people from different geographies and cultural structures in the past and having them resettled in this region exhibits itself in the local dishes of the villages in the region. It is observed that in Turunclu settlement where Cretan immigrants are living, a

³⁷ Shingles

diet based on seafood and vegetables (chicory, mustard, zucchini flower, bostan, mushroom, nopitaraca) has been adopted, whereas in other 5 settlements where Yoruks are located, meat-based diet is common.

As a result of the studies, it has been determined that the Project will not have any significant negative impact on intangible cultural heritage. The preparation of social investment project for rural tourism, including various projects including the ancient city of Issus (Epiphaneia) (Figure 13-7 - Table 13-2), which is included in the Project area, and their implementation together with the local actors in the region with the financial support of the Project, can create added value in the protection of cultural heritage in the region.

13.7.3 Critical Cultural Heritage

Critical cultural heritage is defined as ‘one or both of the following types of cultural heritage:

- i. The internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; or
- ii. Legally protected cultural heritage areas, including those proposed by host governments for such designation.

Examples of legally protected areas which would be considered as cultural heritage ‘include world heritage sites and nationally protected areas.

Under Performance Standard 8 critical cultural heritage should not be removed, significantly altered, or damaged. In exceptional circumstances when impacts on critical cultural heritage are unavoidable, a process of informed consultation and participation of the Affected Communities should be applied as described in Performance Standard 1 and which uses a good faith negotiation process that results in a documented outcome. External experts should be retained to assist in the assessment and protection of critical cultural heritage.

13.7.3.1 Internationally Recognised Cultural Heritage Sites

World Heritage List³⁸ and World Heritage Tentative³⁹ List of UNESCO are considered under the internationally recognized cultural heritage sites.

Turkey has 19 sites inscribed on the World Heritage List of UNESCO (as of 25 November 2021). Those located in the wider region of the Project are listed in Table 13-5 and shown in Figure 13-22. The closest site to the Project is the “Göbekli Tepe” in Şanlıurfa, which is located at a distance of 264 km to the south of the Project.

³⁸ <https://whc.unesco.org/en/list/>

³⁹ <http://whc.unesco.org/en/tentativelists/>

Among the sites included in the World Heritage Tentative List of UNESCO, 9 sites are located in the wider region of the Project. The closest sites to the Project are the “Ancient City of Anazarbos (Adana/Kadirli), which is located at a distance of 37 km to the north of the project and “Karatepe-Aslantaş Archaeological Site” in Osmaniye, which is located at a distance of 47 km in the north of the Project.

None of the internationally recognized cultural heritage sites is overlapping with the study area. Therefore, Project activities do not have any impact on the areas listed neither in the World Heritage List or the World Heritage Tentative list. In case alternative areas need to be identified during the construction or operation phase of the Project, such as quarries or dump sites, the areas listed in Table 13-5 below should be avoided.

Table 13-5. Internationally Recognized Cultural Heritage Areas
(World Heritage List and World Heritage Tentative List of UNESCO)

No	Site Name	Province	Distance to Project (km)
World Heritage List of UNESCO			
1	Nemrut Dağ	Adıyaman	272
2	Göbekli Tepe	Şanlıurfa	264
World Heritage Tentative List of UNESCO			
3	Ancient City of Anazarbos	Adana	37
4	Ancient City of Korykos	Mersin	186
5	Archeological Site of Zeugma	Gaziantep	169
6	Eshab-ı Kehf Kulliyeye (Islamic-Ottoman Social Complex)	Mersin	101
7	St. Pierre Church	Hatay	78
8	Karatepe-Aslantaş Archaeological Site	Osmaniye	47
9	The Underground Water Structures in Gaziantep; Livas' and Kastels	Gaziantep	127
10	Vespasianus Titus Tunnel	Hatay	86
11	Yesemek Quarry and Sculpture Workshop	Gaziantep	68

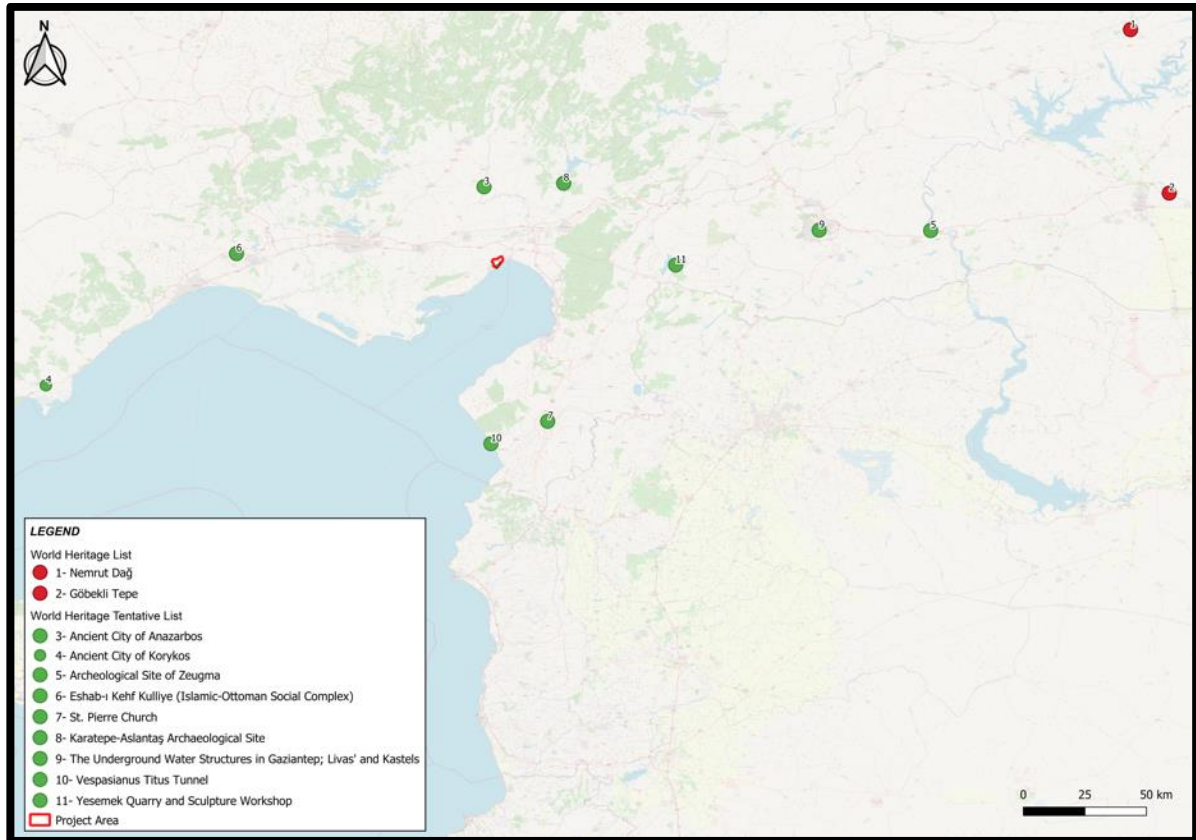


Figure 13-22. Internationally Recognized Cultural Heritage Sites

13.8 Impacts

The aim of this section is to identify the potential impacts on archaeological sites that may arise as a result of proposed Project activities, based on the significance impact criteria as described in *Chapter 4 - Scope and Methodology* of the ESIA and the findings of the desk-based literature review and site-specific archaeological walkover survey.

Archaeological and immovable cultural heritage assets in the Project Area and its surrounding area:

- may adversely be affected by erosion caused by Project activities;
- may be damaged physically as a result of Project activities (the removal of topsoil, excavation for access roads, construction of camps, equipment etc., and other excavation activities for the foundations at the site as well as due to movement of heavy vehicles to and from the Project site); and
- may be affected through dust emissions if not mitigated properly.

13.8.1 Impacts on Tangible Cultural Heritage

Field studies for cultural assets within the Project were carried out in accordance with the Law on Protection of Cultural Heritage numbered 2863. All areas identified within both the Project area and the Ceyhan Petrochemical Industrial Zone have been evaluated according to the criteria for Guidance on Heritage Impact Assessments for Cultural World Heritage Properties⁴⁰.

Within the scope of Ceyhan PDH-PP Project, it is planned to construct a Facility Area with PDH and PP Units and Base Campuses (see: Figure 13-1). In the field studies conducted for archaeological purposes, one registered ancient waterway (*Kurtpınar Ancient Waterway*) and one archaeological trace (*Archaeological Trace 1*) were identified within the Project Area.

In addition, it is understood as a result of the studies that there are two registered archaeological sites (*Karanlık Kapı Remains 1st and 3rd. Degree Archaeological Site and Medieval Turkish Cemetery*) and one archaeological trace (*Archaeological Trace 2*) outside the Project Area but within the Ceyhan Petrochemical Industrial Zone. The term "archaeological trace" here refers to areas having some archaeological findings and surface materials (such as ceramics, roof tiles, architectural stone blocks, glass object shards, stone object shards, metal object shards, bones, etc.). The intensity of the archaeological traces in these areas is low corresponding to 1-5 pieces in each 10mx10m. There is a chance that these materials are carried from an archaeological site as the result of agricultural activities, erosion etc. or these materials are related to a small archaeological site/some remains in the area.

Also, the presence of one more registered archaeological site (Muttalıp Huyuk) 1,2 km away from the Project Area and outside the Ceyhan Petrochemical Industrial Zone has been identified.

The "Kurtpınar Ancient Waterway" belonging to the Roman period is and registered and protected by the law numbered 2863, may be negatively affected by the Project construction activities. The waterway goes along the Project site in proximity to its boundary, as well as in proximity to the Excavation Material Temporary Storage Area (Figure 13-19). In particular, the waterway might be affected during construction works and blasting activities at the Project site. The waterway crosses the Mobilization Area. It will be also crossed by the Project roads.

In order to protect the ancient waterway as in-situ and to prevent possible negative effects of construction activities, the official letter of Adana Regional Council for Protection of Cultural Property (dated 25.06.2021 and numbered E-26571867-165.99-1486096) states that before the blasting activities planned to be carried out within the scope of the Project construction works, the necessary mitigation measures must be taken to prevent potential damages to the ancient waterway on the Project site, and technical documentation showing the condition of the ancient waterway should be prepared and submitted to Adana Regional Council for Protection of Cultural Property.

⁴⁰ ICOMOS (2011), "Guidance on Heritage Impact Assessments for Cultural World Heritage Properties", <https://kvmmgm.ktb.gov.tr/Eklenti/4365,kmed-rehberipdf.pdf?0>

In accordance with the above-mentioned official letter, technical documentation (measured drawings, 3D Modelling, etc.) for the ancient waterway will be completed in accordance with best practices and all data and technical documentation must be submitted to Adana Regional Council for Protection of Cultural Property.

Prior to all ground breaking activities under Archaeological Trace 1, it is recommended to deliver the specific chance find procedure to staff that will carry out the work and to conduct all activities under the supervision of an archaeologist employed by the Project management. Toothless buckets have to be used during the levelling activities to be carried out under the field work. Field work should be stopped in case of encountering any archaeological remains and the chance find procedure shall be followed. Field studies have also been carried out within the borders of the Ceyhan Petrochemical Industry Region in order to determine the level of influence of the Project activities on archaeological and tangible cultural heritage assets in and within immediate vicinity of the Project site. In these studies, it has been determined that there are 2 registered archaeological sites in Ceyhan Petrochemical Industrial Zone, apart from the Ceyhan PDH-PP Project Area. Additionally, archaeological traces were present at one location (at Archaeological Trace-2), apart from the Ceyhan PDH-PP Project Area.

According to the evaluation results, it was determined that 4 archaeological remains outside the Project are not directly affected by Project construction activities. However, these areas may also be exposed to some indirect effects of construction activities to be carried out during the Project. In the construction phase of the Project some activities that will be required for the construction such as possible explosions, working of crushers, vibration created by heavy tonnage vehicle traffic, opening new access roads apart from the existing ones, opening stone and sand quarries along with excavation lines may have negative effects on these cultural assets. Therefore, when designing all Project activities, it is recommended to make necessary plans to take into account the existing archaeological and cultural assets and to minimize the possible effects on these assets. The significance of the impacts on tangible cultural heritage assets during the construction period is presented in Table 13-6.

The significance of the impacts on tangible cultural heritage assets during the operation period is presented in Table 13-7. Impact significances are determined based on the methodology given in Chapter 4 of this ESIA Report.

Many archaeological sites have been identified around the Project Area and in the region as a result of past surveys and archaeological excavations. In this context, the "Cultural Heritage Management Plan" (Annex N) and the "Chance Find Procedure" (Annex O) should be used during the activities that will be carried out in the Project Area and that require intervention to the soil. This plan and procedures should be shared with subcontractors of the Project and the subcontractors should prepare a more detailed "Cultural Heritage Management Plan" and "Chance Find Procedure" to apply them throughout the Project.

Table 13-6. Construction Phase Impact Magnitude on Tangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
Impacts on Tangible Cultural Heritage Assets	Blasting	Negative Direct	Definition	Blasting works will be at the Project site, but the impact area is local given that the impact extends to areas around the project site.	Blasting operations are planned to take a total of 10 months, to be carried out every day, and the possible impacts are expected to be short.	Blasting work will be regulated according to legal standards, but it is likely to result in tangible changes in the tangible cultural heritage.	-	If the necessary precautions are not taken, the stone flying and vibration that will occur during the explosions can damage the cultural heritage.	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
			Score	Project Site	Short	Medium	N/A	Likely	Mid-term
			Value	1	2	3	-	3	3
		Impact Magnitude (G+D+I+F (or L)) x R		27					
	Surface stripping	Negative Direct	Definition	Surface stripping will be at the Project site, but the impact area is local given that the impact extends to areas around the project site.	Surface stripping is planned to take a total of 10 months, to be carried out every day, and the possible impacts are expected to be short.	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	If the necessary precautions are not taken, the surface stripping may damage the cultural heritage.	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
			Score	Project Site	Short	Medium	N/A	Likely	Mid-term
			Value	1	2	3	-	3	3
		Impact Magnitude (G+D+I+F (or L)) x R		27					

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
	Transportation	Negative Direct	Definition	The construction phase of the project is planned to take 38 months. Heavy material will be transported to the region during the construction period and the impact is expected to be regional.	Considering that the construction period will last 38 months, transportation will continue throughout the construction.	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	If the necessary precautions are not taken, the transportation activities may damage the cultural heritage.	Potential impacts are expected to be reversible within one to five years after cessation of the impact source and/or with restoration activities.
			Score	Project Site	Long	Medium	N/A	Likely	Mid-term
			Value	1	4	3	-	3	3
		Impact Magnitude (G+D+I+F (or L)) x R		33					
	Excavation	Negative Direct	Definition	Excavation works will be at the Project site, but the impact area is local given that the impact extends to areas around the project site.	Excavation works are planned to take a total of 10 months, to be carried out every day, and the possible impacts are expected to be short.	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	If the necessary precautions are not taken, the excavation works may damage the cultural heritage.	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
			Score	Local	Short	Medium	N/A	Likely	Midterm
			Value	1	2	3	-	3	3
		Impact Magnitude (G+D+I+F (or L)) x R		27					

Table 13-7 Operation Phase Impact Magnitude on Tangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
Impacts on Tangible Cultural Heritage Assets	Transportation	Negative Direct	Definition	Impacts is expected to remain at the regional level.	It is foreseen that the operation of the project will take 49 years and the impacts will cease after the operation period ends.	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	If the necessary precautions are not taken, the transportation works may damage the cultural heritage during the operational phase.	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
			Score	Regional	Long	High	N/A	Likely	Midterm
			Value	2	4	4	-	3	3
	Impact Magnitude (G+D+I+F (or L)) x R		39						

Vulnerabilities and Receptor Sensitivity for tangible cultural heritage assets are presented in Table 13-8.

Table 13-8. Vulnerabilities and Receptor Sensitivity for Tangible Cultural Heritage Assets

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Kurtpinar Ancient Waterway	High	Potential impacts related to: Non-compliance with the requirements given in the soil section of the soil stripping and blasting operations to be carried out during the construction period of the project, Non-compliance with the Cultural Heritage Management Plan and the Chance Find Procedure Blasting, surface stripping, excavation, traffic risks	5

An assessment of key impact significances for tangible cultural heritage assets is presented in Table 13-9.

Table 13-9. Impact Significances for Construction Phase on Tangible Cultural Assets

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts of Blasting Activities	27	5	135	Medium	If no mitigation is taken, the vibration effects of the blasting may have an impact on the tangible cultural heritage.
Impacts of Surface stripping	27	5	135	Medium	During soil stripping potential impacts: <ul style="list-style-type: none"> • loss of small pieces of cultural heritage found in the soil (small statues, coins, small glass vessels, jewellery, etc.) remaining in the top soil; • damage to structures such as building walls, large statues and tombs that were left in the soil lath; and • finding of archaeological values that buried in the ground.
Impacts of Transportation Activities	33	5	165	high	Temporary and permanent roads used for access to the Project Site is crossing the Kurtpinar ancient waterway. If no mitigation is taken vibration and other physical impacts might cause significant impact.

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts of Excavation Works	27	5	135	Medium	During excavation potential impacts: <ul style="list-style-type: none"> • damage to structures such as building walls, large statues and tombs that were left in the soil lath; and • finding of archaeological values that buried in the ground.

An assessment of key impact significances for tangible cultural heritage assets is presented in Table 13-9.

Table 13-10. Impact Significance for Operation Phase on Tangible Cultural Assets

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts of Transportation Activities	39	5	210	High	Permanent roads used for access to the Project Site are crossing the Kurtpınar ancient waterway. If no mitigation is taken vibration and other physical impacts might cause damage to the site.

13.8.2 Impacts on Intangible Cultural Heritage

The assessment of the Project's impact on the intangible cultural heritage (ICH) has been made at and around the Project are including associated facilities in accordance with international standards and local legislation. The findings are presented in Section 13.7.2 above. The findings show a number of local ICH elements, but none of them are specific to the geography studied. Additionally, none of the identified ICH elements are directly or indirectly tied to a particular location, particular building, or particular artifact. Therefore, it can be concluded that the intangible cultural property samples determined in the study were not affected by the Project and associated facilities. The registered ICH elements in the national inventory and fieldwork findings are listed below (see. Table 13-11, Table 13-12 and Table 13-13).

Table 13-11. Intangible Cultural Heritage Elements of the Provinces Crossed by the Project as Registered in the National Inventory

Province	District	Village	Name of The Element in The National Inventory
Adana	Ceyhan	Kurtkulağı-Kurtpınarı-İncirli-Sarımazı	Kaynar (Puerperant Sharbat)
			Keşkek/Local Dish
Hatay	Erzin	Yukarıburnaz-Aşağıburnaz-Turunçlu	Hidirellez
			Traditional Olive Oil

Table 13-12. The Village Basis Defined Intangible Cultural Heritage Elements in the Fieldwork

Province	District	Village	Defined Intangible Cultural Heritage Elements
Adana	Ceyhan	Kurtkulağı	Topçu Dede Shrine
			Wish Tree Practices
		Kurtpınarı	Wish Tree Practices
		İncirli	Wish Tree Practices
		Sarımazı	Animal Skull
		Kurtkulağı	Narratives about Heroes on Turkish Independence War
Hatay	Erzin	Turunçlu	Historical Immigration Stories
			Festival of Cretans

Table 13-13. The Defined Common Intangible Cultural Heritage Elements for All Villages in the Fieldwork

Province	District	Village	Defined Intangible Cultural Heritage Elements
Adana-Hatay	Ceyhan-Erzin	Kurtkulağı-Kurtpınarı-İncirli-Sarımazı	Turkish Evil Eye Bead
			Tales, Lullaby, Legends, Beliefs, Idioms, Proverbs, Folk Songs, Manis etc.
	Erzin	Turunçlu	Traditional treatment of infertility
			Puerperal Sherbet
			Bathing Babies with Traditional Beliefs

Province	District	Village	Defined Intangible Cultural Heritage Elements
			Celebration for first tooth of babies
			Circumcision Ceremony
			Engagement Ceremony
			Trousseau tradition
			Henna Night
			Wedding Ceremony
			Condolence Ceremony
			Kanaviçe/ Cross-stitch
			Needle lace
			Walnut Churchkhela Making
			Analı Kızlı/ Local Dish
			Tırşik/Local Dish
			Semolina Desert/Local Dish
			Syrup-soaked pastry (Tulumba Desert) /Local Dish
			Sıkma/Local Dish
			Newroz
			St. John's Wort oil
			Cupping
			Steel and Stick
			Hide and Seek

The significance of the impacts on the intangible cultural heritage assets of the construction phase is presented in Table 13-14.

Table 13-14. Construction Phase Impact Significances Impacts on Intangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on Intangible Cultural Heritage Assets	Negative Direct	Definition	Intangible cultural heritage impact area has been evaluated as regional.	Impacts may occur during the 38 months of construction.	Impacts are limited with interaction of the construction activities and the impact cannot be easily detected.	-	The effect is unlikely to occur.	Reversing the change in intangible cultural assets requires mid term.
		Score	Local	Long	Negligible	N/A	Likely	Short/Mid-term
		Value	2	4	1	-	2	3
		Impact Magnitude (G+D+I+F (or L)) x R	27					

The significance of the impacts on the Intangible Cultural Heritage assets of the operation phase is presented in Table 13-15.

Table 13-15. Operation Phase Impact Magnitude on Intangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on Intangible Cultural Heritage Assets	Negative Direct	Definition	Intangible cultural heritage impact area has been evaluated as regional.	Impacts may occur during 49 years of operation phase.	Impacts are limited with interaction of the construction activities and the impact cannot be easily detected.	-	The effect is likely to occur.	Reversing the change in intangible cultural heritage may take 1 to 5 years.
		Score	Local	Very Long	Negligible	N/A	Likely	Mid-term
		Value	2	5	1	-	2	3
		Impact Magnitude (G+D+I+F (or L)) x R	30					

Vulnerabilities and Receptor Sensitivity for intangible cultural heritage assets is presented in Table 13-16.

Table 13-16. Vulnerabilities and Receptor Sensitivity for Intangible Cultural Heritage Assets

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Local Communities	Low	Intangible cultural assets identified in the Project are very common in the region as well as in the country.	1

An assessment of key impact significances for intangible cultural heritage assets is presented in Table 13-17.

Table 13-17. Impact Significances of Intangible Cultural Heritage Assets

Potential Impact		Impact Magnitude	Sensitivity	Impact Significance		
				Value	Score	Description
Construction	Impacts on Intangible Cultural Heritage Assets	27	1	27	Low	Main impact is expected due to relation of the local community with the construction workforce. On the other hand, workforce will live in the accommodation units situated in the Project Area. Therefore, relation with the community will be limited. And, probability of the impact is unlikely.
Operation	Impacts on Intangible Cultural Heritage Assets	39	1	39	Low	The number of Project personnel during construction phase will be approximately 320 people. Though some communities are located in proximity of the Project site (especially Incirli), no significant impact on intangible cultural heritage is anticipated.

As the result of field works on the intangible cultural heritage, any harm to cultural patterns because of the Project activities is not foreseen for all settlements in the study area.

During the Project activities, active stakeholder engagement has to continue and any sensitivity which may the Project cause must be resolved. In addition, the Project staff must be informed about the intangible cultural heritage assets in the region and their importance for the local communities.

On the other hand, the economic activity which will be created by the Project and expected increase in commercial activities in the region during the operation period after the construction of the Project may also create negative impacts on intangible cultural heritage. Preparing social investment Program supporting rural tourism and economy including various Project that cover the ICH samples located in the Projects and implementing these in cooperation with the local actors with the financial support of the Project may create added value in safeguarding cultural heritage and economic development of the people in the region.

13.9 Mitigation Measures

The Project layout has been configured while taking into account the ancient water pathway and its protection zone. The following additional mitigation measures are to be undertaken by the Project Company based on the impact assessment:

- The Project design will take into consideration avoidance of significant adverse impacts to archaeological and immovable cultural heritage assets;
- Number of over crossings on ancient waterway required for temporary and permanent road will be minimized and, special crossing designs (such as steel over-pass bridges) will be developed. Crossing designs are subject to approval of relevant authorities. And effectiveness and structural integrity of the bridges should be monitored regularly;
- According to the Blasting Report, blasting design regards special mitigations to minimize vibration impact on ancient waterway which is defined as smaller than 25 mm/s at ancient waterway. These mitigations regard shallow/low density blast use and 30 m protection zone to the ancient water way. These mitigations will be strictly implemented and vibration at ancient waterway will be monitored at least three stations during blasting operation;
- Training of personnel involved in blasting activities with regard to cultural heritage issues and potential impact on the ancient waterway will be conducted;
- Before and during soil stripping works, one archeological expert will walk over planned striping line(s). After completion of the stripping archeological expert will control stripped section for potential chance find;

- The Ancient Waterway will be marked and fenced before start of construction works. Additionally, signposts will be located at necessary location such as overpass crossings or working areas close to the ancient waterway;
- Illustrative materials showing the Ancient Waterway route will be issued. The Ancient Waterway should be processed on the project alignment sheets. Construction works at the area of Ancient Waterway route will be prohibited. Workers will be trained on the restrictions related to the presence of the Ancient Waterway;
- In addition, the ancient waterway has been taken into account within the scope of vibration impact assessment in *Chapter 10: Noise*, and necessary mitigation measures are included;
- Survey map (rölöve planı) reflecting precise location, dimension and characteristics such as stone arrangements, thickness of the existing walls and construction methods of the ancient waterway will be prepared as the request of the local authority. The map will be used to understand any potential damage caused by the construction works as well as reconstruction of the damaged section as original condition;
- A “Cultural Heritage Management Plan” and “Chance Find Procedure” will be prepared to be used during construction, operation and decommissioning phase of the Project to minimize the possible effects on cultural heritage assets. Similar documents will be developed and implemented by the SPV managing the Terminal Facility, which will also apply to marine activities;
- Should chance finds of archaeological assets objects occur during Project construction activities, the relevant museum directory will be informed of chance finds pursuant to Law No: 2863;
- In order to protect the ancient waterway from possible negative effects of construction activities, detailed research will be carried out during the Project’s pre-construction phase concerning the protection boundaries determined by the Protection Board, under the supervision of Adana Cultural Heritage Preservation Board and Adana Museum Directorate. The research may be initiated by cleaning, drilling and, if necessary, rescue works (including geophysical studies) in the ancient water pathway and protection zone. In case of discovery of movable archaeological remains during these works, the Project’s Chance Find Procedure will be followed;
- The Project Company shall further pay attention to on-site protection of the ancient water pathway through readily developed plans, scaled drawings and provisions stated in official correspondences. In case there are any revisions in these plans and drawings, the necessary approval of the Board will be obtained;
- For ongoing protection of the ancient waterway, the Project Company will ensure all necessary measures are taken in line with the provisions of Plan notes presented for the 1/1,000 implementation zoning plan revision (dated/numbered: 05.07.2019/2019/1-3), 12.07.2019 (UİP38413- NİP38412);

- In the case of chance finds, the “Archaeological Chance Find Report Form” will be completed by the site manager to record the date and time of discovery, coordinates of the location of the chance find, description of the chance find, contacts made with the authorities and decisions taken, and the date of recommencement of work;
- The Chance Find Procedure will include provisions on the notification of relevant competent bodies of found objects or sites; delivering training to the Project personnel including contractor and sub-contractor employees on the procedure; and securing the location of finds to avoid any further disturbance or destruction;
- The “Cultural Heritage Management Plan” and “Chance Find Procedure” will be shared with all subcontractors. The Project Company will ensure that subcontractors will apply the abovementioned plan/procedure during the Project lifetime;
- The Company will also share the results of Cultural Heritage Impact Assessment (this document), the “Cultural Heritage Management Plan” and “Chance Find Procedure” with other companies within the CPIR area to inform them on the results of the assessment and best practices adopted by the Company. The Company will coordinate with other companies implementing projects within the CPIR area as necessary. The Company might participate in implementing joint measures with other companies of the CPIR area with regard to protection of cultural heritage (for example with regard to protection of the Ancient Waterway) as appropriate.

13.9.1 Provisions of Implementation Zoning Plan

In addition to these mitigation measures to be implemented by the Project Company, the following provisions will also be applied for the Project based on the 1/1,000 implementation zoning plan⁴¹:

Law on the Protection of Culture and Natural Assets No. 2863 and its associated regulations as well as Adana Regional Cultural Heritage Conservation Board’s decisions and resolutions shall be applied for the 1st and 3rd degree archaeological sites and protection areas;

An opinion letter shall be secured from the Adana Regional Cultural Heritage Conservation Board prior to any Project activities within the ancient water pathway protection zone;

Projects and activities related to cultural preservation works within the premises of the ancient water pathway protection zone are to be prepared in line with the provisions of the plan, and shall not be undertaken without approval of Adana Regional Cultural Heritage Conservation Board;

Development and expansion of zoning roads in areas that cross the ancient water pathway and protection zone shall be assessed at the upper layer to avoid impacting

⁴¹ Revision 12.07.2019 (UİP38413- NİP38412)

this registered immovable cultural asset. This will require approval of Adana Regional Cultural Heritage Conservation Board. If any archaeological findings are encountered, the activities shall be stopped and the relevant museum authority shall be notified pursuant to the article 4 of the Law No: 2863;

It is obligatory to notify the nearest museum authority or local authority within three days once movable and immovable cultural and natural assets are encountered during the excavation works, or if an individual knows or has recently encountered a cultural and natural asset in their own land.

During National EIA Studies and zoning plan preparation stage, experts from Adana Museum visited the Project Site. In line with the site visit, MoCT's Directorate of Adana Cultural Heritage Conservation Regional Board has provided board decision (date/number: 26.04.2019/11159) regarding the Draft Zoning Plan of the Ceyhan Energy Specialized Industrial Zone through an official letter (dated: 30.04.2019). According to this Board Decision, the following requirements are provided for the Draft Zoning Plan:

- 1st degree archaeological site (regarding ancient waterway) shall be incorporated to the implementation zoning plan and relevant planning shall be made considering the archaeological site boundaries;
- The ancient water pathway protection zone shall be designated as a "green area" pursuant to the decision (date/number: 27.01.2012/542). Where the designation is not possible, the associated assessment shall be made by the related authorities and the following statement will be incorporated to the explanation report of the Plan: "Projects including conservation of cultural heritage and protection zone shall not be implemented without board approval";
- Planned road development and road expansion projects will have an impact on the cultural heritage. The following statement will be incorporated into the Plan: "Planned road development and road expansion projects which cross the boundaries of the ancient water pathway and its protection zone shall be designed at top elevation and necessary approval of Cultural Heritage Conservation Regional Board shall be granted for the implementation of the Projects";
- The intensity of the archaeological traces in these areas is low corresponding to 1-5 pieces in each 10mx10m. There is a chance that these materials are carried from another archaeological site as the result of agricultural activities, erosion in the area. However, these traces must be reported to the nearest Museum Directorate in accordance with Article 4 (Notification Obligation) of the Law No. 2863 on the Protection of Cultural and Natural Assets (Law No. 1983). The Project Owner must make this notification as soon as possible;
- In case any chance find is encountered, the construction activity will cease immediately and the site manager will be contacted. The nearest Museum Directorate will be notified

pursuant to Article 4 of the Law on Preservation of Cultural and Natural Assets (Law No. 2863).

13.10 Residual Impacts

The residual impact as a result of Project activities on the archaeological remains is estimated to be Low significance, following full development and implementation of the defined mitigations and implementation of the corresponding “Cultural Heritage Management Plan” and “Chance Find Procedure” and the mitigation measures described above throughout the lifetime of the Project. The assessment of the magnitudes and significances of the residual impacts after mitigation measures for construction phase and operation phase are shown in Table 13-20 and Table 13-21, respectively. Impact significance estimated for residual impact on intangible cultural heritage assets are also provided in Table 13-24.

Table 13-18. Construction Phase Residual Impact Magnitude on Tangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
Impacts on Tangible Cultural Heritage Assets	Blasting	Negative Direct	Definition	Blasting works will be at the Project site, but the impact area is local given that the impact extends to areas around the project site.	Blasting operations are planned to take a total of 10 months, to be carried out every day, and the possible impacts are expected to be short.	With the Implementation of the mitigations potential vibration will be decreased below 25 mm/s which is defined as safe value for the ancient waterway.	-	If the necessary precautions are taken, impact will unlikely occur.	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
		Score	Project Site	Short	Negligible	N/A	Unlikely	Mid-term	
		Value	1	2	1	-	1	3	
	Impact Magnitude (G+D+I+F (or L)) x R		15						
	Surface stripping	Negative Direct	Definition	Surface stripping will be at the Project site, but the impact area is local given that the impact extends to areas around the project site.	Surface stripping is planned to take a total of 10 months, to be carried out every day, and the possible impacts are expected to be short.	Archaeological expert will make walk over check before and after soil stripping. This will decrease the impact on the cultural assets subject to chance find. Implementation of the Cultural Heritage Management Plan and Chance Find Procedure.	-	If the necessary precautions are taken, impact will unlikely occur.	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
		Score	Project Site	Short	Negligible	N/A	Unlikely	Mid-term	
		Value	1	2	1	-	1	3	
	Impact Magnitude (G+D+I+F (or L)) x R		15						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
	Transportation	Negative Direct	Definition	The construction phase of the project is planned to take 38 months. Heavy material will be transported to the region during the construction period and the impact is expected to be regional.	Considering that the construction period will last 38 months, transportation will continue throughout the construction.	Implementation of the special crossing design and Cultural Heritage Management Plan and Chance Find Procedure intensity will be minimum Negligible value.	-	If the necessary precautions are taken, impact will unlikely occur.	Potential impacts are expected to be reversible within one to five years after cessation of the impact source and/or with restoration activities.
		Score	Project Site	Long	Negligible	N/A	Unlikely	Mid-term	
		Value	1	4	1	-	1	3	
		Impact Magnitude (G+D+I+F (or L)) x R	21						
	Excavation	Negative Direct	Definition	Excavation works will be at the Project site, but the impact area is local given that the impact extends to areas around the project site.	Excavation works are planned to take a total of 10 months, to be carried out every day, and the possible impacts are expected to be short.	Implementation of Cultural Heritage Management Plan and Chance Find Procedure intensity will be minimum Negligible value	-	If the necessary precautions are taken, impact will unlikely occur..	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
		Score	Project Site	Short	Negligible	N/A	Unlikely	Midterm	
		Value	1	2	1	-	1	3	
		Impact Magnitude (G+D+I+F (or L)) x R	15						

Table 13-19. Operation Phase Residual Impact Magnitude on Tangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on Tangible Cultural Heritage Assets	Transportation Negative Direct	Definition	Impacts is expected to remain at the regional level.	It is foreseen that the operation of the project will take 49 years and the impacts will cease after the operation period ends.	Monitoring of overcrossings and regular monitoring of protection measures (i.e. fences etc. around ancient waterway required). Also, implementation of Cultural Heritage Management Plan and Chance Find Procedure intensity will be minimum negligible value	-	If the necessary precautions are taken, impact will unlikely occur.	In case of the realization of the impact, it is foreseen that the rehabilitation works will take more than one year.
		Score	Regional	Long	Negligible	N/A	Unlikely	Midterm
		Value	2	4	1	-	1	3
	Impact Magnitude (G+D+I+F (or L)) x R		24					

An assessment of residual impact significances for tangible cultural heritage assets is presented in Table 13-20.

Table 13-20. Residual Impact Significances for Construction Phase on Tangible Cultural Assets

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts of Blasting Activities	15	5	75	Low	Blasting design and mitigations defined in the ESIA should be implemented strictly and vibration level at ancient waterway should be lower than 25 mm/s. Effective implementation of the Cultural Heritage Management Plan and Chance Find Procedure is essential to minimize the impact. Regular visual monitoring and instrumental vibration monitoring at ancient waterway are essential during blasting.
Impacts of Surface stripping	15	5	75	Medium	Archaeological expert should perform walkover survey. Training of the personnel another important tool for implementation of the chance find procedure. Effective implementation of the Cultural Heritage Management Plan and Chance Find Procedure is essential to minimize the impact.
Impacts of Transportation Activities	21	5	105	Medium	Design, construction, and monitoring of overcrossings on the ancient waterway are critical. Design and construction should be in line with the local authorities' approval. Effective implementation of the Cultural Heritage Management Plan and Chance Find Procedure is essential to minimize the impact.
Impacts of Excavation Works	15	5	75	Low	Monitoring by an archaeological expert during soil stripping and implementation CMP and chance find procedure will decrease the potential impact during excavation works. On the other hand, there always be a chance to find unknown archaeological asset at deeper levels (especially soil accumulated locations) due to that reason, archaeological expert should work until completion of excavation works

An assessment of key impact significances for tangible cultural heritage assets is presented in Table 13-21.

Table 13-21. Residual Impact Significance for Operation Phase on Tangible Cultural Assets

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts of Transportation Activities	24	5	120	Medium	Design, construction, and monitoring of overcrossings on the ancient waterway are critical. Design and construction should be in line with the local authority's approval. Effective implementation of the Cultural Heritage Management Plan and Chance Find Procedure is essential to minimize the impact.

The significance of the residual impacts on the intangible cultural heritage assets of the construction phase is presented in Table 13-22.

Table 13-22. Construction Phase Residual Impact Magnitude on Intangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on Intangible Cultural Heritage Assets	Negative Direct	Definition	Intangible cultural heritage impact area has been evaluated as regional.	Impacts may occur during the 38 months of construction.	Minimization of the local contact and training of the work force about local culture and acting with good behaviour on local people, with the implementation of Labour Management Plan, the intensity of the impact can be decreased to Negligible level. .	-	Training of the workforce on cultural sensitivities and implementation of the Labour Management Plan will decrease the likelihood of the impact.	Reversing the change in intangible cultural assets requires mid term.
		Score	Project Site	Long	Negligible	N/A	Unlikely	Short/Mid-term
		Value	1	4	1	-	1	2
	Impact Magnitude (G+D+I+F (or L)) x R	14						

The significance of the residual impacts on the Intangible Cultural Heritage assets of the operation phase is presented in Table 13-23.

Table 13-23. Operation Phase Residual Impact Magnitude on Intangible Cultural Heritage Assets

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility I
Impacts on Intangible Cultural Heritage Assets	Negative Direct	Definition	Intangible cultural heritage impact area has been evaluated as regional.	Impacts may occur during 49 years of operation phase.	Inclusion of some cultural support project, which also cause some small scale economic benefits such as support for handmade textiles, in the Social Investment Program developed by the Project company may help to sustain of the intangible assets such as Needle Lace etc.	-	Inclusion of the local cultural intangible assets in the Social Investment Program can decrease the likelihood of the impact.	Reversing the change in intangible cultural heritage may take 1 to 5 years.
		Score	Local	Very Long	Negligible	N/A	Unlikely	Short/mid-term
		Value	2	5	1	-	1	2
	Impact Magnitude (G+D+I+F (or L)) x R	18						

An assessment on residual impacts on key impact significances for intangible cultural heritage assets is presented in Table 13-24.

Table 13-24. Residual Impact Significances of Intangible Cultural Heritage Assets

Potentail Impact		Impact Magnitude	Sensitivity	Impact Significance		
				Value	Score	Description
Construction	Impacts on Intangible Cultural Heritage Assets	14	1	14	Negligible	Implementation of the Labour Management Plan and implementation of the necessary workforce training regarding cultural assets can decrease the impact to a low residual level in term of impact significance.
Operation	Impacts on Intangible Cultural Heritage Assets	18	1	18	Negligible	The number of Project personnel during construction phase will be approximately 320 people. Though some communities are located in proximity of the Project site (especially Incirli), no significant impact on intangible cultural heritage is anticipated.

13.11 References

ARÇED, (2007), *A Pipeline Through History*, Ankara

Altay, M. H. (1965), *Adım Adım Çukurova*, Adana

Durugönül, S. (1995), "Kilikia Kulelerinin Tarihteki Yeri", *Ege Üniversitesi Yayınları Arkeoloji Dergisi III*, 197-203.

Durugönül, S. (1998a), "Seleukosların Olba Territorium'undaki "Akkulturation" Süreci Üzerine Düşünceler", *Olba I*, 69-76.

Durugönül, S. (2001-2002), "Development of Ancient Settlements in Cilicia", *Adalya V*, 107-118.

Garstang, J. (1937a), "The First Imperial Hittite Sculpture Found South of the Taurus", *The Illustrated London News* 191/5129, 210-211.

Garstang, J. (1937b), "Explorations in Cilicia: The Neilson Expedition, Preliminary Report", *Annals of Archaeology and Anthropology XXIV/1-2*, 52-68.

Garstang, J. (1937c), "Explorations in Cilicia: The Neilson Expedition, Fifth Interim Report", *Annals of Archaeology and Anthropology XXVI/3-4*, 89-92.

Garstang, J. (1939), "Discoveries in Cilicia", *Palestine Exploration Quarterly LXXI*, 137-143.

Garstang, J. (1953). *Prehistoric Mersin: Yümüktepe in Southern Turkey*, Oxford.

Gates, M. H. (1999) "Kinet Höyük in Eastern Cilicia: A Case Study for Acculturation in Ancient Harbors", *Olba 2*: 303- 312.

Girginer, K. S. (2007), "Ceyhan Ovası 'ndaki Arkeolojik Çalışmalara Genel Bir Bakış", 1. *Ceyhan Sempozyumu Bildiriler Kitabı*, Ceyhun'dan Ceyhan'a, Ceyhan.

Gürbüz, K., (1999) "An example of river course changes on a delta plain: Seyhan Delta (Çukurova Plain, Southern Turkey)", *Geological Journal 34*: 211-222.

Herodotos (M.Ö. 490-424), *Herodot Tarihi*, (çev. M. Ökmen), (2002), İstanbul.

Hild, F., Hellenkemper, H. (1990) "Kilikien und Isaurien", *Tabula Imperii Byzantini 5*, Wien.

Kurt, M., (2006). "M.Ö. I. Bin yıl Asur-Anadolu İlişkilerinde Kilikya Bölgesi", *Bellekten*, Cilt LXX, Ankara, 257/ 1-25.

Kurt, Mehmet. (2011'a). "Roma'nın Anadolu Politikaları Çerçevesinde Kilikya'nın Siyasal ve İdari Durumu", *Arkeoloji ve Sanat*, 136/ 159-168.

Kurt, Mehmet, (2011b) "Ovalık Kilikya'da M.Ö. I. Yüzyıl Roma Yönetim Olgusu ve Tarkondimotos Krallığı", *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 31/ 429-446.

Kurt, Mehmet. (2011c). "M.Ö. I. Yüzyıl Roma-Parth İlişkilerinin Kilikya Eyaleti'ndeki Yansımaları", *Uluslararası Avrasya Sosyal Bilimler Dergisi*, 2/ 1-14.

Magie, D. (1950) *Roman Rule in Asia Minor*, New Jersey.

Özmen, O. (2000). "Adana'nın Tarihsel Yapı Dokusu: Kaleler, Kervansaraylar-Hanlar ve Camiler", *Efsaneden Tarihe, Tarihten Bugüne Adana: Köprü Başı*, (Eds: S. Koz-E. Artun), İstanbul, 202-233.

Pamir, Hatice (2009)." *Alalakh'dan Antiokheia'ya Hatay'da Kentleşme Süreci*" *Mustafa Kemal Üniversitesi, Sosyal Bilimler Enstitüsü Dergisi*, c.6,258-288,Hatay.

Salman, İ. (2000). "Adana'nın Antik Kentleri", *Efsaneden Tarihe, Tarihten Bugüne Adana: Köprü Başı*, (Eds: S. Koz-E. Artun), İstanbul, 179-201.

Sayar, M. H. & Siewert, P. vd. (1993), "Doğu Kilikya'da Epigrafi ve Tarihi-Coğrafya Araştırmaları, 1991", *Araştırma Sonuçları Toplantısı X*, 175-192.

Sayar, M. H. & Siewert, P. vd. (1994), "Doğu Kilikya'da Epigrafi ve Tarihi-Coğrafya Araştırmaları, 1992", *Araştırma Sonuçları Toplantısı XI*, 137-160.

STRABON (2000). *Antik Anadolu Coğrafyası (Geographika XII-XIV)*, Adnan Pekman (çev.), İstanbul.

Şenyurt, Y., Akçay, A., Kamaş, Y., (2006). *Yüceören Doğu Kilikya'da Bir Helenistik-Roma Nekropolü*. Ankara.

Tobin, J. (2001), "The Tarcondimotid Dynasty in Smooth Cilicia", *Kilikia: Mekânlar ve Yerel Güçler (M.Ö. 2. Binyıl-M.S. 4. Yüzyıl)*, *Uluslararası Yuvarlak Masa Toplantısı Bildirileri, İstanbul*, (eds. É. Jean & A. M. Dinçol vd.), 1-5 Kasım 1999, *Varia anatolica XIII*, Paris, 381-387.

Turfan, K. (1941)." *Eski Önasya Kronolojisinin Mühim Bir Noktası*" *Sümeroloji Araştırmaları*, Dil ve Tarih Coğ.Fak. Neşriyatı No:1. İstanbul.

Ünal, A., Girginer, K. S. (2007), *Kilikya-Çukurova, İlk Çağlardan Osmanlılar Dönemi'ne Kadar Kilikya'da Tarihi Coğrafya, Tarih ve Arkeoloji, Kizzuwatnalı Kraliçe Puduhepa ve Yerleşme Alanları Rehberi Ekleriyle Birlikte*, İstanbul.

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (CHAPTER-14)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Version	Revision	Date	Prepared By	Quality Management By	Checked By		Approved By
Draft	A.0	March 2021	Yasemin Çelikel (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Isabelle Kim (RINA)	Elif Doğru (RINA)
	A.1	October 2021	Şeyma Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Isabelle Kim (RINA)	Elif Doğru (RINA)
	A.2	December 2021	Şeyma Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Buket Mesta (2U1K)	
	A.3	August 2022	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		Ilya Gulakov (RINA)
	A.4	October 2022	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		Ilya Gulakov (RINA)
Final Draft	B.0	February 2023	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003
FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
☎: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
14. SOCIOECONOMICS	6
14.1 Scope.....	6
14.2 Methodology for the Baseline Assessment.....	11
14.2.1 Primary Data Collection	12
14.2.2 Sampling for the Social Impact Assessment	17
14.2.3 Secondary Data Collection.....	18
14.3 Baseline Conditions.....	19
14.3.1 Population and Demographics	19
14.3.2 Economy, Employment and Occupations.....	20
14.3.3 Industrial Activities	26
14.3.4 Education.....	27
14.3.5 Recreation and Tourism.....	29
14.3.6 Health	32
14.3.7 Infrastructure and Services	34
14.3.8 Vulnerable Groups.....	35
14.3.9 Project Information Level	40
14.4 Impact Assessment for Construction Phase	47
14.4.1 Direct and Indirect Employment Opportunities	47
14.4.2 Impact Related to Provision of Temporary Workforce Accommodation.....	48
14.4.3 Impact on Population and Demographics.....	48
14.4.4 Impact Associated with Workers Influx.....	48
14.4.5 Land Acquisition and Resettlement.....	48
14.4.6 Traffic Impacts	56
14.4.7 Impact Significances for Construction Phase of the Project	57
14.5 Impact Assessment for Operation Phase	63
14.5.1 Benefits to National Economy	63
14.5.2 Impacts on Direct and Indirect Employment.....	68
14.5.3 Impacts on Road and Marine Traffic	68
14.5.4 Impact Significances for Operation Phase of the Project.....	71
14.6 Mitigation Measures	75
14.6.1 Construction Phase.....	75
14.6.2 Operation Phase.....	78
14.7 Residual Impacts.....	79
14.8 Summary of Analysis Outcomes.....	81

LIST OF TABLES

	<u>Page</u>
Table 14-1. Social Area of Influence.....	7
Table 14-2. Surveys and interviews conducted by 2U1K.....	12
Table 14-3. Populations of project affected neighborhoods and number of surveys	17
Table 14-4. Education Level/ Household Income Crosstabulation	22
Table 14-5. Employment areas of the interviewees during the field study.....	22
Table 14-6. Distribution of agricultural areas in Ceyhan.....	23
Table 14-7. Land ownership status within the Social Aol.....	24
Table 14-8. Agricultural Products within the Social Aol.....	24
Table 14-9. Types of Livestock Activities	25
Table 14-10. Common Economic Activities within the Aol	25
Table 14-11. Education level in Adana (Aged 6 and over).....	28
Table 14-12. Education Level in Aol.....	28
Table 14-13. Overview of the health sector in Adana, 2018.....	33
Table 14-14. Cause of Death in Adana, 2019.....	33
Table 14-15. Availability of infrastructure and services within the Aol.....	34
Table 14-16. Approximate number of people/households in vulnerable groups within the Social Aol (according to information provided by Mukhtars (community heads) and based on results of household survey)	38
Table 14-17. Needs' assessment within the Aol (based on mukhtars' interviews)	40
Table 14-18. Potential labour force in the neighbourhoods.....	40
Table 14-19. Perceptions of mukhtars about the Project	41
Table 14-20. Summary of key informant interviews	42
Table 14-21. Olive trees frequency.....	54
Table 14-22. Construction Phase Impact Magnitude	57
Table 14-23. Vulnerabilities and Receptor Sensitivity	61
Table 14-24. Impact Significances.....	61
Table 14-25. Operation Phase Impact Magnitude.....	71
Table 14-26. Vulnerabilities and Receptor Sensitivity	73
Table 14-27. Impact Significances.....	73
Table 14-28. Construction Phase Residual Impact Significance	80
Table 14-29. Operation Phase Residual Impact Significance	80

LIST OF FIGURES

	<u>Page</u>
Figure 14-1. Nearby neighbourhoods and sensitive receptors in the vicinity of the Project site	10
Figure 14-2. Closer view of land use in the close vicinity of the Project site	11
Figure 14-3. Distribution of interviewees by place of residence	13
Figure 14-4. Interview in Kurtpınarı (faces are blurred due to confidentiality reasons)	14
Figure 14-5. Interview in Kurtkulağı	14
Figure 14-6. Interview in Sarımazı (faces are blurred due to confidentiality reasons)	15
Figure 14-7. Women focus group discussion (faces are blurred due to confidentiality reasons).....	17
Figure 14-8. Gender and age distribution	18
Figure 14-9. Kurtpınarı Population Profile.....	20
Figure 14-10. Kurtkulağı Population Profile	20
Figure 14-11. Sarımazı Population Profile	20
Figure 14-12. Gölovası Population Profile	20
Figure 14-13. Distribution of employment by cities (Source: The Economy of Adana Presentation-March 2020).....	21
Figure 14-14. Distribution of fishing and farming activities within the Social Aol.....	25
Figure 14-15. Toros Tarım Primary School.....	29
Figure 14-16. Historical and cultural places, and natural assets in the region (1) Taşköprü (Justinianus Roman Bridge), 2)Adana Archaeology Museum, 3) Adana Atatürk House Museum, 4) Bebekli Church (Italian Catholic Church), 5) Adana Bedesten,6) Big Clock, 7) Yağ Mosque, 8) Adana Great Mosque, 9) Karatepe-Aslantaş National Park, 10) Aladaglar National Park, 11) Yumurtalik Lagoon National Park, 12) Anavarza Ancient City and Anavarza Castle, 13) Comona (Shar) Ancient City, 14) Misis Ancient City (Mopsuestia), 15) Misis Mosaic Museum, 16) Magarsus Ancient City, 17) Kozan (Sis) Castle and Monastery .	31
Figure 14-17. Views from Ancient Waterway (1), Karanlık Kapı Remains (2), Medieval Turkish Cemetery (3)	32
Figure 14-18. Residential Area within the Project Site – 1	51
Figure 14-19. Residential Area within the Project Site – 2	51
Figure 14-20. Residential Area within the Project Site – 3	52
Figure 14-21. Residential Area within the Project Site – 4	52
Figure 14-22. Residential Area within the Project Site – 5	53
Figure 14-23. Residential Area within the Project Site – 6	53
Figure 14-24. The restaurant within the CPIR.....	55
Figure 14-25. The restaurant within the CPIR.....	55
Figure 14-26. Co-Period Comparison of Plastic Product Production (Source: Turkey Polypropylene Sector Monitoring Report, 2019 ⁷).....	63

Figure 14-27. Co-Period Comparison of Plastic Product Import (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)..... 64

Figure 14-28. Co-Period Comparison of Plastic Product Export (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)..... 64

Figure 14-29. Co-Period Comparison of Domestic Consumption of Plastic Products (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)..... 65

Figure 14-30. Co-Period Comparison of Domestic Consumption of Plastic Raw Materials (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)..... 66

Figure 14-31. Change in Turkey's import of polypropylene by years (Source: Turkey Polypropylene Sector Monitoring Report, 2017)..... 67

Figure 14-32. Change in Turkey's export of polypropylene by years (Source: Turkey Polypropylene Sector Monitoring Report, 2017⁷)..... 67

ABBREVIATIONS

ABPRS	Address Based Population Registration System
AoI	Area of Influence
BOTAŞ	Turkish Petroleum Pipeline Company
BIL	BOTAŞ International
BTC	Baku-Tbilisi-Ceyhan Crude Oil Pipeline
Ceyhan PDH-PP Project / Project	Ceyhan Propane Dehydrogenation - Polypropylene Production Facility
Ceyhan PP A.Ş. or Project Company	Ceyhan Polipropilen Üretim A.Ş.
CLS	Community Level Surveys
CPIR	Ceyhan Petrochemical Industrial Region or Ceyhan Energy Specialized Industrial Zone
CPIR Port	Raw Material Supply, Storage and Port Facility Project
EBRD	European Bank for Reconstruction and Development
ESIA	Environmental and Social Impact Assessment
FGD	Focus Group Discussion
GBVH	Gender-based Violence and Harassment
GDP	Gross Domestic Product
GNP	Gross National Product
GVA	Gross Value Added
HHS	Household Surveys
HDPE	High density polyethylene
IFC	International Finance Corporation
KII	Key Informant Interview
LDPE	Low density polyethylene
LOA	Length Overall
O.G.	Official Gazette
PAGEV	Turkish Plastics Industry Foundation
PAP	Project Affected Person
PET	Polyethylene Terephthalate
PR	Performance Requirements
PS	Performance Standards
PVC	Polyvinyl Chloride
TAYSEB	Toros Adana Yumurtalık Free Zone Founder and Operator Co.
TUIK/ TURKSTAT	Turkish Statistical Institute
URAK	International Competition Research Institute

14. SOCIOECONOMICS

14.1 Scope

This chapter presents an assessment of the potential socioeconomic impacts of the Ceyhan Propane Dehydrogenation - Polypropylene Production Facility (the Project) and of associated facilities. It describes the socioeconomic baseline conditions of the Project social area of influence, and assesses relevant socioeconomic impacts of the Project.

This chapter describes how the existing local/regional/national socioeconomic conditions will be affected based on the review of the following standards:

- IFC Performance Standard (PS) 1: Assessment and Management of Environmental and Social Risks and Impacts;
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 1: Assessment and Management of Environmental and Social Impacts and Issues;
- IFC Performance Standard (PS) 2: Labor and Working Conditions;
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 2: Labor and Working Conditions;
- IFC Performance Standard (PS) 4: Community Health, Safety, and Security;
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 4: Community Health and Safety;
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;
- IFC Performance Standard (PS) 5: Land acquisition and involuntary resettlement;
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 7: Indigenous Peoples;
- IFC Performance Standard (PS) 7: Indigenous Peoples;
- Finance Corporation (IFC) "Good Practice Note: Addressing the Social Dimensions of Private Sector Projects.

IFC Performance Standard 7 recognizes that indigenous people as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population and sets objectives to anticipate and avoid adverse impacts of Projects on them through ensuring appropriate management and consultation principles. No Indigenous Peoples were also identified as part of the field surveys

and consultations conducted as part of the ESIA process. As there are no indigenous people in Turkey the requirements set out in this PS are not considered applicable to the Project.

A number of other issues related to social factors are addressed in *Chapter 15: Community Health and Safety* and *Chapter 16: Labour and Working Conditions*. The Human Rights Impact Assessment (HRIA) is prepared for the Project and is given as Annex M. Project impacts and mitigation methods are covered in detail in this report. This chapter has been prepared considering information on stakeholder engagement activities conducted, which are discussed in the Stakeholder Engagement Plan.

The Project is planned to be developed in the premises of Ceyhan Petrochemical Industrial Region or Ceyhan Energy Specialized Industrial Zone (CPIR) which is located in İncirli locality, Kurtpınarı neighbourhood, Ceyhan district of Adana province.

The dominant land use in the surrounding area of the Project site includes industrial facilities, forestation and forest areas located approximately 1.5 km distance in the CPIR area as well as residential areas.

The closest settlement is the Kurtpınarı neighbourhood with its two localities: İncirli and Karatepe. The Kurtpınarı neighbourhood center is located at approximately 3.5 km northwest. The İncirli locality is approximately 50 m to the southwest of the Project site boundary and the Karatepe locality is at approximately 2.2 km to the northwest. Furthermore, Sarımaçı neighbourhood of Ceyhan district and Gölovası neighbourhood of Yumurtalık district are located 6.5 km northeast and 5.1 km southwest of the Project site boundary, respectively.

Kurtpınarı, Karatepe, Sarımaçı and Gölovası neighbourhoods are expected to experience the potential land acquisition impacts and community health and safety impacts in addition to other environmental and social impacts. Therefore, they are considered within the Primary Social Area of Influence.

Furthermore, the overall AoI of the Project covers neighbourhoods within a radius of approximately 15 km in order to understand potential impacts and appropriate mitigation measures to minimize impacts that may affect local residents' life quality, e.g. stress impact caused by traffic movement, impact on infrastructure used by the villages). Further details on the area of influence can be found in Table 14-1 below.

Table 14-1. Social Area of Influence

Primary Social Area of Influence-Settlements				
Province	District	Neighborhoods	Settlements	Description of Potential Impacts
Adana	Ceyhan	<ul style="list-style-type: none"> Kurtpınarı 	<ul style="list-style-type: none"> İncirli 	<p>İncirli is the closest settlement to the Project site.</p> <p>During construction and operation periods:</p>

Primary Social Area of Influence-Settlements				
Province	District	Neighborhoods	Settlements	Description of Potential Impacts
				<p>impacts caused by dust, noise and vibration;</p> <p>impacts by conflicts caused by labor influx;</p> <p>impacts of acquisition of houses and farmland;</p> <p>impacts of traffic;</p> <p>impacts of life and fire risks;</p> <p>impacts of employment opportunities and local procurement are expected.</p>
			<ul style="list-style-type: none"> Karatepe, Karayılan and center of Kurtpınarı 	<p>During construction and operation periods:</p> <p>impacts caused by dust, noise and vibration;</p> <p>impacts by conflicts caused by labor influx;</p> <p>impacts of acquisition of houses and farmland;</p> <p>impacts of traffic;</p> <p>impacts of infrastructure risks;</p> <p>impacts of life and fire risks;</p> <p>impacts of employment opportunities and local procurement are expected.</p>
		<ul style="list-style-type: none"> Kurtkulağı Sarımazı 		<p>During construction and operation periods:</p> <p>impacts by conflicts caused by labor influx;</p> <p>impacts of acquisition of farmland;</p> <p>impacts of traffic;</p> <p>impacts of employment opportunities and local procurement are expected.</p>
	Yumurtalık	<ul style="list-style-type: none"> Gölovası 		<p>During construction and operation periods:</p> <p>impacts of terrestrial and marine traffic is expected.</p>
Primary Social Area of Influence-Businesses				
Businesses			Description of Potential Impacts	
Cengiz Restaurant/İncirli			It is expected that the business potential will increase due to the Project related activities. The impacts mentioned above for the İncirli settlement are also relevant to Cengiz Restaurant.	
Esentepe Kilyos Restaurant/İncirli			Esentepe Kilyos Fish Restaurant is located within the boundaries of the Project site. The fish restaurant is currently closed.	
Primary Social Area of Influence-Fishermen				
Location			Description of Potential Impacts	
Fishermen in İncirli			Marine traffic and restrictions may affect fishing activities.	
Fishermen in Gölovası				

Primary Social Area of Influence-Settlements				
Province	District	Neighborhoods	Settlements	Description of Potential Impacts
Primary Social Area of Influence-Affected Households and Land Users/Owners				
Households and Land Owners/Users		Description of Potential Impacts		
Households in Incirli		Economic and/or physical displacement.		
Land owners/users in Incirli				
Primary Social Area of Influence-Facilities				
Facilities		Description of Potential Impacts		
BOTAŞ Facility (BOTAŞ and Botaş International (BIL)		Traffic, pressure on infrastructure, labor influx, risk of fire can affect facilities.		
TOROS Agri-Industry				
Primary Social Area of Influence-Schools				
Schools		Description of Potential Impacts		
Torus Tarım Primary School		Traffic, pressure on infrastructure, labor influx, risk of fire can affect schools.		
Turkish Petroleum Pipeline Company (BOTAŞ) Facility Primary School and Kindergarten				
Primary Social Area of Influence-Workers				
Project Workers (including third party workers)		Potential risks related to labour and working conditions, etc.		
Secondary Social Area of Influence				
Province	District	Neighborhoods		
Ceyhan	<ul style="list-style-type: none"> Sağırlar Aydınlı Narlık Selimiye Hamidiy Çiftlikler 	<ul style="list-style-type: none"> Erenler Değirmendere Çevretepe Dokuzteke Körkuyu Soğukpınar İmran Dutlupınar 		
	Yumurtalık	<ul style="list-style-type: none"> Hamzalı Narlıören Sugözü 		
Erzin	<ul style="list-style-type: none"> Yukarıburna Aşağıburnaz Turunçlu 			
Supply Chain Workers				

The locations of nearby neighbourhoods and sensitive receptors in the vicinity of the Project site are illustrated in Figure 14-1.

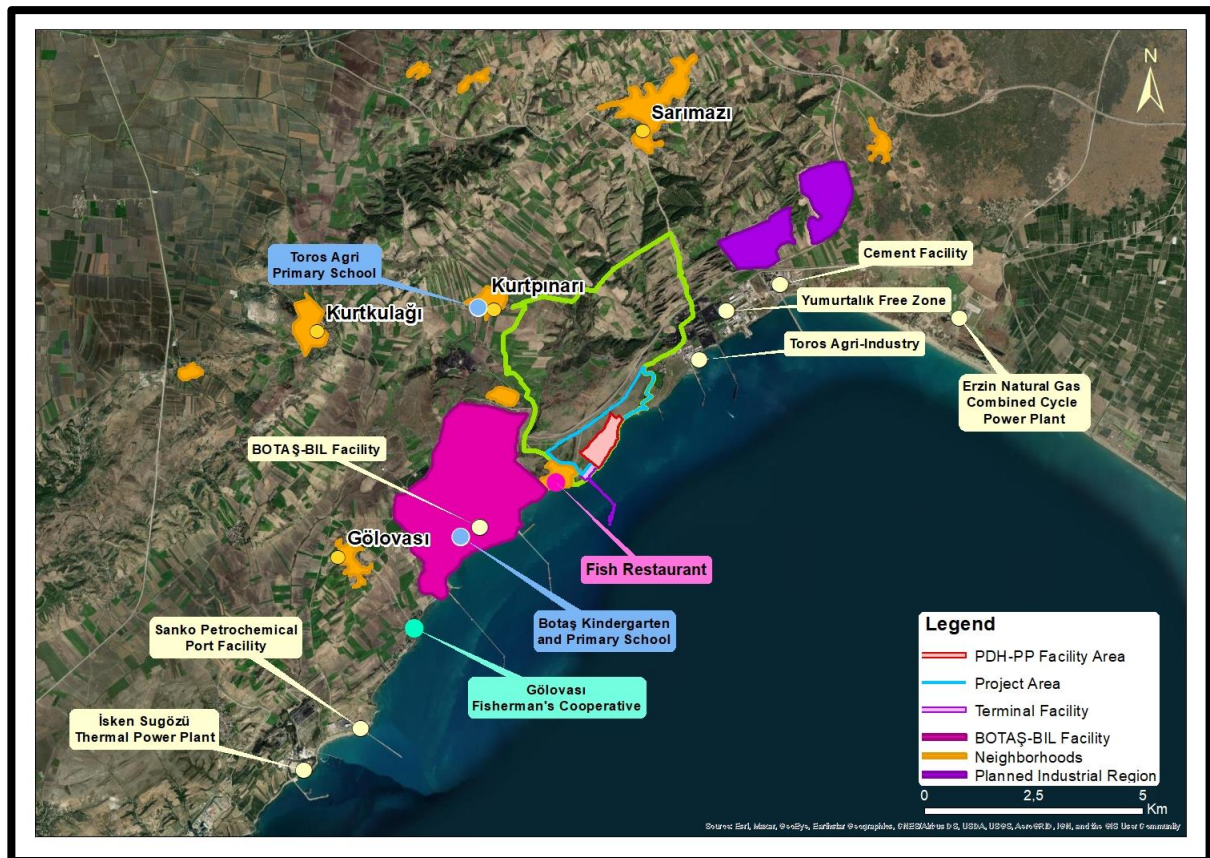


Figure 14-1. Nearby neighbourhoods and sensitive receptors in the vicinity of the Project site

The public housing facilities (approx. 1,000 residents) that belong to BOTAŞ Facility (BOTAŞ and Botaş International (BIL)) are located to the west (approximately 1-2 km distance) of the Project site. Moreover, Toros Agri Industry (Toros Tarım) has a public housing facility (approximately 120 people in 35 houses) and a guest house (30 room capacity) which is located to the east of the Project site at 0.7 km distance.

As can be seen from Figure above, the closest residences and businesses to the Project site are identified as a fish restaurant and a number of houses (the closest house at 15 m) to the west of the Project area. Closer view of land use in the close vicinity of the Project site shown in Figure 14-2.

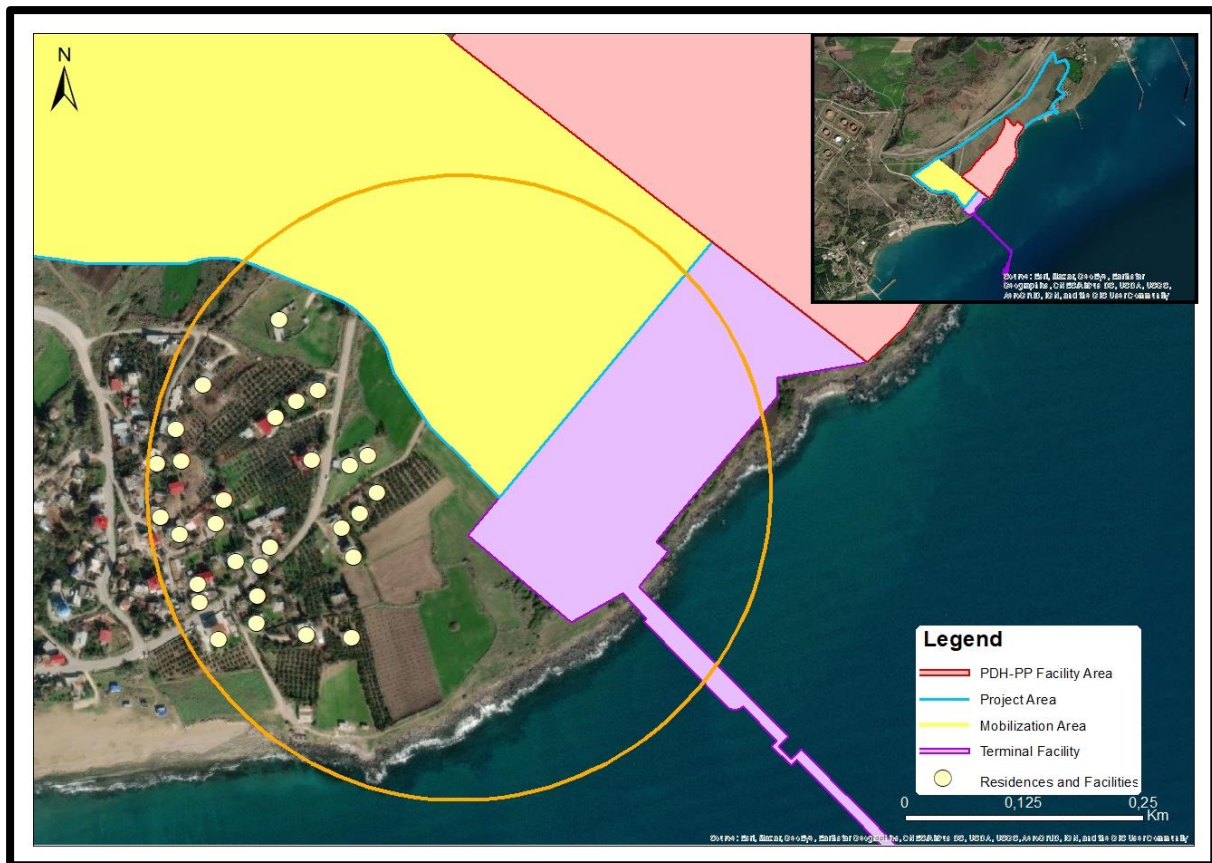


Figure 14-2. Closer view of land use in the close vicinity of the Project site

The Project site is located in the vicinity of the major industrial settings i.e BOTAŞ Regional Directorate of Petroleum Enterprises Ceyhan Marine Terminal (BIL- BTC), Toros Agri Industry (Toros Tarım), Toros-Adana-Yumurtalık Free Zone Investor A.Ş. (TAYSEB) which mainly includes manufacturing plants including chemicals, petrochemicals, iron and steel, food and animal feed, shipyards and cement factory (Sönmez Cement Facility), coal processing facilities (i.e. Super Enerji, Bamak Kömür, İnterkarbon İthal Kömür) and İsken-Sugözü Power Plant. A kindergarten and a primary school (Botaş Facility Primary school with 140 students) are located within the premises of BOTAŞ Facility (BOTAŞ and BIL). The Toros Tarım Primary School is located in Kurtpınarı neighbourhood to the north of the Project site at approximately 3 km distance.

14.2 Methodology for the Baseline Assessment

The Social Baseline methodology describes the approach adopted for data collection to develop a socioeconomic baseline survey for the Project. This baseline study was performed in order to:

- understand characteristics of the social context that may be subject to change, either as:
 - a result of the Project's direct and indirect potential impacts; or

- independent from the Project impacts. This will enable monitoring of the socioeconomic situation in the social context over time, using the present baseline as the pre-Project comparison point;
- understand what resources are available at the household level in terms of livelihoods strategies and coping/resilience mechanisms through profiling households' economic, social, and cultural activities;
- identify particular groups deemed vulnerable in the local context and potentially less able to cope with the changes brought about by the Project and its activities, or less able to benefit from its positive effects.

The primary data collection will focus on verification or supplementation, where existing data were insufficient. The objective of primary data collection is to gather recent data, to triangulate it with secondary data and to gather first-hand information from potentially impacted communities.

14.2.1 Primary Data Collection

The primary data collection focuses on verification or supplementation where existing data were insufficient. The objective of primary data collection is to gather recent data, to triangulate it with secondary data and to gather first-hand information from potentially impacted communities. Field research was conducted using quantitative and qualitative data collection techniques in this study. Primary data obtained for the Project community level assessments were conducted on July 5-10, 2021 for the purpose of gathering primary data, and include the following:

- 4 in-depth interviews with the Non-Governmental Organisations (NGOs);
- 2 focus group interviews with women live in the Aol;
- In depth interviews with residents of affected communities (Kurtpınarı, Kurtkulagı, Sarımazı and Golovası);
- Key Informant Interviews with the affected / interested cooperatives, authorities and organizations (see below);
- Community level surveys with the Mukhtars (the head of local government of villages) within the Social Aol.

Table 14-2. Surveys and interviews conducted by 2U1K

Type of Survey/ Interview	Number of Interviews/ Meetings
Household Interview	223
Community Level Surveys	4
Key Informant Interviews (KIs)	12
Focus Group Discussions	2

Household Survey (HHS): The household survey aims to collect data on the local people living in the mentioned settlements, including socioeconomic characteristics (age, gender, education, employment, land use, income level, etc.) and general opinions of the local communities about the Project.

Within the scope of the research, household interviews were conducted with 223 people based on statistical sampling methods in the settlements determined as social Aol.

The scope of the research consists of the following settlements, where the impacts are expected to be intense, considering the criteria of being affected by the Project.

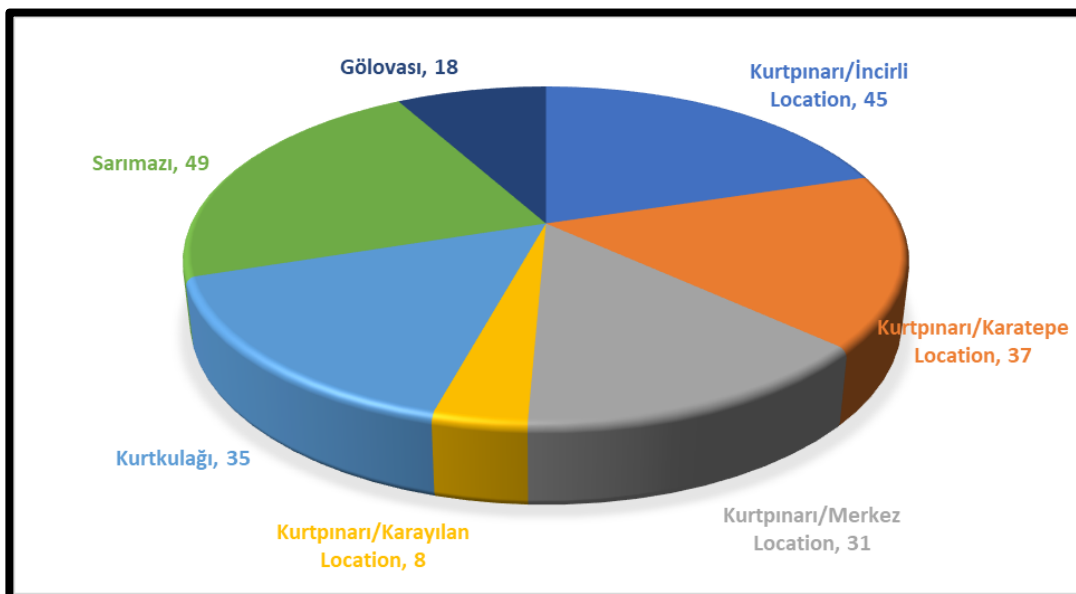


Figure 14-3. Distribution of interviewees by place of residence

54% of the total HH interviews were conducted in Kurtıpınarı neighbourhood within the Primary Social Aol (see below for photographs taken during the survey studies, Figure 14-4 to 14-6).



Figure 14-4. Interview in Kurtpınarı (faces are blurred due to confidentiality reasons)



Figure 14-5. Interview in Kurtkulağı



Figure 14-6. Interview in Sarımazı (faces are blurred due to confidentiality reasons)

Community Level Surveys (CLS): The aim of the CLS is to determine the socioeconomic status of each settlement inclusive of population, migration and reasons of migration, ethnic composition, age and gender distributions, social facilities education level, local conflicts and problems, livelihoods and main income generation activities, economic production in the settlement, land use, land ownership, ecosystem services usage, services and infrastructure, vulnerable groups and perceptions of project impacts in the settlement.

CLS were performed with the village heads designated by Municipal authorities or opinion leaders who have a representative position and deep knowledge about each settlement.

Key Informant Interviews (KIIs): KIIs were held with relevant local leaders and relevant experts, cooperatives, local government officers, local Non-Governmental Organizations (NGOs) and other individuals that are able to provide specific information. KIIs would involve specific 'deep dives' into certain topics to close any remaining data gaps.

Following stakeholders were interviewed within the scope of KIIs:

- Kurtkulağı Agricultural Credit Cooperative No. 2001;
- Sarımazı Agricultural Credit Cooperative No. 1953;
- Gölovası Fisheries Cooperatives;
- Mediterranean Agriculture and Citrus Workers Motor Carriers Cooperative;
- Botas International (Pipelines and Petroleum Transport Joint Stock Company, has been restructured in order to operate the BTC (Baku-Tbilisi–Ceyhan) Crude Oil Pipeline.)
- Botaş Port Authority
- ASCHEM Petrochemical Industry and Trade Inc.;
- Yumurtalık Municipality;
- Ceyhan Municipality;
- Ministry of Food, Agriculture and Livestock Ceyhan District Directorate;
- Neighbouring businesses to the Project Site (Cengiz Restaurant and Esentepe Kilyos Restaurant).

The aim of the interviews was to:

- understand the socioeconomic baseline conditions and characteristics of the organizations, etc.;
- understand the possible environmental and social impacts to determine the approach to impact mitigations.

Focus Group Discussions (FGDs): Another method for qualitative primary data collection is focus group discussions (FGDs) with different women groups within the social AoI. The aim of the study was not only to target women for the general population, but also interview with women from specific demographic groups, including young, elderly, unemployed and widow women.

In total, two focus group discussions with 10 participants were conducted in İncirli locality of Kurtpınarı neighbourhood within the Primary Social AoI. Photographs from the women's focus group studies carried out in the field studies are given in Figure 14-7 below.



Figure 14-7. Women focus group discussion (faces are blurred due to confidentiality reasons)

14.2.2 Sampling for the Social Impact Assessment

According to the 2022 Address Based Population Registration System (ABPRS) data, the total population of the Kurtpınarı, Kurtkulağı, Sarımazı and Gölovası is 6,814 with an average household size of 3.57.

Considering the study area, the socio-cultural structure in small settlements is mostly homogeneous. For this reason, the number of samples was defined based on the approximate number of households to represent the research population. Accordingly, the sample rate to total household number to be surveyed was determined as 30% for Kurtpınarı neighbourhood, 10% for Kurtkulağı and Gölovası neighbourhoods, and 5% for Sarımazı neighbourhood. The total number of surveys determined as a result of this is 222 households (see. Table 14-3).

Table 14-3. Populations of project affected neighborhoods and number of surveys

Province	District	Neighbourhood	Population (2020 ABPRS)	Average Household Size (TURKSTAT, 2020)	Approximate Number of Houses	Number of Planned Surveys
Adana	Ceyhan	Kurtpınar	1451	3,57	406	121
Adana	Ceyhan	Kurtkulağı	1218	3,57	341	34

Province	District	Neighbourhood	Population (2020 ABPRS)	Average Household Size (TURKSTAT, 2020)	Approximate Number of Houses	Number of Planned Surveys
Adana	Ceyhan	Sarımazi	3500	3,57	980	49
Adana	Yumurtalık	Gölovası	645	3,57	180	18
Total			6814		1907	222

Source: ABPRS, 2020

Figure 14-8 below shows the age and gender distribution of the participants in the HHS.

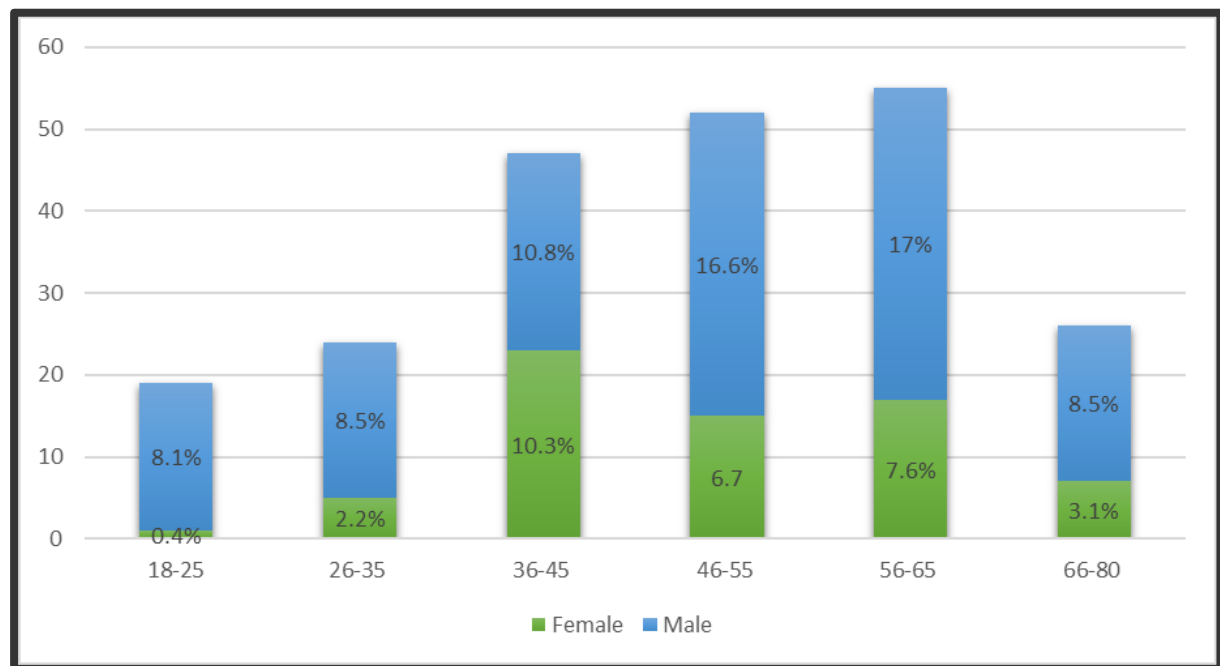


Figure 14-8. Gender and age distribution

The Land Acquisition survey is also being conducted. Within the scope of this survey, interviews were conducted with the land users / owners and residents of houses nearby the Project area, as well as with the fishermen in Incirli and Golovası.

14.2.3 Secondary Data Collection

Secondary data was collected through regional and national statistics, newspaper archives and Project documents. Secondary data holds an important role in reaching key stakeholders and Project affected people before designing the field study. Information gathered from the secondary data increases the quality of field study and time efficiency during the field study.

Sources of information generally used for the ESIA are:

- Demographic information from Turkish Statistical Institute (TURKSTAT)¹;
- Information compiled from official websites;
 - Cukurova Development Agency (www.cka.org.tr),
 - Turkish Plastics Industrialists Research, Development and Education Foundation (pagev.org),
 - Ankara Chamber of Industry (www.aso.org.tr).
- Information from Ceyhan Municipality;
- Information on the health infrastructure at the district level;
- Information on the education infrastructure at the district level;
- National EIA Report for the Project;
- Satellite images showing social Aol.

14.3 Baseline Conditions

14.3.1 Population and Demographics

This section presents general demographic information of Adana province and Ceyhan district respectively, and moves on to further details within the borders of the Social Aol.

Adana province is neighbored by Kayseri in the north, Kahramanmaraş, Osmaniye and Gaziantep in the east, Hatay in the southeast, Niğde, İçel provinces and the Mediterranean in the west. The area of the province, which is bordered by the Mediterranean coast of 160 km to the south, is 14,030 km². According to the database derived from ABPRS in 2021, the population of the Adana is 2.263.373 with a population density of 162 people per km².

Adana has a total of 15 districts. Those are; Seyhan, Çukurova, Sarıçam, Yüreğir, Aladağ, Ceyhan, Feke, İmamoğlu, Karaisalı, Karataş, Kozan, Pozantı, Saimbeyli, Tufanbeyli and Yumurtalık. Also the Province has 21 towns, 37 municipalities, 467 villages and 400 neighbourhoods. The ratio of the rural population to the total population is 12.66% (Turkish Statistical Institute, 2020).

There has been a decrease in the population of villages/neighbourhoods over the years due lack of employment opportunities, especially the youth generation immigrating to the city centers for jobs. Data showing the decreasing population statistics since 2013 in the neighbourhoods where the fieldwork was carried out are given in Figure 14-9 through 14-12 below.

¹ It is important to note that the socioeconomic data from TURKSTAT was only available at regional level; no data (such as age groups, gender distribution etc.) was available for the local communities except population information.

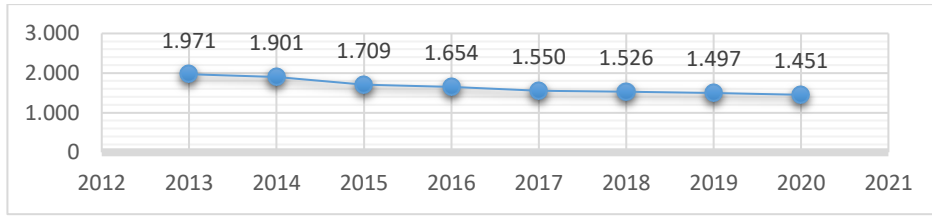


Figure 14-9. Kurtpınarı Population Profile

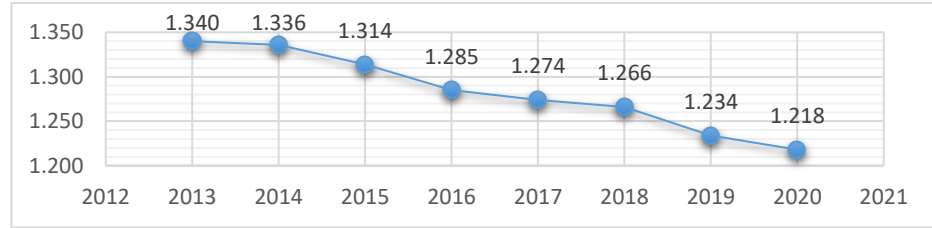


Figure 14-10. Kurtkulağı Population Profile

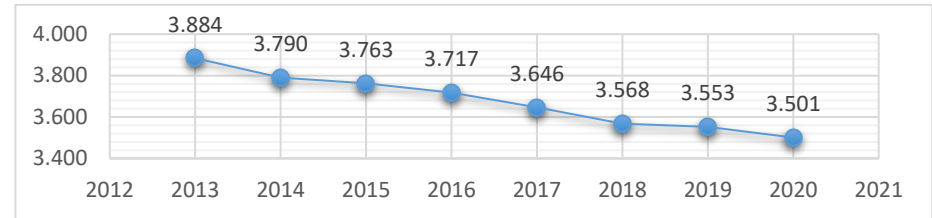


Figure 14-11. Sarımaçı Population Profile

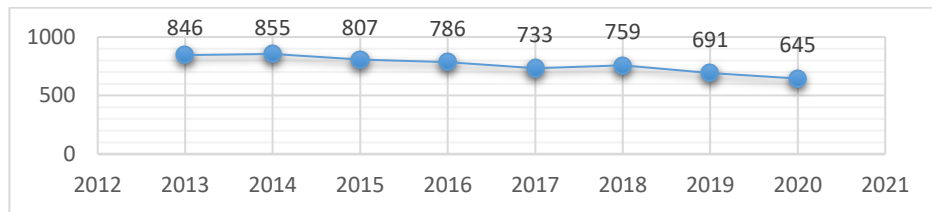


Figure 14-12. Gölovası Population Profile

14.3.2 Economy, Employment and Occupations

Adana Coastal Mediterranean Basin consists of Ceyhan, Çukurova, İmamoğlu, Karaisalı, Karataş, Kozan, Sarıçam, Seyhan, Yumurtalık and Yüreğir districts. The portion of the Coastal Mediterranean Basin within the borders of Adana is 843,800 ha. This area constitutes 60.14% of Adana. In total, 468,320 ha land in the Adana Coastal Mediterranean Basin is classified as agricultural lands.

Çukurova Region (i.e., the region covering Adana and Mersin provinces) has a potential to grow as a metropolitan area following İstanbul, Ankara and İzmir with its advantageous location in the center of different socioeconomic developments. Moreover, the region is also quite important with its key role as an energy distribution hub with the existing and developing pipelines. In particular, Ceyhan district is a bridge between Europe and Middle East with its

role in oil and gas transfer. Development of CPIR is expected to have a significant effect in the industrial development of the region.²

In terms of employment indicators, the manufacturing sector has high importance in Adana; 25.5% of the workplaces in the area covered by the Project's Social Aol are engaged in the manufacturing business. Following the manufacturing sector, significant number of establishments operate in the construction sector; 23.1% of the business in the Project Aol are operating in construction sector. Overall, nearly half of the establishments employing 20 or more employees in Adana are engaged either in the manufacturing or construction sectors.

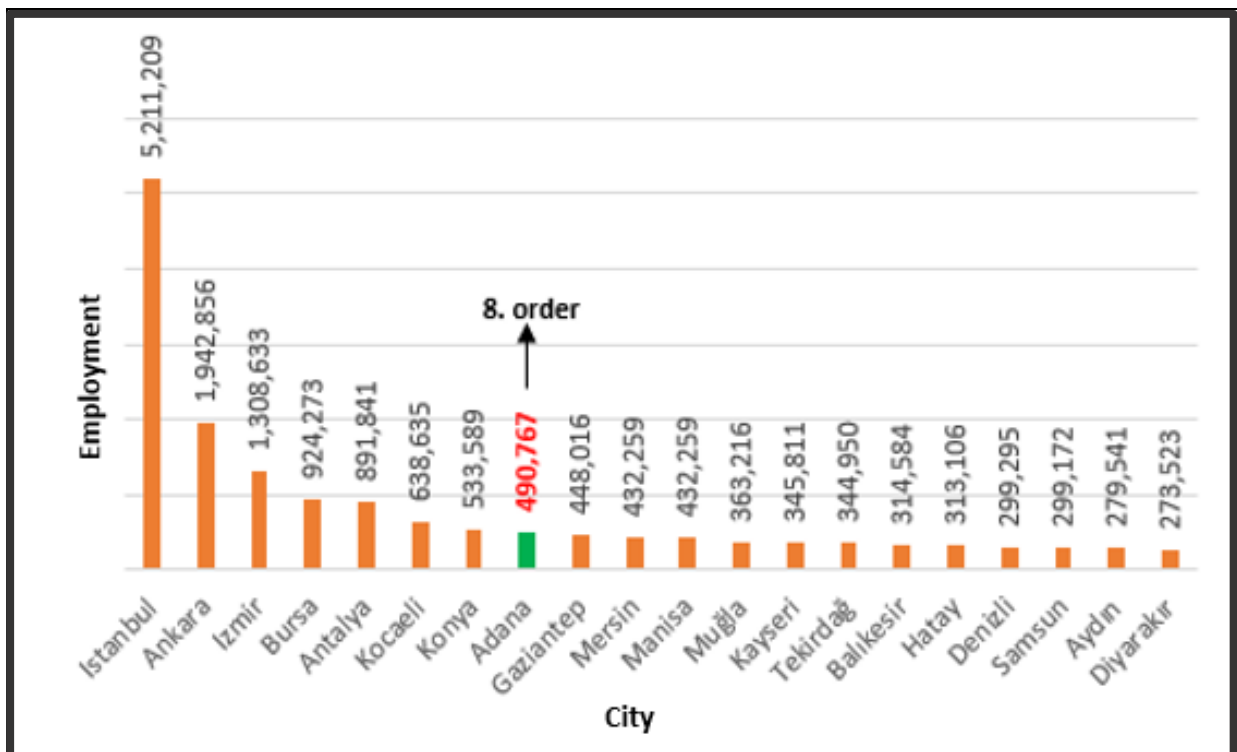


Figure 14-13. Distribution of employment by cities (Source: The Economy of Adana Presentation- March 2020)

In terms of socioeconomic indicators households within the social Aol, income levels were also surveyed through the interviews. It has been observed that the income status of the interviewees is mainly in the range of 30,000-60,000 TL per year (see below Table 14-4 for further details obtained during the field study).

² Çukurova Regional Plan for 2014-2023, Çukurova Development Agency (https://www.cka.org.tr/uploads/pages_v/2014--2023-cukurova-bolge-plani.pdf)

Table 14-4. Education Level/ Household Income Crosstabulation

Education Level	Household Income (TL/yr)					Total	(%)
	0-30.000	30.001-60.000	60.001-120.000	No income in family			
Illiterate	8	0	0	0	8	3.6	
Literate without a diploma	1	3	0	0	4	1.8	
Primary education	40	43	12	1	96	43	
Junior high school	12	15	2	0	29	13	
High school	20	36	8	1	65	29.1	
Associate degree	4	4	4	0	12	3.6	
Bachelor's degree	1	5	2	0	8	5.4	
Above bachelor's degree	0	1	8	0	1	0.4	
Total	86	107	28	2	223	100	
(%)	38.6	48	12.6	0.9	100		

Source:Field Survey, 2021

Majority of the local residents of communities within the Social Aol derive their income through retirement pensions and obtain additional income through agriculture, livestock, fishing and trade activities (see Table 14-5 below for further details obtained during the field study).

Table 14-5. Employment areas of the interviewees during the field study

Employment Type	Frequency	(%)
Housewife	56	24
Retirement	56	24
Regular salary	48	21
Self-employment	27	11
Farmer	23	10
Unemployment (short period)	9	4
Seasonal employment	8	3
Unemployment (long period)	4	1.8
Student	2	0.9
Working for family without salary	1	0.3
TOTAL	234	100

Source:Field Survey, 2021

Çukurova Region has an important place in agricultural production in Turkey with its favourable climatic conditions, geographical features, soil fertility and irrigation possibilities. It ranks 1st in the production amount and diversity among other regions of Turkey. The industry of the Çukurova Region, which is mainly based on agriculture, has important sub-branches such as food and beverage, and textile industries, which are directly or indirectly affected by agricultural productivity and ease of access to agricultural products (i.e., raw material supplies to the

above-mentioned production processes). The employment rate in agriculture and agriculture-based industry are therefore high in the region².

60% of the agricultural lands in Adana are classified as Class I regarding Land Capability Classification. Arable lands in Adana with Land Capability Class I properties with approximately 323,000 ha, surface area constitute 6.5% of the Class I agricultural lands in Turkey. 30% of the province's agricultural lands have Land Capability Class II properties. Additionally, 19% of terrains in Adana is composed of non-agricultural lands.

After the central districts of Adana, Ceyhan district has the highest population and it is the most economically developed district of the province. The main economical activities in the district are agriculture and industry. It ranks first in Adana in terms of cultivated field area, with its suitable climate and fertile lands, Ceyhan is also very rich in product diversity. Watermelon, peanuts, and corn are the leading agricultural products. District industry concentrates on textile, basic metal, food, and non-metallic minerals sectors. It has an important potential in freshwater fisheries.

The distribution of agricultural lands in Ceyhan by product groups in the 2010-2020 period is given in Table 14-6. As it is seen in Table 14-6, the cultivated agricultural lands in Ceyhan decreased by 25% in the mentioned period. The highest proportional decrease is in vegetable cultivation. There is a partial expansion in the surface area of lands with cultivation of trees and crops for fruit, juice and spice production.

Table 14-6. Distribution of agricultural areas in Ceyhan

Agricultural Area (Decare)	Years		
	2010	2016	2020
Total Area	1,168,458	893,864	877,686
Sown area of grain and other crops	1,102,463	840,140	805,490
Fallow field	1,427	1,236	1,675
Vegetable cultivation area	30,656	14,310	21,389
Field planted for fruit, juice, and spicery	35,339	39,414	49,132

Source: TURKSTAT (<https://biruni.tuik.gov.tr/medas/?kn=92&locale=tr>)

During the social field study, the participants interested in agricultural activities were also asked about the ownership status of the lands they use (see Table 14-7 below). As a result, it was observed that the majority of the households use their own lands for agriculture. There are also households who rent state-owned treasury lands for agriculture. It is observed that agricultural land lease among the local people is not common income generation activity (i.e. local people don't often rent out their land for gaining profit).

Table 14-7. Land ownership status within the Social Aol

Property status	Frequency	(%)
Owned and used by the household	58	55.4
Treasury land	30	29
Leased	6	5.9
Owned by the household and product is shared	6	5.9
Owned by the household and leased	4	3.8
Total	104	100

Source:Field Survey, 2021

To identify the basic agricultural activities in the region, interviewees were also queried about the crops they mostly plant. Accordingly, grain and olive tree cultivations are the most common. In addition to these, sunflower (for oil production) and fruit trees farming is also carried out (see. Table 14-8).

Table 14-8. Agricultural Products within the Social Aol

Crops	Frequency	(%)
Grain (wheat, barley)	64	28.7%
Olive trees	56	25.1%
Sunflowers	45	22.3%
Fruit trees	8	3.6%
Beans	6	2.7%
Vegetables and greens	5	2.2%
Cotton	5	2.2%
Potatoes and onions	4	1.8%
Peanut	3	1.3%
Nut trees	3	1.3%
Vineyard	2	0.9%
Green pea	1	0.4%
Rice	1	0.4%
Melon/watermelon	1	0.4%
Corn	1	0.4%

Source:Field Survey, 2021

According to the household survey, 148 of the 223 people are engaged in farming (i.e., agriculture, husbandry) and/or fishing activities (Figure 14-14).

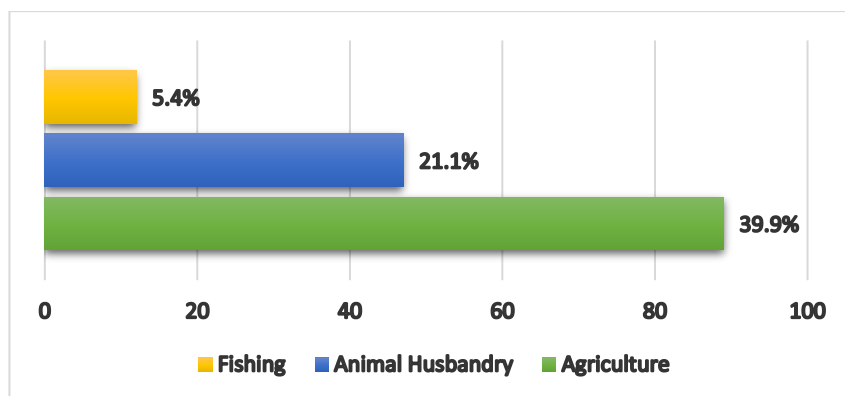


Figure 14-14. Distribution of fishing and farming activities within the Social Aol

According to the interview results, it was observed that animal husbandry activities are not common due to unfavourable conditions for husbandry and limited area for grazing lands. Details of the animal husbandry activities regarding the types of livestock within the Aol can be found in Table 14-9 below.

Table 14-9. Types of Livestock Activities

Products	Frequency	(%)
Cattle	29	40.2
Sheep and goat	26	36.2
Poultry	16	22.2
Beehive	1	1.4
Total	72	100

Source: Field Survey, 2021

The overall income activities within the Aol were also asked during the field study. Results of the surveys for each settlement within the primary Aol can be found in Table 14-10 below.

Table 14-10. Common Economic Activities within the Aol

Neighbourhood	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
First Common Economic Activity	Agriculture	Agriculture	Agriculture	Fishing
Second Common Economic Activity	Animal Husbandry	Animal Husbandry	Animal Husbandry	Agriculture
Third Common Economic Activity	Fishing	Trade	Trade	Animal Husbandry

Source: Field Study, 2021

According to interview with Kurtpınarı Mukhtar, although olive cultivation is the main agricultural activity in İncirli locality, fishing is also common for household consumption or income generation purposes. He stated that there is a decrease in fishing activities compared to previous years, especially since the BOTAŞ-BIL facility port has limited the field of activity of coastal fisheries.

The head of the Kurtkulağı neighbourhood stated that farming is a common income activity as majority of the locals are retired. Farmers produce sunflower, olive, corn, wheat, and cotton. Olive cultivation is also main agricultural activity in Kurtkulağı and Sarımazı neighbourhoods and locals also breed cattle and sheep for income generation.

Although fishing seems to be the primary activity in Gölovası district, the headman of Gölovası stated that fishing is decreasing every year due to the industrial facilities nearby. The headman of Gölovası stated that due to the ports of these facilities extending to the shore, fishing activities are restricted, fishing is allowed up to a certain distance from the ports, but because this distance is too far, the costs of the sailing increase due to increased use of diesel fuel.

See Chapter 5 for more details related land users/farmers.

14.3.3 Industrial Activities

Ceyhan has very important industrial infrastructure such as crude oil pipelines, free zone, energy specialization zone and organized industrial zone. Details of the industrial activities in Ceyhan region can be found in below.

- **Crude Oil Pipelines:** Ceyhan plays a critical role in opening Azerbaijan and Northern Iraq oil to international markets. In addition, crude oil is transported to the Orta Anadolu Refinery via the pipeline between Ceyhan and Kırıkkale. In the 2010-2014 Strategic Plan of the Ministry of Energy and Natural Resources, it is stated that the Ceyhan Region will be transformed into an integrated energy centre where crude oil of different qualities and characteristics can be offered to international markets, with a refinery, petrochemical facilities and liquefied natural gas (LNG) export terminal.

In this context, efforts continue in the Ceyhan Energy Specialized Industrial Zone, which was announced in 2007 by the decision of the Council of Ministers. As a result of the completion of the planned investments, Ceyhan is expected to turn into an energy centre, and it is thought that the industrial structure of Ceyhan will develop significantly with the development of the petrochemical industry (ÇDA, 2015);

- **Ceyhan Energy Specialized Industry Region:** Ceyhan Energy Specialized Industrial Zone was established with the Law No. 2007/12632 published in the Official Gazette dated 17 October 2007.

The region in question, which was designed to include energy-related investments, has an area of 13,471,964.34 square meters. With the Council of Ministers Decision dated 04.01.2010 and numbered 2010/33, "Immediate Expropriation Decision" was taken, that decision was turned to expropriation decision later within the scope of the Expropriation Law No. 2942;

- **Yumurtalık Free Zone:** Free zones are special zones designed to increase export-oriented investments, which are within the political borders of the country, but are considered outside the customs zone.

Adana-Yumurtalık Free Zone, one of the first free zones in Turkey, was established with the decision of the Council of Ministers dated 04.03.1985. Adana Yumurtalık Free Zone, one of the largest free zones in Turkey and the world, stretches along a 5 km long coastline in the Gulf of Iskenderun. Its completed infrastructure covers an area of 460 ha.

With the decision of the Council of Ministers, the region is Turkey's first and only free zone for heavy industry investments such as chemistry, petrochemistry, iron and steel, power plants, shipyards, and cement factories. It is very easy for companies investing in the region, which is located at an important transit point at an important crossroads between 3 continents, to European, Middle Eastern and African markets. In addition to privileged free zone incentives, the zone also offers significant advantages to companies in terms of logistics and strategy (Ceyhan Chamber of Commerce, 2017);

- **Ceyhan Organized Industrial Zone:** Ceyhan Organized Industrial Zone was established on 02 August 2016 on an area of approximately 121 hectares in Sarımazi neighbourhood, Şarlayan and Başyurt locations of the district.

The entrepreneurial committee of the Ceyhan Organized Industrial Zone includes Adana Governor's Office, Adana Metropolitan Municipality, Adana Special Provincial Administration, Adana Chamber of Industry, Ceyhan Chamber of Commerce, Ceyhan Commodity Exchange, Ceyhan Chamber of Agriculture, Ceyhan Craftsmen and Craftsmen Cooperative (Ceyhan Chamber of Commerce, 2017);

- **Ceyhan Small Industrial Site:** Ceyhan Small Industrial Site is one of the 7 small industrial sites of Adana. In order to gather the industrial tradesmen it was started with the cooperative established in 1965, and in 1971 the small industrial site was put into service by building 450 workplaces on a total area of 34.4 ha. Currently, 498 tradesmen and craftsmen serve on this site. There is 1 Health Centre, 1 PTT Branch, and Mosque in the industrial site, which does not have a significant infrastructure problem (Ceyhan Chamber of Commerce, 2017).

14.3.4 Education

In Adana, the educational services are provided in 540 primary schools, 377 secondary schools and 294 high schools representing a total of 1,173 educational facilities in 2018. An overview of education level in Adana province is provided in below Table 14-11.

Table 14-11. Education level in Adana (Aged 6 and over)

Indicator (2020)	Female	Male	Total
Illiterate	52,506	8,338	60,844
Literate without a diploma	127,558	97,206	224,764
Primary school	252,527	194,652	447,179
Primary education	57,275	89,191	146,466
Junior and vocational high school	180,786	215,531	396,317
High and vocational high school	200,406	241,622	442,028
Universities and other higher educational institutions	130,407	143,561	273,968
Master (Including 5- or 6-Years Faculties)	10,978	13,548	24,526
Doctorate	1,913	2,506	4,419

Source: TURSTAT, 2020 (<https://data.tuik.gov.tr/Kategori/GetKategori?p=egitim-kultur-spor-ve-turizm-105&dil=1>)

In Ceyhan, there are 12 kindergarten, 46 primary schools, 31 secondary schools and 28 general and vocational technical high schools. The number of schools in general secondary education is 10 and 5 of these schools are Anatolian High School, one is social sciences high school, and one is science high school. Also, a vocational training centre and a public education centre is available in Ceyhan. There are two faculties continuing their education in Ceyhan, affiliated to Çukurova University.

The table (see. Table 14-12) showing the educational status of the people interviewed during the fieldwork is given Table 14-12 below.

Table 14-12. Education Level in Aol

Education Level	Gender		Frequency	
	Female	Male	Total	(%)
Illiterate	7	1	8	3.6
Literate without a diploma	2	2	4	1.8
Primary education	38	58	96	43
Junior high school	6	23	29	13
High school	12	53	65	29.1
Associate degree	1	11	12	5.4
Bachelor's degree	2	6	8	3.6
Above bachelor's degree	0	1	1	0.4
Total	68	155	223	100
(%)	30.5	69.5	100	

Source: Field Study, 2021

Considering the close surrounding of the Project site, a kindergarten and a primary school (Botaş Facility Primary school with 140 students, see Figure 14-15. Toros Tarım Primary School) are located within the premises of BOTAŞ Facility (BOTAŞ and BIL). Moreover, Toros Tarım Primary School is located in Kurtpınarı neighbourhood to the north of the Project site at approximately 3 km distance. There are also Gölovası Primary School in Gölovası neighbourhood at 6 km distance to the west of the Project site, Orhan Ekinci Primary school in Kurtkulağı neighbourhood at 7 km distance to the northwest and Necati Akçağlılar Primary school and a kindergarden in Sarımazı neighbourhood at 7 km distance to the northeast of the Project site.

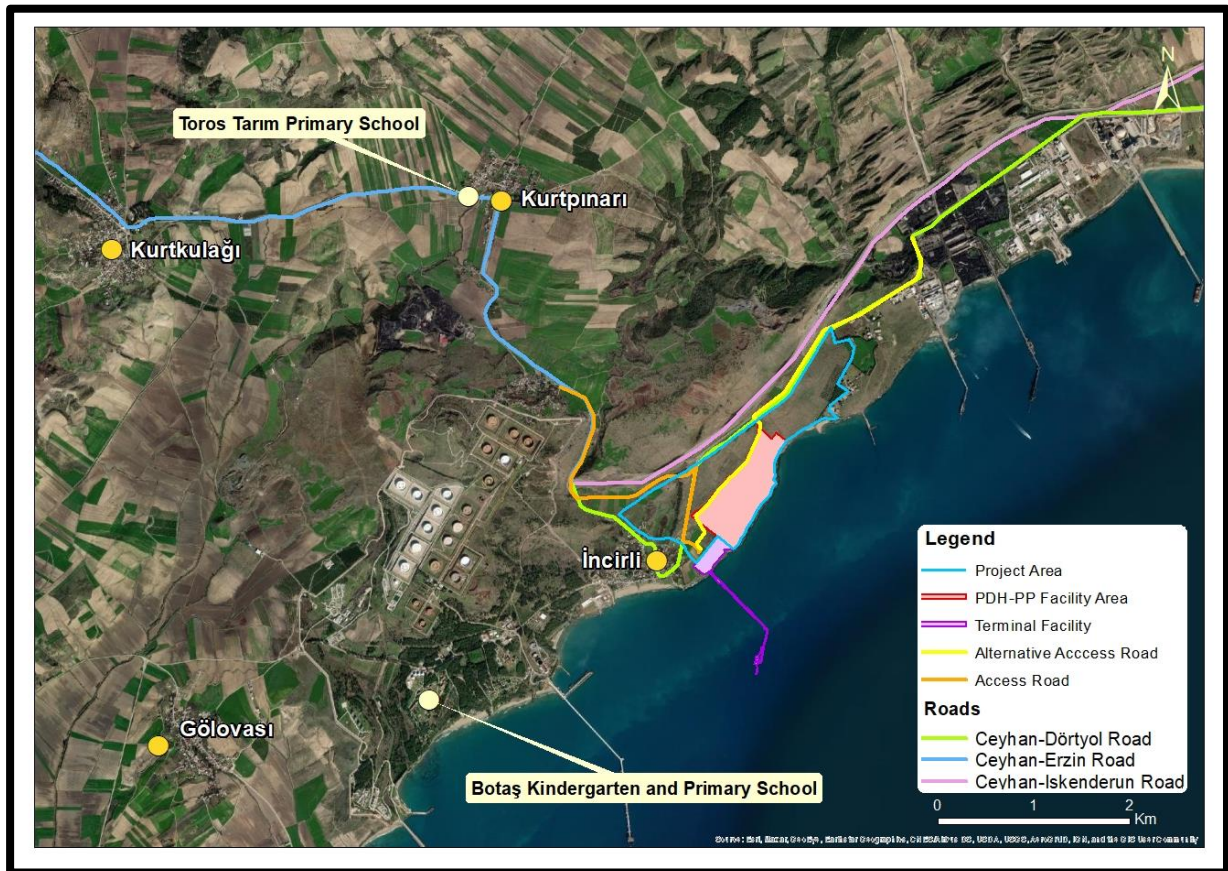


Figure 14-15. Toros Tarım Primary School

14.3.5 Recreation and Tourism

The development potential of tourism in the region is high due to the fact that Adana and Mersin coasts are suitable for the coastal tourism and have high potential with their rich natural resources and cultural values².

The number of arrivals to facilities (i.e. tourists) in TR62 Adana-Mersin Region in 2011 is 1,037,289 (430,972 for municipal certified facilities and 606,317 for tourism operation certified facilities). Considering the national targets on tourism sector for 2023 and the increase in the bed capacity in the region together, the number of tourists coming to the region is estimated

to exceed 1.5 millions in 2023. Çukurova Region mostly appeals local tourists; the proportion of foreign tourists staying in the Region is approximately 11%. Regarding the foreign tourists accommodating local facilities, the distribution by their nations shows that German and Iraqi tourists are most common. It is seen that the distribution of foreign tourist numbers by their nations is parallel to the countries to which foreign trade is made. This reveals the close relationship of economic activity in the region with tourism².

Turkey's Tourism Strategy (2023) and Action Plan 2007-2013 documents highlight that Adana is one of the major fair centers and Mersin's infrastructure is suitable for congress tourism².

In addition, there are some attractive historical and cultural places (shown in Figure 14-16) and also prominent natural landmarks in the region such as; Taşköprü (Justinianus Roman Bridge), Adana Archaeology Museum, Adana Atatürk House Museum, Bebekli Church (Italian Catholic Church), Adana Bedesten, Big Clock, Yağ Mosque, Adana Great Mosque, Karatepe-Aslantaş National Park, Aladaglar National Park, Yumurtalik Lagoon National Park, Anavarza Ancient City and Anavarza Castle, Comona (Shar) Ancient City, Misis Ancient City (Mopsuestia), Misis Mosaic Museum, Magarsus Ancient City, Kozan (Sis) Castle and Monastery, etc. Additionally, considering the close surrounding of the Project site, there are 1st and 3rd degree archaeological sites to the northeast (Karanlık Kapı Remains) and a 1st degree archaeological site to the north of the Project site (Medieval Turkish Cemetery – outside the Project boundaries).

Moreover, there is an ancient waterway and its protection zone stretching along the Project area boundary at northeast. The visuals for Ancient Waterway, Karanlık Kapı remains, Medieval Turkish Cemetery are presented in Figure 14-17. Necessary mitigation measures and detailed information on the archaeological assets are discussed in *Chapter 13: Cultural Heritage*.

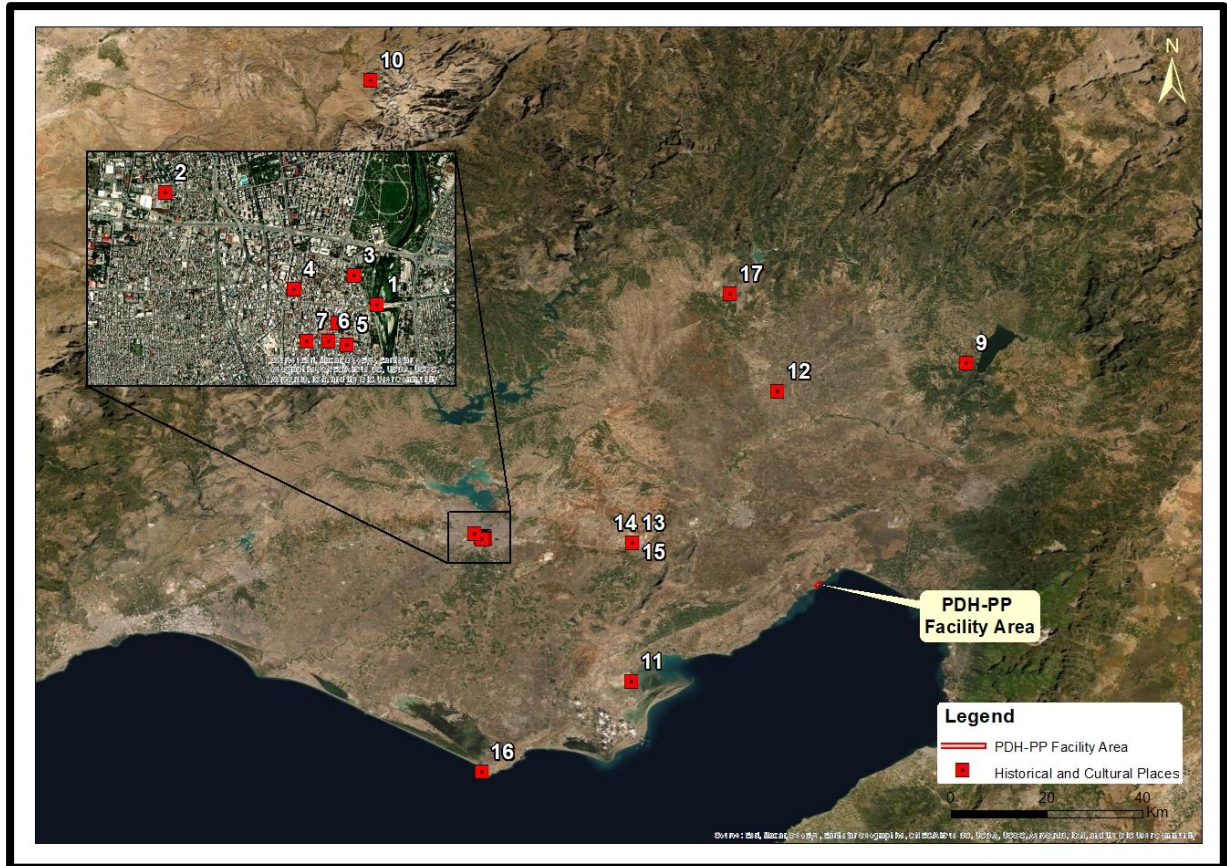


Figure 14-16. Historical and cultural places, and natural assets in the region (1) Taşköprü (Justinianus Roman Bridge), 2) Adana Archaeology Museum, 3) Adana Atatürk House Museum, 4) Bebekli Church (Italian Catholic Church), 5) Adana Bedesten, 6) Big Clock, 7) Yağ Mosque, 8) Adana Great Mosque, 9) Karatepe-Aslantaş National Park, 10) Aladaglar National Park, 11) Yumurtalık Lagoon National Park, 12) Anavarza Ancient City and Anavarza Castle, 13) Comona (Shar) Ancient City, 14) Misis Ancient City (Mopsuestia), 15) Misis Mosaic Museum, 16) Magarsus Ancient City, 17) Kozan (Sis) Castle and Monastery



Figure 14-17. Views from Ancient Waterway (1), Karanlık Kapı Remains (2), Medieval Turkish Cemetery (3)

Incirli also has a beach approximately 500 meters long. According to the information provided by the headman and local residents, fishermen from Incirli sail to the sea from here (approximately 7 people). During the summer season, people from nearby areas come here to swim in the sea. However, due to the increasing industrialization along with other facilities in the region, the number of visitors to this beach have decreased. There are no other businesses at or in proximity to the beach except for a restaurant (see subsection 14.4.5 for more detail).

14.3.6 Health

According to Adana Provincial Health Directorate, there are 16 private and 14 state hospitals, 2 oral and dental health hospitals with a total bed capacity of 7,137 (Adana Provincial Health Directorate, 2019).

A comparison for the health sector in Adana province and national conditions is provided in Table 14-13. Accordingly, although the province shows parallel trends with the national numbers, total number of physicians per thousand people is higher than the country statistics, in general. Furthermore, the province has higher standards in terms of total number of hospital beds per hundred thousand people.

Table 14-13. Overview of the health sector in Adana, 2018

	Number of hospitals	Number of hospital beds	Total number of hospital beds (per hundred thousand people)	Total number of physicians (per thousand people)
Turkey	1,534	231,913	283	2
Adana	32	7,033	317	2

Source: TUIK official web site (<http://www.tuik.gov.tr/>)

According to data from the TurkSTAT, when cause of death statistics were analyzed by age groups, it was determined that circulatory system diseases were mostly seen in the 75-84 age group with 51,376 people in 2018, while benign and malignant tumors were mostly seen in the 65-74 age group with 23,674 people.

Circulatory system diseases accounted for 38.4% of deaths. This was followed by neoplasms with 19.7% and respiratory system diseases with 12.5%. After ischemic heart disease, cerebrovascular disease and hypertensive disease caused 22.4% and 8.3% of deaths respectively in 2018.

The total number of deaths caused by malignant neoplasms was 81,129 in 2018. Of these deaths, 30.8% were caused by malignant neoplasms of the larynx and trachea/bronchus/lung.

When cause of death statistics by place of residence are analyzed, Adana was ranked 3rd with 46.7% of deaths due to circulatory system diseases in 2018.

Table 14-14. Cause of Death in Adana, 2019

Cause of Death	Number	Rate
Diseas of the circulatory system	4,104	~36%
Malign and bening neoplasms	1,924	~16.8%
Diseases of the respiratory system	1,204	~10.5%
Disaes of the nervous system and the sense organs	416	~3.6%
Endocrine, nutritional and metabolic disaeses	501	~4.3%
External causes of injury and poisoning	493	~4.3%
Other	933	~8.1%
Unknown	1,817	~15.9%
Total	11,392	~100%

Source: TUIK official web site (<http://www.tuik.gov.tr/>)

In 2020, adult mortality rate for Turkey was 22.27 deaths per 100 population. While adult mortality rate in Turkey was 18.01 deaths per 100 population in 1975, it increased to 22.27 deaths per 100 population in 2020 with an average annual increase of 2.62%.

In 2020, infant mortality rate for Turkey was 2.04 deaths per thousand live births. Between 1971 and 2020, Turkey's infant mortality rate decreased, from 5.53 deaths per thousand live births in 1971 to 2.04 deaths per thousand live births in 2020.

Alcohol and Drug Use

The research titled "Attitudes and Behavior Related to Tobacco, Alcohol and Substance Use by General Population in Turkey"³ conducted by the Ministry of Interior, General Directorate of Security, Department of Combating Narcotic Crimes was published in 2018 and presented to the public covering a sample of 42,754 people. According to this research, 81.5% of the general population stated that they do not tolerate using alcohol, 97% do not tolerate using drugs and 93.3% do not tolerate using tranquilizers except on the recommendation of a doctor. 22.1% of those who have used alcoholic products (beers, wines, spirits, etc.) at least once in their lives and 8.6% of those who said they had used alcoholic products within eleven months were determined as 22.1% and 8.6%, respectively. 3.1% of the respondents said that they had used drugs at least once in their lives. Of those who responded to this question, 94% were male and 6% were female.

Among those who have used drugs at least once in their lives, 20% are primary school graduates, 18.3% are middle school graduates and 29.9% are high school graduates. Gender distribution of drug-related deaths in 2018 was as follows: 96.8% (636) were male and 3.2% (21) were female.

In addition to these data, no reliable study has been conducted in Adana. Within the scope of the ESIA, four interviews with the headmen of communities within the Social Aol were conducted to collect information on alcohol and drug-related crimes in the region. It was found that there is a small number of people who use alcohol and drugs in the region, but the exact number is unknown. The headmen also informed that there are no cases of alcohol and drug related crimes in the region that they are aware of.

14.3.7 Infrastructure and Services

Information on the existing infrastructure and services were obtained during the Community Level Surveys with the head of neighbourhoods. Information on infrastructure and services within the Aol can be found in the given Table 14-15 below.

Table 14-15. Availability of infrastructure and services within the Aol

Infrastructure and services	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
Number of neighbourhood coffee shops	N/A	2	2	1
Number of restaurants	2	1	2	2
Number of markets	3	3	5	2
Post office	N/A	Yes	Yes	N/A
Electricity infrastructure	Yes	Yes	Yes	Yes

³Accessed at: <http://www.narkotik.pol.tr/kurumlar/narkotik.pol.tr/Duyurular/T%C3%9CRK%C4%B0YE%E2%80%99DE%20GENEL%20N%C3%9CFUSTA%20T%C3%9CT%C3%9CN%20ALKOL%20VE%20MADDE%20KULLANIMINA%20Y%C3%96NEL%C4%B0K%20TUTUM%20VE%20DAVRANI%C5%9E%20ARA%C5%9ETIRMASI.pdf>. Accessed on 15.02.2023.

Infrastructure and services	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
Drinking water source	Natural spring (Burnaz)	Natural spring (Burnaz)	Natural spring (Burnaz)	Tap water and well water
Availability of sewage system	Septic tanks are used	Septic tanks are used	Septic tanks are used	Septic tanks are used
Waste management	Municipality collects from waste bins	Municipality collects from waste bins	Municipality collects from waste bins	Municipality collects from waste bins
Availability of public transportation	Municipality bus to district center	Municipality bus to district center	Municipality bus to district center	N/A
Condition of village road	High quality asphalt	High quality asphalt	High quality asphalt	High quality asphalt
Availability of association, club etc.	N/A	Kurtkulağı charity association, Kurtkulağı sport club	N/A	N/A
Availability of cooperatives	Kurtpınarı transport cooperative (under establishment)	Kurtkulağı agricultural credit cooperative	Sarımazı agricultural credit cooperative	Gölovası fisheries cooperative, Gölovası transport cooperative (inactive)

Source: Field Study, 2021

There are 4 neighborhoods in the primary area of influence: Kurtpınarı, Kurtkulağı, Sarımazı and Gölovası. There is no sewerage system in the neighborhoods, wastewater in all neighborhoods is diverted from houses to septic tanks. Solid wastes are collected and disposed of by the municipality in all neighborhoods. Village roads and connection roads are high quality asphalt in all neighborhoods. While tap water and well water is used in Gölovası for drinking, natural spring water from Burnaz is used in the remaining neighborhoods. While there is no public transport in Gölovası, there are buses to the district center in other neighborhoods.

14.3.8 Vulnerable Groups

Vulnerable groups are people who might be directly and differentially or disproportionately affected by a project because of their disadvantaged or vulnerable status. This disadvantaged or vulnerable status may stem from an individual's or group's race, color, sex, language, religion, political or other opinion, national or social origin, property, birth, or other status (IFC PS 1).

Information on the vulnerable groups were obtained from the public sources, consultations with Mukhtars (community heads) and the household survey. The criteria used for evaluating an individual or group as vulnerable was based on the IFC definition described above and included:

- Race;
- National or social origin;
- Color;

- Language;
- Age;
- Disability;
- Poverty;
- Civil status;
- Living off the unique resources of a project area.

Adana's population is 2,263,373 which includes 1,132,511 women (50.03%) and 1,130,862 men (49.97%) (TurkSTAT, 2021). Besides, there are 654,558 people under the age of 18 (28.91%) and 205,553 over the age of 65 (9.08%) in Adana. The population of Ceyhan is 159,955 which includes 79,432 women (49.65%) and 80,523 men (50.35%). Besides, there are 51,399 people under the age of 19 (32.13%) and 16,812 people over the age of 65 (10.51%).

According to information provided by the Adana Metropolitan Municipality Health Department, 61,220 people in Adana have been provided with identity cards for the mentally or physically disabled. Of these, 17,839 were registered as severely disabled people in need of home care. According to information provided by the Ceyhan District Governorate, people receive a disability pension. In Ceyhan, persons with disabilities were registered without being categorized as mentally or physically disabled.

According to Adana Provincial Directorate of Family and Social Services 2022 data, 339,500 households receive assistance (such as food, firewood or coal, monetary support) from the state or associations in Adana, while according to Ceyhan District Governorate data, 22,890 people are provided with assistance in Ceyhan.

In Adana, there are 6,800 female heads of households applying to KADEM (Women and Democracy Association) for livelihood support. In Ceyhan, this number is 453. However, these numbers are based on the applications to the named association of people who are not in a favourable financial situation. Therefore, it is estimated that the number of female heads of households in the province is much higher than the numbers given here.

According to information provided by the Adana Metropolitan Municipality Health Department, Thalassemia/Mediterranean anemia and sickle cell anemia are reported as hereditary genetic diseases in Adana and its districts. Individuals with these diseases have not been identified in the Project's impact area based on information provided by the headmen. Therefore, they are not included in vulnerable groups.

In the Republic of Turkey, the Social Insurance and General Health Insurance (GSS) was introduced by the Social Insurance and General Health Insurance Law in order to facilitate the access of citizens without health insurance to health services. The payment for this insurance is made either by a person or by the state, depending on the financial situation of a person. In Adana, 342,690 people benefit from this service. According to statistics (Ceyhan District

Governorship), the state covers insurance payments for 70% of the beneficiaries, while the remaining 30% are people who do not have financial problems but do not work anywhere and pay their premiums out of their own savings. In Ceyhan, 35,025 people benefit from this service; the state covers insurance payments for 24,169 people and the remaining 10,856 people make payments on their own.

No secondary data on vulnerable groups in communities within the Project Social AoI is available. Therefore, this information has been obtained during the field work. Based on results of the field work, the vulnerable groups for the Project are categorized as follows:

- **Children:** Children may be vulnerable to project impacts in terms of their physical and cognitive health, safety, learning processes. In addition, the harm to children may be irreversible. Factors that may pose risks to children include: violence and exploitation; lack of care due to parents working full time; risks due to disruption to school and health services; difficulties in accessing personal hygiene and sanitation, especially for girls, etc. Children may be also left unattended in rural areas, which make them particularly vulnerable to traffic risks.
- **People who are over 65 years of age:** Elderly people have limited participation in decision-making, which can lead to certain concerns they may have being overlooked;
- **People who have chronic disorder or need special care:** During the interviews conducted with residents of Kurtpınarı, Kurtkulağı, Sarımaçı, Gölovası neighborhoods in July 2022, some households have people who have got chronic diseases⁴. In addition, there are residents who also need special care. The number of chronically diseased or people that require special care is presented in Table 14-16;
- **Disabled people:** The participation of people with mental or physical disabilities in decision-making processes may be hindered from time to time. In addition, various activities of the Project may have a greater impact on persons with disabilities;
- **People who do not have health insurance:** People who do not have health insurance are considered as vulnerable since they can not reach free or less paid treatment and medical interference. The potential negative impact on public health may affect them more;
- **People earning below the minimum wage/receiving donations from state or foundations:** People who have low income can experience adverse impacts of the Project more than other people since they have less opportunity to solve problems on their own and might require support;

⁴ ALS (Lou Gehrig's Disease), Alzheimer's Disease and other Dementias, Arthritis, Asthma, Cancer, Chronic Obstructive Pulmonary Disease (COPD), Crohn's Disease, Ulcerative Colitis, Other Inflammatory Bowel Diseases, Irritable Bowel Syndrome, Cystic Fibrosis, Diabetes, Eating Disorders, Heart Disease, Obesity, Oral Health, Osteoporosis, Reflex Sympathetic Dystrophy (RSD) Syndrome, Sudden Cardiac Arrest (SCA) in Youth, Tobacco Use and Related Conditions are considered as chronic disorder (New York State Department of Health, 2021).

- **Female-headed households:** There are women which are responsible for covering needs of their familie on their own. According to researches, women heading households are forced to play multiple, conflicting roles after losing their spouses, leaving their spouses or being alone, and have to work in marginal, part-time, informal, and low-income jobs due to lack of access to high-paying jobs (BMC Women Health, 2020). These adversities make female-headed households vulnerable.

The following interviews were conducted / information has been collected as part of the household survey:

- In Kurtpınarı Neighborhood, interviews were held with 12 people who are over 65 years of age, 14 people who do not have health insurance, 53 people earning below the minimum wage. In addition, according to interviews with residents, there are 3 persons who have chronic disorder or people who need special care and 10 disabled people in the households;
- In Kurtkulağı Neighborhood, interviews were held with 7 persons who are over 65 years of age, 2 persons who don't have health insurance, 11 persons earning below the minimum wage. In addition, according to interviews with residents, there is 1 person who has chronic disorder or needs special care and 1 disabled person in the households;
- In Sarımazı Neighborhood, interviews were held with 5 persons who are over 65 years, 5 persons who do not have health insurance, 17 persons earning below the minimum wage. In addition, according to interviews with residents, there is 1 person who has chronic disorder and 5 disabled people in the households;
- In Gölovası Neighborhood, interviews were conducted with 3 persons who are over 65 and people earning below the minimum wage. In addition, according to interviews with residents, there is 1 disabled person in the households.

Accordingly, the following vulnerable groups were identified in the communities:

Table 14-16. Approximate number of people/households in vulnerable groups within the Social AoI (according to information provided by Mukhtars (community heads) and based on results of household survey)

Type of Vulnerability	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
Children (Population Under 18)	Approximately 200 people	Approximately 100 people	Approximately 400 people	Between 100-150 people
People Aged 65+	More than a quarter of the population	More than a quarter of the population	More than a quarter of the population	More than a quarter of the population
Chronic Diseased or	Between 5-10 people	2 or 3 persons	At least 1 person	No information available

Type of Vulnerability	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
Special Care Needed People				
Disabled People (Mental & Physical)	2 persons	6 persons	2 persons	1 persons
People Who Do not Have Health Insurance	At least 10 households	Approximately 15 households	At least 10 households	Unknown number
People whos Income is below the Minumum Wage/ Receiving Donations from the State or Foundaitons	No information available	No information available	No information available	No information available
Female-headed Households	At least 15 households (one of these households is affected by the CPIR expropriation activities)	No information available	No information available	No information available

Source: Field Study, 2021

Information on the vulnerable groups discussed above is considered sufficient for the purposes of the ESIA process. However, it is advisable for the Company to interact with the local NGOs to obtain more detailed information on the vulnerable groups.

As part of the ESIA, two focus group interviews were conducted with women within the social AoI. These interviews were also decisive in determining whether women should be defined as vulnerable group for the ESIA purposes. During the focus groups, women requested to take part in consultations together with men, not specific consultations with women only. They also stated that women take part in in decision-making processes at the same grounds as men, and are not particularly vulnerable in this matter. For these reasons, women considered as part of vulnerable groups for the ESIA purposes. However, women might be part of other identified vulnerable groups (i.e. as part of such groups as female-headed households, etc.). According to the population census, there are 3,535,898 Syrian refugees in Turkey. There are 252,080 registered Syrian refugees in Adana and 10,983 in Ceyhan. However, no Syrian refugees were identified within the Project Social AoI during the field survey and analysis of secondary data. Therefore, Syrian refugees are not included in vulnerable groups for the purposes of this ESIA.

14.3.9 Project Information Level

Community Level Survey

According to Community Level Surveys with the head of neighbourhoods, all of the interviewees are aware of the Project. The mukhtars stated that since the field work of the Project had already started, information meetings were held in these neighbourhoods.

In order to reveal the needs of the region where the Project will be carried out, the mukhtars were also asked what is needed for the development of the region they live in (see. Table 14-17).

Table 14-17. Needs' assessment within the Aol (based on mukhtars' interviews)

Regional needs	Villages			
	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
Employment support/ vocational training especially for local young people	*		*	*
Football ground		*		
Condolence house		*		
Office of mukhtar		*		
Social interaction areas			*	
Support for solving infrastructure issues			*	

In order to learn about the labour force potential in the region, the headmen were also asked questions about the positions of the people who could work in the surrounding industrial facilities and the Project (see. Table 14-18). Accordingly, it is possible to say that in general, semi-skilled and unqualified personnel can be employed from the local people.

Table 14-18. Potential labour force in the neighbourhoods

	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
Welder		*	*	*
Driver	*			
Repairman			*	*
Security guard		*		*
Cleaning staff	*	*	*	*
Technician		*		
Catering staff	*	*	*	*
Engineer	*			

Source: Social Field Study, 2021

The mukhtars interviewed during the field studies were asked regarding the potential impacts of the Project, accordingly, all of the mukhtars are expecting employment opportunities from the Project. Further details can be found in Table 14-9 below.

Table 14-19. Perceptions of mukhtars about the Project

Effects	Villages			
	Kurtpınarı	Kurtkulağı	Sarımazı	Gölovası
The local economy will be positively affected by the project (Positive)		*		
Receiving logistical support from local people (Positive)		*		
Employment support for local people (Positive)	*	*	*	*
Not preferring local people in employment (Negative)				*
The project will cause environmental pollution (Negative)			*	
Negative impact of the public due to being an industrial area	*			

Key Informant Interview

Different types of stakeholders were included during the Key Informant Interviews to understand opinions and suggestions from local authorities, cooperatives and organizations in broader scope. Summary of the interviews can be found in Table 14-20 below.

Table 14-20. Summary of key informant interviews

Name of the Institution	General information of the Institution/ Organization	Project information level and perceived potential impacts	Suggestions to increase project benefits
<p>Gölovasi Village Seafood Cooperative</p>	<ul style="list-style-type: none"> • Gölovasi Village Seafood Cooperative founded in 2002; • There are 30 fisherman members of the Gölovasi Village Seafood Cooperative; • There are more than 20 fishing boats • No fishing ban 365 days. There is fishing ban for some species and sizes; • Due to the existing projects in the region, the hunting area has narrowed. • They hunt shrimp, lagoon, bluefish, minekop, halile, sea bass, sea bream bottom fish, bream, scorpion fish and slingshot; • They receive financial aid from existing projects as the hunting area is narrowed. 	<ul style="list-style-type: none"> • The cooperative president did not attend the information meeting; • Inadequate level of information, looking forward to obtaining further information; • Wants to know the date of start of construction. 	<ul style="list-style-type: none"> • As fishing, which is the primary source of livelihood, will be affected by the project, studies should be carried out on this issue; • Providing local employment in the region will be beneficial in terms of the social impact of the project.
<p>Mediterranean Agriculture and Citrus Workers Motor Carriers Cooperative</p>	<ul style="list-style-type: none"> • Mediterranean Agriculture and Citrus Workers Motor Carriers Cooperative founded in 2013; • There are 330 members of Mediterranean Agriculture and Citrus Workers Motor Carriers Cooperative; • 60 vehicles of the cooperative are in Ceyhan; 	<ul style="list-style-type: none"> • Inadequate level of information, looking forward to obtaining further information; • Wants to know the date of start of construction. 	<ul style="list-style-type: none"> • Providing local employment in the region will be beneficial in terms of the social impact of the project; • An agreement can be made with the cooperative for the transport of workers to the project area; • The cooperative can contribute finding non-skilled workers.

Name of the Institution	General information of the Institution/ Organization	Project information level and perceived potential impacts	Suggestions to increase project benefits
	<ul style="list-style-type: none"> 35 workers can be transported with one vehicle; They give D2 Driving service and lisanse to the cooperative members. 		
Local Market Near Project Site	<ul style="list-style-type: none"> A little local market which is near the project area; Owner of the market used to fish; Due to the reduction of the number of fish they had to put an end to fishing activities. 	<ul style="list-style-type: none"> Inadequate level of information; The owner did not want to attend the meeting because of the video recording during the meeting; Wants to know the date of start of construction. 	<ul style="list-style-type: none"> Providing local employment in the region will be beneficial in terms of the social impact of the project.
Restaurant Near Project Site	<ul style="list-style-type: none"> Beach café in İncirli area, which has been working for 2 years; There is a camping area near the cafe. 2 staff working in the café; Employees stay here periodically; Untreated wastewater is dumped into the sea next to the cafe. 	<ul style="list-style-type: none"> Inadequate level of information, looking forward to obtaining further information; The area where the cafe is located is in the impact zone of several projects; With this project, he thinks customers will be reduced; They want to know the date of start of construction. 	<ul style="list-style-type: none"> Social responsibility projects can be carried out in order to reduce the use of drugs by the youth in the region and to prevent them from turning to drugs; The water purification system in the region can be renewed.
Botas International	<ul style="list-style-type: none"> In 2001, BOTAŞ International (BIL) has been restructured in order to operate the BTC (Baku-Tbilisi-Ceyhan) Crude Oil Pipeline; BIL began loading at the Ceyhan terminal on the 2nd June 2006; 350 workers are employed here, including blue-collar and white-collar workers. 	<ul style="list-style-type: none"> Inadequate level of information, looking forward to obtaining further information; Project information form given. They want to know the date of start of construction. 	<ul style="list-style-type: none"> A vocational school can be established in the region and skilled workers can be trained for the project.
Botaş Port Authority	<ul style="list-style-type: none"> BOTAŞ port directorate next to the project area; 	<ul style="list-style-type: none"> Inadequate level of information, looking forward to obtaining further information. 	<ul style="list-style-type: none"> Providing local employment in the region will be beneficial in terms of the social impact of the project;

Name of the Institution	General information of the Institution/ Organization	Project information level and perceived potential impacts	Suggestions to increase project benefits
	<ul style="list-style-type: none"> BOTAŞ International began loading at the Ceyhan terminal on the 2nd of June 2006. 		<ul style="list-style-type: none"> Turning the caravanserai from the Ottoman period in Kurtkulağı into a museum would be a beneficial for the region.
ASCHEM Petrochemical Industry and Trade Inc.	<ul style="list-style-type: none"> ASCHEM PETROCHEMICAL INDUSTRY AND TRADE INC. is the manufacturer of General Purpose Polystyrene (GPPS) and High Impact Polystyrene (HIPS) in Turkey, established in 2000 at Adana - Yumurtalik Free Zone with the patent of USA's the most advanced Continuous Mass Polymerization License, FINA Co; Blue-collar workers are mostly employed from İncirli and Sarımazı; White collar employees mostly come from Adana city center; There are 60 blue-collar and 37 white-collar employees; They find employees by posting advertisements on the internet and through the headman's office. 	<ul style="list-style-type: none"> Inadequate level of information. 	<ul style="list-style-type: none"> A vocational school can be established in the region and skilled workers can be trained for the project.
Yumurtalık Municipality	<ul style="list-style-type: none"> The majority of the population of the district is engaged in agriculture and animal husbandry; The main source of livelihood in coastal areas is fishing and tourism; Yumurtalık is a tourist destination; Until 2018, a kiteboard festival was being held in the region. 	<ul style="list-style-type: none"> Inadequate level of information, looking forward to obtaining further information; Municipality employees follow the developments in the region from the official gazette. 	<ul style="list-style-type: none"> Providing local employment in the region will be beneficial in terms of the social impact of the project; Social responsibility projects can be carried out in order to reduce the use of drugs by the youth in the region and to prevent them from turning to drugs; Sports fields can be built; The greenhouses producing bananas in the region have increased, and those whose main livelihood is

Name of the Institution	General information of the Institution/ Organization	Project information level and perceived potential impacts	Suggestions to increase project benefits
			<p>affected by the project can be supported in this regard;</p> <ul style="list-style-type: none"> • Courses can be opened for illiterate women; • Job-guaranteed vocational training schools can be opened in the industrial zone.
Ceyhan Municipality	<ul style="list-style-type: none"> • Ceyhan district, where the industry is relatively developed outside the metropolitan center, shows a sub-central feature in the region; • The region is very suitable for agriculture and has a lot of agricultural land; • Agriculture is an important source of livelihood in the region; • Young population is high in Ceyhan; • Unemployment rate is high among the young; • There are neighbourhoods without internet infrastructure. 	<ul style="list-style-type: none"> • Inadequate level of information, looking forward to obtaining further information. 	<ul style="list-style-type: none"> • Providing local employment in the region will be beneficial in terms of the social impact of the project; • Social responsibility projects can be carried out in order to reduce the use of drugs by the youth in the region and to prevent them from turning to drugs; • Sports fields can be built; • Job-guaranteed vocational training schools can be opened in the industrial zone.
Ministry of Food, Agriculture and Livestock Ceyhan District Directorate	<ul style="list-style-type: none"> • The region is very suitable for agriculture and has a lot of agricultural land; • Agriculture is an important source of livelihood in the region; • Young population is high in Ceyhan; • Unemployment rate is high among the young. 	<ul style="list-style-type: none"> • Not at this stage as the Directorate do not have sufficient information on the Project; 	<ul style="list-style-type: none"> • Studies can be conducted on the social and environmental impacts of the project by communicating with the district governor;
Agricultural Credit Cooperative No. 2001 (Kurtkulağı)	<ul style="list-style-type: none"> • The head of cooperative have knowledge on neighbouring facilities in the region. 	<ul style="list-style-type: none"> • Do not have in depth information about the Project at this stage; • Employment opportunities. 	<ul style="list-style-type: none"> • No suggestions at this stage.

Name of the Institution	General information of the Institution/ Organization	Project information level and perceived potential impacts	Suggestions to increase project benefits
Agricultural Credit Cooperative No. 1953 (Sarımazı)	<ul style="list-style-type: none"> The head of cooperative have no detailed information about the Project at this stage. 	<ul style="list-style-type: none"> The head of cooperative has no detailed information about the Project at this stage, however looking forward to obtain further information; No perceived impacts expected at this stage considering the Project related activities did not start to date 	<ul style="list-style-type: none"> No suggestions at this stage.

14.4 Impact Assessment for Construction Phase

14.4.1 Direct and Indirect Employment Opportunities

It is envisaged that the Project will have a positive impact on employment which can be direct (i.e., on-site employment), indirect (i.e., suppliers or support services) and induced employment (i.e., created due to the expenditure of new employees). Estimated number of employees for construction phase of the Project are 4,500 at its peak.

The Project will be beneficial for the economic growth in the Region. In addition, the Project may create in-direct employment opportunities during the construction period to provide service for the Project Company. The Project Company provides catering, cleaning, and transportation services for all workers. For these services, local people and suppliers will be utilized. The restaurant located in Kurtpınarı neighbourhood, İncirli locality, which is the closest settlement to the project site, may be one of the places used by the Project employees. It is also a contribution to the local economy that the employees travel around the Project site for sightseeing purposes, eat, drink and shop on weekends or holidays.

It is envisaged that the Project will have positive impacts on the local and regional economy with the employment opportunities created. Besides, due to the expected reduction in imports after the establishment of the Project, the Project is expected to have continuous positive effect contributing to the Gross Domestic Product (GDP) of Turkey.

Project Company aims that the workforce will be sourced locally to the extent possible. As such, the provision of temporary employment might provide a significant benefit to the economy. All construction workers will be employed and remunerated in accordance with the provisions of Turkish law and IFC PS2/EBRD PR2: Labour and Working Conditions.

In addition to the direct employment benefits of the Project, indirect and induced employment benefits will also arise. Indirect employment is created in providing goods and services during the construction phase; induced employment is created by the expenditure of direct and indirect employees' earnings in the economy.

Within the scope of the Project, it is planned that 4,500 people will work during the peak time of the construction period. Hence, compared to the total unemployment rate in Adana (approximately 231,000 unemployed for the age 15 and above and 228,000 for the age 15-64 (TUIK, 2015), it can be said that the Project will have a relatively low but positive impact regarding regional employment.

Potential risks are associated with violation of labour requirements with regard to labour and working conditions. These may include improper management of labour relations, untimely or unfair remuneration, failure to provide safe working conditions, and lack of grievance

mechanism. Such risks are particularly relevant to the Project (sub)contractors. See Chapter 16 for more detail.

Potential positive impacts will be also associated with social investment activities to be conducted by the Company.

14.4.2 Impact Related to Provision of Temporary Workforce Accommodation

Ceyhan PP A.Ş. intends to employ as many construction workers based in Adana as is possible. There will be on-site worker accommodation. The camp site will be equipped with the necessary utilities and infrastructure to support their operations including power generation, water supply, sewage treatment and waste management. Ceyhan PP A.Ş. shall ensure that accommodation of workers and provision of basic services to workers are managed in line with the guidance note on workers' accommodation published by IFC and EBRD (Workers' Accommodation: Processes and Standards). The risks related to workers accommodation are assessed in Chapter 16.

14.4.3 Impact on Population and Demographics

The introduction of the imported temporary workforce during construction and the creation of a small number of permanent jobs during operation will have no impact on the population of the district, which was recorded as 160,977 for Ceyhan district in 2019. The significance of impact is considered negligible.

14.4.4 Impact Associated with Workers Influx

The Project construction will lead to workers' influx into the area (with a peak of 4,500), which in its turn might lead to potential conflict of workers with local residents, potential spread of infectious diseases and additional load on social infrastructure. Location of camps near the existing communities may present risks to local people. In particular, these risks might be relevant to the communities located nearby to the Project site and Mobilization area, including Incirli. The risks might be related to potential use of drugs or alcohol by the Project personnel and gender-based violence and harassment (GBVH), which may also contribute to the risks described above.

These risks are assessed in Chapter 15.

14.4.5 Land Acquisition and Resettlement

According to the EIA report and the baseline studies undertaken within the scope of the ESIA study:

- Ceyhan Energy Specialized Industrial Zone is allocated for Industry and Storage purposes;

- The entire Project site is located on the Ceyhan Energy Specialized Industrial Zone lands;
- The lands in CPIR which also includes the Project and its Associated Facilities were expropriated by MoIT in 2019 within the scope of the Expropriation Law No. 2942, in line with the provisions of Article 10 of the Regulation on Industrial Zones;
- Despite the completed expropriation process there are a few expropriated land plots on which housings are still in use by local residents at the footprint area of the Associated Facilities of the Project;
- Within the boundaries of the Project area, the expropriation of all the land parcels has been already completed (the last parcel no. 622 was expropriated on October 6, 2022, with the court case being completed). This parcel will be used for the Mobilization Area and Terminal site;
- 41.38% of the Project area consists of agricultural areas with natural vegetation and 58.62% of natural meadows;
- The vicinities of the Project site are composed of lands that can be defined with marginal agricultural land characteristics and hence have significant limitations for an alternative agricultural use;
- The Project site is located on a coastline which is designated for Industrial and Energy Facilities according to the 1/50,000 scaled İskenderun Bay (Adana-Mersin-Hatay) Integrated Shoreline Plan and the region is not favorable for industrial fishing;
- The Project area and its vicinities including the sea site of the shoreline, where the Associated Facility Jetty is located, are in a Special Security Zone announced as per the Presidential Decision date/number: 04.10.2019/1649;
- The mobilization area that is also an Associated Facility of the Project will be used during the construction phase of the Project by renting from the Management Company;
- Other Associated Facilities, the topsoil and overburden deposition areas, will be temporarily used to stockpile and manage material excavated during the Early Works of the Project;
- The relocation of the olive and citrus trees -that were planted on the treasury lands (expropriated by MoIT) that are within the boundaries of the CPIR is already completed in 2020 under the supervision of the PDoAF;

The Project area has the characteristics of land located within the municipality boundaries. In the area where the project is planned, work and transactions continued within the scope of the Expropriation Law No. 2942, as stated in Article 10 of the "Industrial Zones Regulation", which was published in the Official Gazette dated 06.08.2019 and numbered 30854 (EIA Report, 2020).

EIA report mentions that olive trees are found at various locations within the CPIR. However, the olive trees in CPIR are not classified as the olive groves regulated by Law No. 3573 under the provisions of Article 3. Additionally, according to the land registry records CPIR does not include any lands classified as olive grove.

Before the start of the Project activities olive trees in the area were transferred in accordance with the Article 20 of the Law No 3573 to 90-decare forest land area in Narlıören locality of the Yumurtalık district, in cooperation with the Adana Provincial Directorate of Agriculture and Forestry and the Adana Forestry Management Directorate.

The results related to land acquisition and expropriation when the interviews conducted during the fieldwork can be listed as follows:

- Before the expropriation of Ceyhan Energy Specialized Industrial Zone area in 2010 the land was being used by locals for agricultural activities, grazing and growing olive trees on those lands of public property status rented from the government;
- After the expropriation decision was made, the lease could not be renewed, but the locals continued to grow the trees;
- The National Real Estate Directorate decided to move the olive trees off-site during planning of the CPIR. According to the Turkish legislation, expropriation payment cannot be compensated to the farmers who have a product on the lands with public property status (treasury land) in the expropriated area. For this reason, expropriation and product price payments were not paid to the people who have olive trees on the lands within the industrial specialization area;
- The olive trees were transported to the Narlıören locality in Yumurtalık district in February 2020. The transported trees were located in parcels 130/1, 145/1, 145/2, 145/4, 145/6, 147/1, 149/1, 150/5, 150/6, 0/9001 and 0/1352. According to satellite images, olive or citrus trees are still visible in parcels 133/1, 134/1, 135/1, 136/1, 625, 627 and 628 (approved by the headman). The trees in parcels 133/1, 625, 627 and 628 are in the gardens of the expropriated houses;
- The expropriation process of the lands within the CPIR area has been completed. The land acquisition process is governed by MoIT;
- On the other hand, those whose litigation process is over, since more than one right holder appears in the title deed, the expropriation cost is divided among these persons, and the cost of their share is less.

During the in-depth interview (06.07.2021), the headman of Kurtpınarı informed that 15 houses in İncirli locality were subject to expropriation due to the Project activities.

During the field studies, in-depth interviews were conducted with 9 of the 15 people whose houses were subject to expropriation. Interviews could not be conducted with the remaining 6

people because they were in the upland at the time of the survey. Surveying of the relevant properties from the outside, it is seen that relevant houses are of 1.5-2 acres footprint area including accompanied garden with some fruit and olive trees in it. The photographs from the field visit are given in Figure 14-18 to 14-23 below.



Figure 14-18. Residential Area within the Project Site – 1



Figure 14-19. Residential Area within the Project Site – 2



Figure 14-20. Residential Area within the Project Site – 3



Figure 14-21. Residential Area within the Project Site – 4



Figure 14-22. Residential Area within the Project Site – 5



Figure 14-23. Residential Area within the Project Site – 6

The interviewees stated that they would not be able to afford resettlement to a new property due to high construction costs.

Another issue in this process is land ownership. The ownership of the lands where the houses are located belongs to 10 people, and since these people passed away years ago, the number of beneficiaries is very high. Therefore, the payment obtained because of expropriation remains very low.

There are 15 houses that are located within expropriation area of CPIR.

The headman of Kurtkulagi stated that some of the local people were planting olive trees on leased public property lands before the expropriation decision was made and continued doing this even after the decision was made. According to information obtained during the field survey, when the Project was initiated, the olive trees owned by those locals were also transported to the Yumurtalık district, Narlıören locality among all other trees transported.

According to the data obtained from the field studies, the table showing the status of owning olive trees and the expropriation status of these trees is given in Table 14-21 below.

Table 14-21. Olive trees frequency

Current Situations	Frequency	(%)
The participants have olive trees and trees were not transported	51	22.9
The participants does not have olive trees	28	12.6
The participants have olive trees and trees were transported	10	4.5
The participants that are not farming in the region	134	60.1
Total	223	100

Source: Field Study, 2021

As can be seen from the table, the number of people who have olive trees and whose trees are not transported is dominant among the interviewees. Among the interviewed people dealing with agricultural activities, there are 10 people who have olive trees and transported these trees to another place. The olive groves of these people were transported because of they remained within the boundaries of the Project site.

During the field study, it was discussed that a fish restaurant located very close to the Project site might be removed because it is within the boundaries of the Project site. The informant stated that the land where the restaurant is located is the treasury land, and that he rented the restaurant as a tenant from the person who leased the treasury land. According to information provided by the manager of the restaurant, after the urgent expropriation, restaurant licenses are suspended because the tenant could not pay for the lease. Photographs of the restaurant taken during the fieldwork are given in Figure 14-24 and 14-25 below.



Figure 14-24. The restaurant within the CPIR



Figure 14-25. The restaurant within the CPIR

Therefore, the Project will lead to land acquisition and, potentially, to physical and economic displacement. Sensitivity of the receptor (potentially affected land owners and users, and households to be potentially resettled), is considered moderate. Impact significance is considered high due to the relatively high number of affected land owners/users and potential resettlement. Therefore, significance of impact is assessed as high.

14.4.6 Traffic Impacts

There will be an increase in vehicle traffic particularly on the road traffic during the Project construction phase. The baseline conditions and potential impact of increased traffic is assessed with a Traffic Study undertaken by Ceyhan PP A.Ş. The construction activities of the Project is planned to be conducted in parallel to the construction activities of CPIR. Considering these conditions the Traffic Study indicated that the capacity of the local transportation network is sufficient to carry traffic load caused by the construction activities of the Project during peak hours. With that, it is important to take necessary measures in coordination with public authorities in order to maintain safety of residents of the nearby communities, especially Incirli neighbourhood. Relevant details are provided in Section 14.1.21 and *Chapter 11: Traffic Impact*.

There are two fishing settlements in the area of influence: Incirli and Golovasi. Although Incirli is closer to the Project area, fishing activity is less intense there than in Golovasi. During the field studies, it was identified that there were 7 boats in Incirli. During the interviews conducted with the boat owners and crew, it was identified that they do not have cooperatives and they are engaged in fishing as a secondary source of livelihood. However, they also stated that they get almost half of their income from fishing. Fishermen stated that they usually go fishing for 12 months, but they do more activities in September-May because there are fishing regulatory restrictions in summer.

It is planned that piles will be driven first during the construction period of the associated facilities. If there is not enough lighting and information during the construction period, fishermen may hit the piles in this area at dusk, their nets may be snagged and torn, the fishing areas may be temporarily restricted due to the protection band or their access may be difficult.

Fishing is more developed in Golovasi. During the meeting with the head of the fisheries cooperative, it was learned that more than 20 fishermen are actively fishing, which is their primary source of income. The expected impacts on fishermen of Golovasi and Incirli are expected to be similar.

It should be noted that fishing areas have already been narrowed due to such industrial facilities as Toros Tarım, BOTAŞ and İsken Thermal Power Plant. Detailed information on this subject is included in *Chapter 18-Cumulative Impact Assessment*.

Table 14-22 shows the summary of the respective socioeconomic impact assessment for construction phase of the Project:

Table 14-22 Table 14-22 shows the summary of the respective impact significances during construction phase. Impact significances are determined based on the methodology given in Chapter 4 of this ESIA Report.

14.4.7 Impact Significances for Construction Phase of the Project

Table 14-22 shows the summary of the respective socioeconomic impact assessment for construction phase of the Project:

Table 14-22. Construction Phase Impact Magnitude

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to direct and indirect employment opportunities	Positive Direct	Definition	Construction activities will create direct or indirect business opportunities regionally.	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Considering the number of people to be recruited and prioritizing local workers, positive effects are expected to be high.	-	The Project will lead to employment opportunities.	Construction activities will take 38 months. There is the possibility of employment throughout this process.
		Score	Regional	Long	High	N/A	Probable	Mid-term
		Value	3	4	4	-	5	3
	Impact Magnitude (G+D+I+F (or L)) x R	48						
Impacts related to provision of temporary workforce accommodation	See Chapter 16							

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on population and demographics in Ceyhan district	Negative Direct	Definition	Population and demographic impacts will remain local.	The construction period is limited to 38 months.	It will not have any impact on the district population recorded as 160,977 for the Ceyhan district in 2019.	-	Negative impacts of the Project on population and demographics are unlikely.	There are reversible impact within a short period of time after the source of the impact is cut off.
		Score	Local	Long	Negligible	N/A	Improbable	Short term
		Value	2	4	1	-	0	1
	Impact Magnitude (G+D+I+F (or L)) x R	7						
Impacts on settlements related to workers influx	See Chapter 15							
Impact on formal land owners/users	Negative Direct	Definition	The Project site is located in the industrial area in CPIR, the expropriation of which is completed by the MoIT. The geographical extent is expected to be local.	Impact relates to the operation phase of the Project which is over 50 years.	The impact is might cause tangible changes in environmental or social components.	NA	The impact will occur during implementation (construction and operation) of the Project (i.e., it is essentially inevitable). (Probability; greather than 50%)	The Project does not affect lands particularly favorable for agricultural activities. The region is dominantly allocated for industrial purposes and includes several energy and industry facilities. Hence, initial conditions can be restored within a few months to one year after cessation of the impact source and/or with restoration activities.
		Score	Local	Very long	Medium	-	Probable	Short/mid-term:
		Value	2	5	3	-	5	2
	Impact Magnitude (G+D+I+F (or L)) x R	30						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
Impact on the informal land users for agricultural activities within the Project Site boundaries	Negative Direct	Definition	The olive and citrus trees are replanted to another site. Furthermore, during the site visit in 2020 it was observed that grazing and agricultural activities still continue despite the change of the land use status of the the Project site.	Due to the use of the Project site and the Associated Facilities and depending on the regulatory requirements of the Special Security Zones impacts may continue during the construction and operation phases unless efficient compensation measures are taken.	The impact might cause tangible changes in socioeconomic components regarding the non-official users of lands.	NA	The event will occur during implementation (construction and operation) of the Project (i.e., it is essentially inevitable). (Probability; greather than 50%)	The trees are already relocated from the site and the land cover properties including natural vegetation will be changed by the Project. Considering potential replantation of olive and citrus trees after the rehabilitation phase the impact is defined as reversible but in medium-term rather than short term.	
		Score	Local	Very long	Medium	-	Probable	Mid-term	
		Value	2	5	3	-	5	3	
	Impact Magintude (G+D+I+F (or L)) x R		45						
Impacts related to households to be resettled	Negative Direct	Definition	Impact related to resettlement is in the local area.	The impacts of the acquisition of land and houses can be long-lasting.	Land acquisition and resettlement might cause serious disruptions in people's livelihoods.	-	There is land acquisition within the scope of the project.	If land acquisition is not conducted properly, it can have irreversible impacts.	
		Score	Local	Very Long	High	N/A	Likely	Irreversible	
		Value	2	5	4	-	3	5	
	Impact Magintude (G+D+I+F (or L)) x R		70						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on traffic (see Chapter 11 Traffic)	Negative Direct	Definition	The Project and Terminal Facility will cause traffic in the Project site and on the highways around the Project site. Marine traffic will remain regional.	38 months.	It is expected that the traffic impact of the construction period will be at a medium level.	Traffic flow will continue during the construction period and an additional load is expected.	-	Traffic impacts can disappear in a short time with proper procedures.
		Score	Regional	Long	Medium	Recurrent	N/A	Short term
	Value	3	4	3	3	-	1	
	Impact Magnitude (G+D+I+F (or L)) x R	13						

Table 14-23. Vulnerabilities and Receptor Sensitivity

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Potential Project workers	Medium	The potential impacts relate to: <ul style="list-style-type: none"> • Direct and indirect employment opportunities; • Accommodation. 	3
Local communities / settlements	Medium	The potential impacts relate to: <ul style="list-style-type: none"> • Population and demographics; • Workers influx; • Traffic. 	3
Land users, including those conducting agricultural activities on official basis	Medium	The official land users are considered to be able to cope with potential changes of caused by industrial development. However, it is necessary to ensure that adequate grievance mechanism is developed, adequate compensation is provided, etc., otherwise land users might experience negative change in livelihood status, household assets/income or living conditions.	3
Non-official land users for agricultural activities	Medium	The non-official agricultural activities on the expropriated lands are not the only economic activities of the users of these lands. Additionally, the local community and PAP are considered to be able to cope with changes caused by development. However, implementation of relevant measures (grievance mechanism, adequate compensation, etc.) is necessary.	3
Households to be resettled	Medium	The potential impacts relate to land acquisition and resettlement.	3
Fishermen	High	Livelihoods may be affected.	5
Businesses (see Chapter 15)	Low	Positively, business potential and revenues may increase. Negatively, contractors may default on their debts.	1
Schools (see Chapter 15)	Medium	Impacts expected due to terrestrial traffic.	5
Facilities (see Chapter 15)	Medium	Impacts expected due to terrestrial traffic.	3

Table 14-24. Impact Significances

Potential Impact	Impact Magnitude	Sensitivity Value	Total Value	Impact Significance	
				Score	Description
Impacts of direct and indirect employment opportunities on potential project workers	48	3	144	Medium	The construction phase of the Project will lead to significant employment potential. The impact was evaluated as positive.
Impacts of direct and indirect employment opportunities on businesses	48	1	48	Low	Direct and indirect employment opportunities arising from the project are expected to increase the revenues of the enterprises. On the other hand, contractors who will work temporarily at the Project site may work on loan with local

Potential Impact	Impact Magnitude	Sensitivity Value	Total Value	Impact Significance	
				Score	Description
					businesses and may leave the site without paying their debts.
Impacts of accommodation on potential project workers	See Chapter 16				
Impacts on population and demographics in Ceyhan district	7	3	21	Negligible	The expected impact of the construction phase of the project on population and demographics is negligible.
Impacts of workers influx on local communities	See Chapter 15				
Impacts of traffic on local communities (see Chapter 15)	13	3	39	Low	The construction phase of the Project will increase regional traffic. However, studies show that the project can meet the traffic load.
Impact on formal land owners/users	30	3	90	Medium	Impact can be minimized to a level that is as low as reasonably practicable (ALARP) by proper measures including grievance mechanism, compensation of losses and adequate resettlement of the residents on expropriated lands.
Impact on the informal land users for agricultural activities within the Project Site boundaries	45	3	135	Medium	Impact can be minimized to a level that is ALARP by proper measures including grievance mechanism, compensation of losses.
Impacts related to households to be resettled	70	3	210	High	If the mitigation measures are not taken, the effects of land acquisition and resettlement can be high.
Impacts of terrestrial traffic on schools (see Chapter 15)	13	5	65	Medium	Terrestrial traffic during the construction period has the potential to pose a danger to students.
Impacts of terrestrial traffic on facilities (see Chapter 15)	13	3	39	Low	During the construction period, terrestrial traffic may affect the transportation of raw materials and products from facilities located in the immediate area.
Impacts of marine traffic on fishermen	13	5	65	Medium	Accidents may occur if the fishermen are not informed and the lighting is insufficient during the construction at marine area.

14.5 Impact Assessment for Operation Phase

14.5.1 Benefits to National Economy

Plastic products production, import and export

Polypropylene is the most common plastic raw material after polyethylene with regard to its production, consumption and foreign trade. Thus; in 2015 polypropylene imports received 16% share in total plastic raw material imports and 17% share in total plastic raw material exports in the world⁵. Plastic products production, which has been 7,087,000 tons with a market value of approximately 26 billion dollars (for a 9-month period in 2018), decreased to 6,699,000 tons and approximately 24 billion dollars (in the same period within 2019); accordingly, the production was decreased by 5% on quantity and 8% on value basis between 2018 and 2019⁶. Figure 14-26 shows the decrease in the plastic product production.

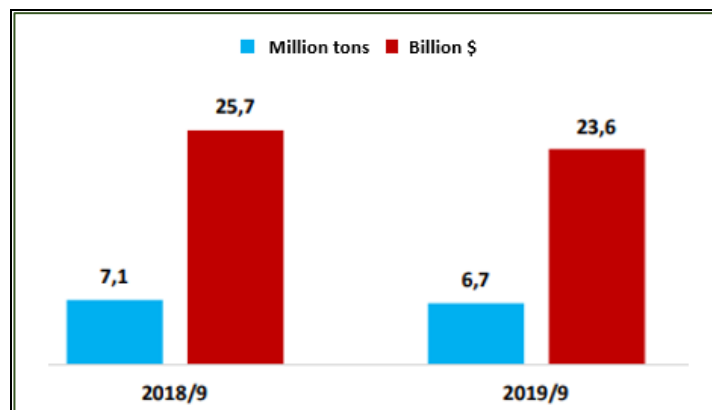


Figure 14-26. Co-Period Comparison of Plastic Product Production (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)

414,000 tons and nearly 2 billion dollars of plastic products were imported within the 9 months period in 2019. Imports of plastic products decreased by 8% on quantity and 14% on value basis compared to the same period of 2018⁷. Figure 14-27 shows the decrease in plastic product import with graphs.

⁵ Subcontracting & Supplier Newspaper, November 2016, World and Turkey Polypropylene (PP) Report (<http://www.subconturkey.com/2016/Kasim/koseyazisi-Dunya-ve-Turkiye-Polipropilen-PP-Raporu.html>)

⁶ Turkey Polypropylene Sector Monitoring Report, 2019, Turkish Plastics Industry Foundation (PAGEV) <https://www.pagev.org/upload/files/Plastik%20%20Sekt%C3%B6r%20Raporu%202019%20Ocak%20-%20Eyl%C3%BC.pdf>

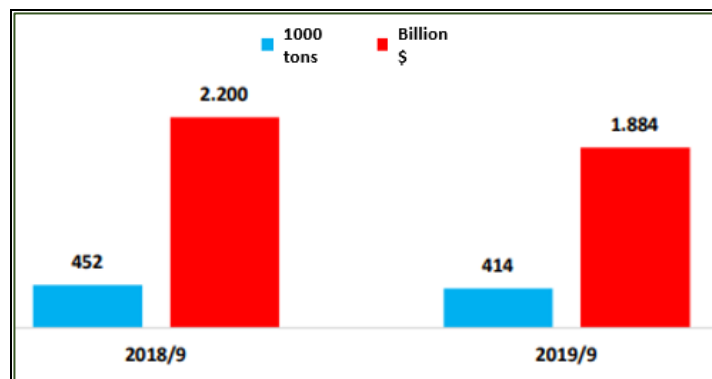


Figure 14-27. Co-Period Comparison of Plastic Product Import (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)

Similarly, within the 9 months period in 2019, 1,427,000 tons and 3,5 billion dollars of plastic products were exported. Exports of plastic products has increased by 10% on quantity and 3% on value basis compared to the same period of 2018⁷. Figure 14-28 shows the increase in plastic product export with graphs.

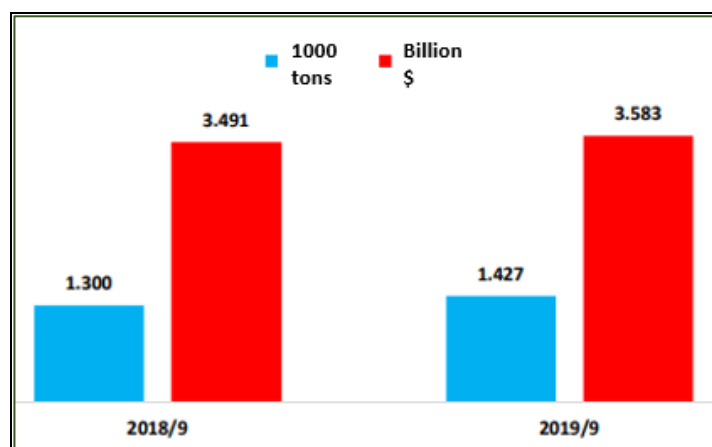


Figure 14-28. Co-Period Comparison of Plastic Product Export (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)

While Turkey imports plastic products from over 100 countries each year, plastic products are exported to nearly 200 countries⁷. Imports from 10 countries in the 9 months of 2019 constituted 65% on amount and 72% on value basis of total imports. In this period, Germany became the country where the most plastic products were imported with 14% share on amount and 18% on value basis of Turkey's total plastic product imports; and China has the second-largest import share with 25% on amount and 18% on value basis. Apart from Germany and China, it is seen that Italy, France and South Korea maintain their position in Turkey's importers for plastic products with the largest amounts⁷.

Exports to 10 countries in 9 months of 2019 constituted 49% on amount and 46% on value basis of total exports. In this period, Iraq, Germany, England, Israel and Romania formed Turkey's largest exporters for plastic products⁷.

The amount of plastic product use in the domestic market was 5,148,000 tons and nearly 22 billion dollars within the 9-month period in 2019. The share of plastic use in the domestic market decreased by 5% on amount and 10% on value basis compared to the same period of 2018⁷. Figure 14-29 shows the decrease of plastic use in domestic market.

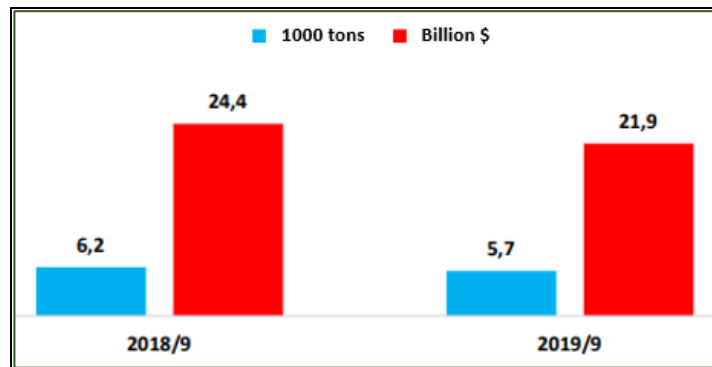


Figure 14-29. Co-Period Comparison of Domestic Consumption of Plastic Products (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)

Plastic raw materials production, import and export

Total plastic raw material production is estimated to be around 761 thousand tons within 9 months period in 2019 in Turkey. Low density polyethylene (LDPE) constitutes 31% of the total plastic raw materials, followed by high density polyethylene (HDPE) with 9%, polyvinyl chloride (PVC) with 15%, Polypropylene with 12%, Polystyrene with 10%, Polyethylene Terephthalate (PET) with 23%⁷.

Within the 9 months period in 2019, 5 million tons and 7 billion dollars of plastic raw materials were imported. The share of plastic raw material imports decreased by 1% on amount and 14% on value basis compared to the same period of 2018. In the 9 months period in 2019, the highest imports were made in polyethylene and polypropylene in terms of quantity and value. Imports from both of these raw materials accounted for 54% on amount and 51% on value basis among the total plastic raw material imports⁷.

In the 9 months period in 2019, 881 thousand tons and 2 billion dollars of plastic raw materials were exported. Plastic raw material exports increased by 32% on amount and 10% on value basis compared to the same period of 2018. In the 9 months period in 2019, the largest exports in amount and value basis occurred in acrylic polymers and polyacetals.

While Turkey imports plastic raw materials from over 100 countries, plastic raw materials are exported to close to 100 countries⁷. Imports from 10 countries in the 9 months of 2019 constituted 64% on amount and 67% on value basis of total imports. In this period, Saudi Arabia, South Korea and Germany take the first three places in Turkey's importers for plastic raw materials with the shares of 34% on amount and 35% on value basis totally⁷. Exports to 10 countries in 9 months of 2019 constituted 46% on amount and 47% on value basis of total

exports. In this period, Germany, Iran and Egypt take the first three places in Turkey's exporters for plastic raw materials with the total shares of 16% on amount and 19% on value basis totally⁷.

Plastic raw materials consumption

Domestic consumption of plastic raw materials was realized as 5.1 million tons and 6.8 billion dollars in the 9 months of 2019. Domestic consumption decreased by 6% on amount and 17% on value basis compared to the same period of 2018⁷. Figure 14-30 shows the decrease in domestic consumption of plastic raw materials with graphs.

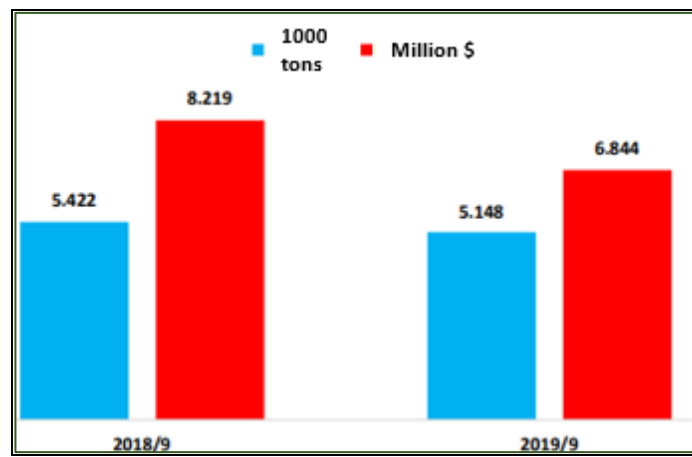


Figure 14-30. Co-Period Comparison of Domestic Consumption of Plastic Raw Materials (Source: Turkey Polypropylene Sector Monitoring Report, 2019⁷)

In specific of polypropylene, it is observed that total polypropylene production of Turkey between the years of 2013 and 2017, decreased by 8.4% on average per year. However, it is observed that imports, exports and domestic consumptions increased by 6.9%, 5% and 6% respectively⁷. Change in Turkey's import and export of polypropylene by years is shown in Figure 14-31 and Figure 14-32.

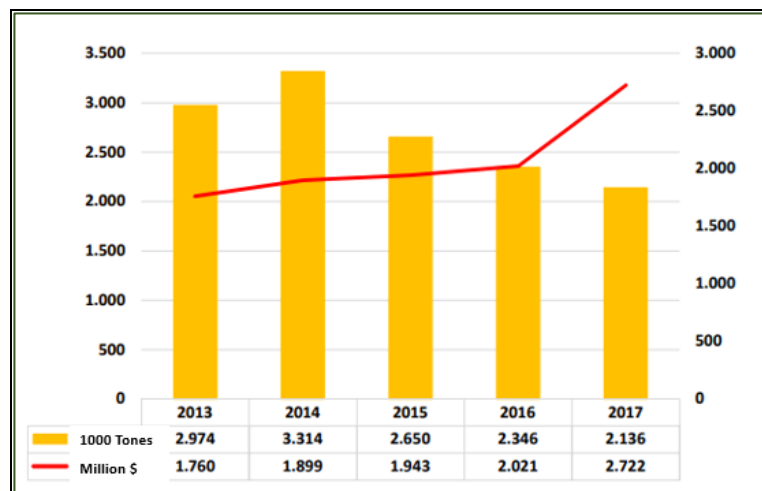


Figure 14-31. Change in Turkey's import of polypropylene by years (Source: Turkey Polypropylene Sector Monitoring Report, 2017⁷)

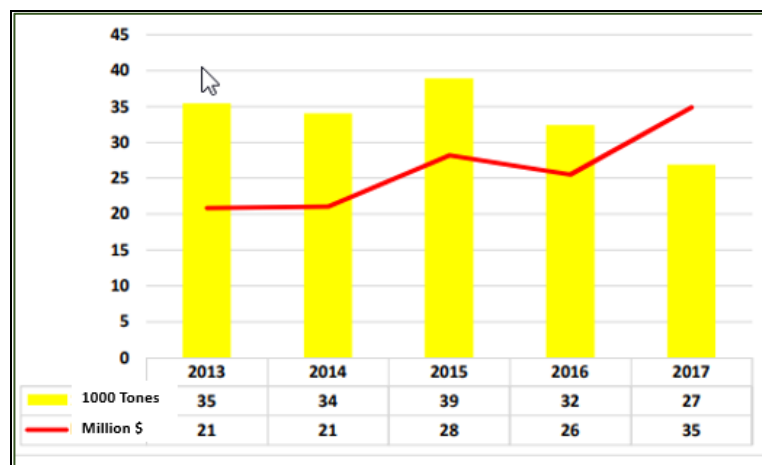


Figure 14-32. Change in Turkey's export of polypropylene by years (Source: Turkey Polypropylene Sector Monitoring Report, 2017⁷)

The most important problem in the petrochemical industry of Turkey is, in spite of rapidly rising domestic demand, domestic production remains extremely low because of very limited investment. This, on the one hand, negatively affects the competitiveness of the sector against its competitors both within the country and around the world, while on the other hand, causes the added value of the petrochemistry sector, which is very high, remains abroad⁸.

In line with Turkey's 2023 strategy, the government aims to increase the gross domestic product; therefore, increasing industrial production capacity is deemed as a significant factor that contributes to this aim. As part of this strategy, there are a number of initiatives including the establishment of the CPIR with the primary aim of attracting potential investors. Therefore,

⁷Turkey Polypropylene Sector Monitoring Report, 2017, Turkish Plastics Industry Foundation (PAGEV) (<https://www.pagev.org/upload/files/Hammadde%20Yeni%20Tebli%C4%9F%20Bilg.%203/T%C3%BCrkiye%20Polipropilen%20Raporu%202017.pdf>)

⁸ Petroleum and Chemical Industry Report, 2017, Ankara Chamber of Industry (<https://www.aso.org.tr/wp-content/uploads/2017/09/9.pdf>)

it is anticipated that the development of the CPIR will significantly decrease import dependency. Ceyhan PDH-PP Project is being developed to produce polypropylene as part of the CPIR in Ceyhan district. It is estimated that the Project will meet 15% of the Turkey's polypropylene demand, and therefore will have positive impact on national economy.

14.5.2 Impacts on Direct and Indirect Employment

There will be employment opportunities during the operation of the Project. Total number of workforce to be employed during operation phase of the Project and Associated Facilities is 321 at its peak including personnel to be employed by Project Company and their subcontractors. Due to the nature of the polypropylene production facility, it will require mainly highly skilled personnel (qualified workforce) during the operation phase of the Project; as such, candidate's professional suitability with the required jobs will be evaluated/assessed during the recruitment phase. The Project Company favours local recruitment as long as the requirements match the profiles of the local job seekers. In addition to the direct positive impacts of employment of the Project, indirect and induced positive impacts of employment might also arise.

Potential positive impacts will be also associated with social investment activities to be conducted by the Company.

14.5.3 Impacts on Road and Marine Traffic

Road traffic

There will be an increase in vehicle traffic with the development of the Project during both construction and operation phases. Vehicle traffic will increase due to the expected number of employees and service providers. In order to understand the existing baseline conditions and future conditions in detail, Ceyhan PP A.Ş. has assigned a traffic consultant to undertake a traffic assessment study.

It is concluded in the Traffic Study that the capacity of the transportation network is sufficient to carry traffic load caused by the construction activities of the Project during peak hours under current traffic load, and future traffic load conditions. With that, it is important to take necessary measures in coordination with public authorities in order to maintain safety of residents of the nearby communities, especially Incirli neighbourhood.

During operation phase of the Project, the total of 321 personnel will be travelling to and from the Project site by private cars and personnel shuttles; reportedly 66% of the personnel are expected to use shuttle buses and the remaining personnel will be using their private vehicles. The traffic increase in the vicinity of the Project site will be in the range of 24 to 138 % for future forecast and 95 to 138 % when the current conditions are considered. The access road is planned to be a 15 m wide road with 2 lanes as indicated in the zoning plan. According to the Traffic Study Report of the Project, regarding the available road condition one lane can

sufficiently carry a traffic load of 600 vehicles per hour. In that sense, the capacity of the road is found adequate both for current and future conditions. These topics are discussed in detail in *Chapter 11: Traffic Impact*.

Marine traffic

A vessel maneuvering risk modelling study was performed for Raw Material Supply, Storage and Port Facility Project (CPIR Port) by Maritime Faculty, Dokuz Eylül University (“Adana Ceyhan Port Modelling Report” 10 August 2020). The Jetty, that is planned to be a part of the CPIR Port that will serve for the raw material supply of the Ceyhan PDH-PP Project and is, therefore, considered as an integral part of this project. Hence, beside the environmental assessment for the Jetty Section that is included in this ESIA study the results of the vessel maneuvering risk modelling study are also assessed in that scope.

The following risks were identified regarding approaching maneuvers of vessels i) disruption of maneuvers in case of a simultaneous maneuvering of vessels coincide with the vessels approaching to BOTAŞ Facility; ii) disturbance to maneuvers that may occur due to damages on the ropes of tug boats caused by strong waves; iii) risks associated with insufficient pulling power of tug boats for the vessels (if Length Overall (LOA)>300 m). Additionally, risks were also identified for departing maneuvers of vessels which are i) risks associated with insufficient pulling power of tug boats for the vessels (if LOA>300 m) and ii) risks that may occur during departing the tanker terminals without support in case of an unexpected meteorological condition.

It is concluded in the modelling study that the approaching points/berths do not possess unacceptable risks for the designed vessels. Additionally, the existing neighbouring facilities as well as planned developments in the close surrounding of the CPIR Port Project were also included in the assessment. The interaction of the CPIR Port Project and planned development to be proposed by Toros Agri Industry were studied and it was found that the distance between the two facilities have enough space for vessels’ maneuvering. Additionally, it was also found that the safety distances especially between jetties # 2 and 3, and the design in terms of maneuvering was suitably arranged considering the neighbouring BOTAŞ-BIL Facilities.

In terms of safe navigation of vessels and marine safety of life and property, the mitigation measures proposed in the Adana Ceyhan Port Modelling Report prepared by Maritime Faculty, Dokuz Eylül University shall be undertaken by the Project Company during construction and operation phase of the Project. It is noteworthy to mention that, the design of the marine section of the CPIR Port (including jetties) shall be made in accordance with the findings driven from the simulation study and recommendations that have been already stated in the Adana Ceyhan Port Modelling Report.

These topics are discussed in detail in *Chapter 11: Traffic Impact* and *Chapter 15: Community Health and Safety*.

Marine traffic has the potential to affect fishermen as well. It is expected that a maximum of two ships will approach the Jetty area per month. Impacts related to collision with fishing vessels and damage to fishing nets might be expected. These risks will be managed by the Coastal Safety Authority and the Project Company.

The table below shows the summary of the respective impact significances during operation phase. Impact significances are determined based on the methodology given in Chapter 4 of this ESIA Report. These topics are discussed in detail in *Chapter 11: Traffic Impact*.

14.5.4 Impact Significances for Operation Phase of the Project

Table 14-25 shows the summary of the respective Impact assessment for operation phase of the Project:

Table 14-25. Operation Phase Impact Magnitude

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on national economy	Positive Direct	Definition	The operational period of the project will have an impact for the national domestic market.	49 years	The social and economic impact of the impact is expected to be high.	-	The positive impact of the Project is expected to be at a high level.	The impact of the project is not expected to turn negative.
		Score	National	Very Long	High	N/A	Probable	Irreversible
		Value	4	5	3	-	5	5
	Impact Magnitude (G+D+I+F (or L)) x R		85					
Impacts on direct and indirect employment	Positive Direct	Definition	High qualification is expected from those who will be employed in the operation of the project. Employment opportunities are expected to cover the whole country.	49 years	It is planned to employ 321 people during the operation period. It is unlikely to cause tangible changes in social components.	-	The Project will definitely lead to employment opportunities.	Operation activities will take 49 years. There is the possibility of employment throughout this process.
		Score	National	Very Long	Low	N/A	Probable	Mid-term
		Value	4	5	2	-	5	3
	Impact Magnitude (G+D+I+F (or L)) x R		48					

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to road and marine traffic	Negative Direct	Definition	Impacts is expected to remain at the regional level.	49 years	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	Traffic impacts may occur if the plans and procedures prepared for the Project are not followed.	Potential impacts are expected to be reversible with rehabilitation and/or restoration activities in more than a year.
		Score	Regional	Very long	High	N/A	Likely	Short/mid-term
		Value	3	5	4	-	3	2
	Impact Magnitude (G+D+I+F (or L)) x R	30						

Table 14-26. Vulnerabilities and Receptor Sensitivity

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Turkish citizens and residents of Adana province / Ceyhan district	Medium	The impacts might relate to: <ul style="list-style-type: none"> • Tax payments to the national economy, • Employment opportunities. 	3
Local communities / settlements	Medium	The impacts might relate to: <ul style="list-style-type: none"> • Road and marine traffic. 	3
Incirli and Golovasi Fishermen	High	The impacts might relate to: <ul style="list-style-type: none"> • Marine traffic, <p>Especially among the fishermen in Gölovası, there are people whose only livelihood is fishing.</p>	5
Businesses	Low	Positively, business potential and revenues may increase. Negatively, contractors may default on their debts.	1
Schools (see Chapter 15)	Medium	Impacts expected due to terrestrial traffic.	3
Facilities (see Chapter 15)	Medium	Impacts expected due to terrestrial traffic.	3

Table 14-27. Impact Significances

Potential Impact	Impact Magnitude	Sensitivity Value	Total Value	Impact Significance	
				Score	Description
Impacts on national economy	85	3	255	Very High	It is anticipated that the project will meet 15% of Turkey's polypropylene demand and the impact is positive.
Impacts associated with creation of employment opportunities to Turkish citizens and residents of Adana province / Ceyhan district	48	3	144	Medium	321 people will be needed to work at the Project. Although local employment is priority, qualified personnel from all over Turkey will work at the facility. The impact was evaluated as positive.
Impacts of direct and indirect employment opportunities on businesses	48	1	48	Low	Direct and indirect employment opportunities arising from the project are expected to increase the revenues of the enterprises. On the other hand, contractors who will work temporarily at the Project site may work on loan with local businesses and may leave the site without paying their debts.

Potential Impact	Impact Magnitude	Sensitivity Value	Total Value	Impact Significance	
				Score	Description
Impacts of road and marine traffic on local communities	30	3	90	Medium	Road and marine traffic will increase during the operation phase of the Project. It is concluded in the Traffic Study that the capacity of the transportation network is sufficient to carry traffic load caused by the operation activities. A major marine traffic impact is not expected.
Impacts of terrestrial traffic on schools (see Chapter 15)	13	5	65	Medium	Terrestrial traffic during the operation period has the potential to pose a danger to students.
Impacts of terrestrial traffic on facilities (see Chapter 15)	13	3	39	Low	During the operation period, terrestrial traffic may affect the transportation of raw materials and products from facilities located in the immediate area.
Incirli and Golovasi Fishermen (see Chapter 15)	30	5	150	Medium	The impact of marine traffic during the operation period is medium unless adequate precautions are taken.

14.6 Mitigation Measures

The Project may cause positive and adverse socioeconomic impacts during the construction and operation phases. These will be mainly local and temporary impacts in the region where the Project activities are carried out. The impact mitigation and management measures presented in this section are developed for the purposes of avoiding or minimizing any negative socioeconomic impacts on the means of livelihood of the local community or, where this is not possible, balancing these impacts with remedial measures. It is expected that most of the envisioned economic and social impacts of the Project are positive. A range of options for mitigation of the few potential adverse socioeconomic effects is potentially available for the Project, including the types of measures outlined below.

14.6.1 Construction Phase

The mitigation measures to be considered during the construction phase of the Project include the following:

Impact	Mitigation Measure
Direct and Indirect Employment Creation	<ul style="list-style-type: none"> • The Project will develop Personnel Selection and Employment Procedure. This will include the aim to provide opportunities for employment of local workforce to the extent possible considering unskilled, semi-skilled and skilled workforce; • The Project will seek to maximize the benefits from the Project to local communities in terms of direct and indirect employment and purchasing of local goods and services during construction. This will include measures such as adopting local employment and purchasing policies, establishing tenders for procurement of subcontracted goods and services at a scale that local businesses can respond to, ensuring opportunities are advertised locally; • Project Company will ensure that all workers will have contracts that clearly state the terms and conditions of their employment and their legal rights; • The Project Company will adopt a Human Resources policy which observes wage standards, working hour regulation, freedom of association and staff encouragement in line with the IFC PS 2 / EBRD PR 2. The policy will also make provisions on child and forced labour, discrimination on the basis of religion, language, gender or social status, bullying and harassment. This policy will be developed by the Project Company to cover local employment and training of local people. It will also apply to the Project contractors; • Labour and Working Conditions Management Plan will be developed for the Project construction stage (Chapter 16); • Workers will be provided with information including, but not be limited to, entitlement to wages, hours of work, overtime arrangements and overtime compensation, and any benefits (such as leave for illness, maternity / paternity, or holiday); • Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights prior to any employment contract to be signed; • Wages, benefits and conditions of work offered will be comparable to those offered by equivalent employers in Adana; • The Project and all contractors will put in place a formal worker grievance mechanism; • Project should seek to maximize the benefits for local communities in terms of both direct and indirect employment opportunities and purchasing of local goods and services;

Impact	Mitigation Measure
	<ul style="list-style-type: none"> • Procurement Procedure will be developed and implemented. Project should adopt measures within its purchasing policy to provide opportunity for local scale businesses to tender for procurement of subcontracted good and services (e.g., advertising locally); • The Company will check the indebtedness of companies and monetary relationships with local businesses before hiring contractors to work on site; • The Company will develop Social Investment Plan in line with the IFC guidelines to ensure it makes consistent positive effect to the communities within the Social Area of Influence.
Impact of the Provision of Temporary Workforce Accommodation	<ul style="list-style-type: none"> • Workers accommodations will be established in compliance with the Guidance by IFC and EBRD Workers' Accommodation: Processes and Standards to reduce pressure on the facilities of the local communities. The Company will develop and implement Workers Accommodation Management Plan to ensure that provisions of national requirements and the named guidance are met (in case local requirements and provisions of the guidance differ, the Project will adhere to more stringent requirements). <p>See Chapter 16.</p>
Impact on Population and Demographics	<ul style="list-style-type: none"> • Workers will be paid into bank accounts; • Priority will be given to the local labour where possible and practical; • Worker accommodation facilities will include leisure areas to reduce the interaction of the workers with the local communities; • Code of Conduct will be developed in compliance with the Turkish legislation and international standards. Hard copies will be provided in Turkish and English; • All workers (including expats) will be trained in their native languages about the Code of Conduct and dismissal policy in particular in criminal cases; • Recruitment Plan will be prepared and implemented to prevent spontaneous influx of job seekers; • Employment capacity and the qualifications required for the construction will be disclosed to the public to prevent unrealistic expectations.
Impact Associated with Workers Influx	<ul style="list-style-type: none"> • The Project will provide job opportunities for the residents of nearby settlements to the extent possible; • Code of Conduct will be developed in compliance with the Turkish legislation and international standards. Hard copies will be provided in Turkish and English. It will outline expected behaviour with respect to their daily interactions with local residents and users of public amenities. In particular, it will cover issues related to ban on alcohol and drugs use, GBVH, etc.; • The measures related to GBVH include: <ul style="list-style-type: none"> ○ The grievance mechanism, toll-free telephone number and a designated organization (e.g. NGO) or local women organization will be used to identify and overcome problems related to GBVH, alcohol and drug use; ○ The Project Company and contractors will conduct mandatory regular training and awareness raising for staff on the availability of a grievance mechanism to report cases of gender-based violence and GBV against local community members and coworkers, especially women; ○ Project staff will be made aware of laws and regulations that make GBV a criminal offense subject to criminal prosecution; ○ Ensure that there is representation of women on the Project team, acting as a contact person or CLO for GBV issues; ○ The Project Company will work closely with local authorities in investigating any complaints related to GBV in local communities involving Project staff; ○ Develop a monitoring system to track GBVH activities to assess the effectiveness of controls, including monitoring GBVH related complaints and actions implemented to address them;

Impact	Mitigation Measure
	<ul style="list-style-type: none"> • Training to the Project workers will be conducted with regard to community health, safety and security issues (including on the Code of Conduct and workers' awareness of risk of sexually transmitted diseases (particularly HIV/AIDS), and on availability of confidential consultation services at the medical center(s) when an infection is suspected); • Community Health Safety and Security Plan will be developed and implemented; • The Company will develop and implement Accommodation Camp Management Plan to ensure adequate living conditions and conditions for workers' rest are provided to the Project workers, that will also contribute to minimization of contacts between Project workers and residents; • Temporary loss of, or access to infrastructure or services should be avoided by providing alternative routes and roads, as necessary; • Local communities will be informed on program and sequence of works; • In case of using local roads for transportation, repair works will be made in collaboration with the local authorities; • The Company will coordinate with relevant authorities and/or relevant social infrastructure facilities (health care and educational facilities, etc.) as relevant in case additional strain on these facilities is anticipated; • Implementation of the SEP will also contribute to maintaining regular communication with affected parties and timely identification of potential issues associated with workers' influx and relevant impacts; • The Project Company will establish and implement a grievance mechanism. <p>See Chapter 15.</p>
<p>Land Acquisiton and Resettlement</p>	<ul style="list-style-type: none"> • Conduct Land Acquisition Gap Analysis to collect robust information on land acquisition and the status of economic and physical displacement conducted for the Project; • Develop Livelihood Restoration Plan and/or Resettlement Action Plan as relevant; • The Project should seek to maximize the benefits for local communities in terms of both direct and indirect employment opportunities and purchasing of local goods and services, as well as by implementing Social Investment Plan; • Local employment and Project Affected People (PAP) who lost income previously during the expropriation process should be prioritized for employment opportunities, as feasible; • Grievance mechanism will be disclosed to the affected community and will be provided as a means of encouraging affected people to state their grievances about the land acquisition.
<p>Road and Marrine Traffic</p>	<ul style="list-style-type: none"> • See Chapter 11 Traffic.

14.6.2 Operation Phase

The mitigation measures to be considered during the construction phase of the Project include the following:

Impact	Mitigation Measure
Direct and Indirect Employment Creation	<ul style="list-style-type: none"> • Recruitment procedures will be in line with Ceyhan PP A.Ş. Human Resources Policy that is to be developed for the Project. This will include the aim to provide opportunities for employment of local workforce to the extent possible considering unskilled, semi-skilled and skilled workforce; • The Project will seek to maximize the benefits from the Project to local communities in terms of direct and indirect employment and purchasing of local goods and services during construction. This will include measures such as adopting local employment and purchasing policies, establishing tenders for procurement of subcontracted goods and services at a scale that local businesses can respond to, ensuring opportunities are advertised locally; • Project Company will ensure that all workers will have contracts that clearly state the terms and conditions of their employment and their legal rights; • The Project Company will adopt a Human Resources policy which observes wage standards, working hour regulation, freedom of association and staff encouragement. The policy will also eliminate child and forced labour, discrimination on the basis of religion, language, gender or social status, bullying and harassment. This policy will be developed by the Project Company to cover local employment and training of local people; • Workers will be provided with information including, but not be limited to, entitlement to wages, hours of work, overtime arrangements and overtime compensation, and any benefits (such as leave for illness, maternity / paternity, or holiday); • All workers will be able to join trade unions of their choice and have the right to collective bargaining; • Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights prior to any employment contract to be signed; • Wages, benefits and conditions of work offered will be comparable to those offered by equivalent employers in Adana; • The Project and all contractors will put in place a formal worker grievance mechanism; • Project should seek to maximize the benefits for local communities in terms of both direct and indirect employment opportunities and purchasing of local good and services; • Procurement Plan will be developed and implemented. Project should adopt measures within its purchasing policy to provide opportunity for local businesses to tender for procurement of subcontracted good and services (e.g., advertising locally); • The Company will check the indebtedness of companies and monetary relationships with local businesses before hiring contractors to work on site; • The Company will develop Social Investment Plan in line with the IFC guidelines to ensure it makes consistent positive effect to the communities within the Social Area of Influence.

Impact	Mitigation Measure
<p>Impact Associated with Workers Influx</p>	<ul style="list-style-type: none"> • The Project will provide job opportunities for the residents of nearby settlements to the extent possible; • Code of Conduct will be developed in compliance with the Turkish legislation and international standards. Hard copies will be provided in Turkish and English. It will outline expected behaviour with respect to their daily interactions with local residents and users of public amenities. In particular, it will cover issues related to ban on alcohol and drugs use, GBVH, etc.; • The grievance mechanism, toll-free telephone number and a designated organization (e.g. NGO) or local women organization will be used to identify and overcome problems related to GBVH, alcohol and drug use; • The Project Company and contractors will conduct mandatory regular training and awareness raising for staff on the availability of a grievance mechanism to report cases of gender-based violence and GBV against local community members and coworkers, especially women; • Project staff will be made aware of laws and regulations that make GBV a criminal offense subject to criminal prosecution; • Ensure that there is representation of women on the Project team, acting as a contact person or CLO for GBV issues; • The Project Company will work closely with local authorities in investigating any complaints related to GBV in local communities involving Project staff; • Develop a monitoring system to track GBVH activities to assess the effectiveness of controls, including monitoring GBVH related complaints and actions implemented to address them; • Training to the Project workers will be conducted with regard to community health, safety and security issues (including on the Code of Conduct and workers' awareness of risk of sexually transmitted diseases (particularly HIV/AIDS), and on availability of confidential consultation services at the medical center(s) when an infection is suspected); • Community Health Safety and Security Plan will be developed and implemented; • Temporary loss of, or access to, infrastructure or services should be avoided by providing alternative routes and roads, as necessary; • Local communities will be informed on program and sequence of works. • In case of using local roads for transportation, repair works will be made in collaboration with the local authorities; • The Company will coordinate with relevant authorities and/or relevant social infrastructure facilities (health care and educational facilities, etc.) as relevant in case additional strain on these facilities is anticipated; • Implementation of the SEP will also contribute to maintaining regular communication with affected parties and timely identification of potential issues associated with workers' influx and relevant impacts; • The Project Company will establish and implement a grievance mechanism. <p>See Chapter 15.</p>
<p>Road and Marine Traffic</p>	<ul style="list-style-type: none"> • See Chapter 11 Traffic.

14.7 Residual Impacts

The local economy will be positively affected overall by the operation of Ceyhan PDH-PP Project. With the implementation of mitigation measures mentioned above and in other relevant chapters of the ESIA report with the exception of road traffic impact, a significant

negative residual impact on socioeconomic conditions is not anticipated and the summaries of the residual impact significance are shown in Table 14-28 and Table 14-29.

Table 14-28. Construction Phase Residual Impact Significance

Subject	Construction Phase Residual Impact
Impact of the Provision of Temporary Workforce Accommodation	Low
Impact on Population and Demographics	Negligible
Impact Associated with Workers' Influx	Medium
Land Acquisition and Resettlement	Low
Impacts on Road and Marine Traffic	Negligible

Table 14-29. Operation Phase Residual Impact Significance

Subject	Operation Phase Residual Impact
Impacts on Road and Marine Traffic	Low

14.8 Summary of Analysis Outcomes

In line with Turkey's 2023 strategy, the government aims to increase the gross domestic product; therefore, increasing industrial production capacity is deemed as a significant factor that contributes to this aim. As part of this strategy, there are a number of initiatives including the establishment of the CPIR with the primary aim of attracting potential investors. Therefore, it is anticipated that the development of the CPIR will significantly decrease import dependency. Ceyhan PDH-PP Project is being developed to produce polypropylene as part of the CPIR in Ceyhan district. It is estimated that the Project will meet 15% of the Turkey's polypropylene demand.

There will be employment opportunities related with the Project. Estimated number of employees for construction and operation phases of the Project are 4,500 and 321 at the peak, respectively. This workforce will be sourced locally to the extent possible. All construction workers will be employed and remunerated in accordance with the provisions of Turkish law and IFC PS2/EBRD PR2: Labour and Working Conditions. There will be on-site worker accommodations which will be established in line with the IFC/EBRD Guidance Note on Workers' Accommodation. A Workers' Accommodation Plan will be developed and implemented together with Worker Code of Conduct to manage workers' behaviour inside the construction site, camp and outside.

It is envisaged that the Project will have an impact on the economic conditions of the nearby land users as well as fisheries. The closest settlements to the Project site are identified as a fish restaurant (at 25 m) and a number of houses (the closest house at 15 m) to the west of the Project site. Moreover, some of the households around the Project site conduct livestock grazing, beekeeping, agriculture and fishery activities to support their livelihood. Although, as stated above, the expropriation process for all the land within the Project site has been completed; the Project Company will engage with the affected people through a clear stakeholder engagement process and will ensure effective implementation of a Grievance Mechanism.

In the meantime, the Project may cause above mentioned adverse socioeconomic impacts on the local community during the construction and operation phases. These will be mainly local and temporary impacts in the region where the Project activities are carried out. During construction phase of the Project, location of camps near the existing communities may present risks to local people. A key objective will be to avoid any negative impact on the adjacent community or on local services, community facilities and businesses. Movement of non-local workers will be strictly controlled to prevent inappropriate interaction with local people. A strict code of conduct governing activities and behaviour will apply to all Project personnel in line with Community Health, Safety and Security Plan.

There will be an increase in vehicle traffic with the development of the Project during both construction and operation phases which may increase possibility of traffic accident. All

negative impacts on socio economic condition of local community affected by the Project shall be controlled with relevant mitigation measures by sensitive approach of the Project Company.

The impact of the Project on the population and demographic structure has been evaluated and it is not expected to have an impact on this subject.

Within the scope of the Project, there will be land acquisition and potentially resettlement. A Livelihood Restoration Plan and/or Resettlement Action Plan should be developed as relevant.

A strong and open grievance mechanism will be established for all phases of the Project by the Project Company for local people's complaints and suggestions.

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (CHAPTER-15)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION AND JETTY PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Version	Revision	Date	Prepared By	Quality Management By	Checked By	Approved By
Draft	A.0	March 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.1	April 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.2	June 2021	Yasemin Çelikel (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.3	October 2021	Deniz Kozanlı (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.4	December 2021	Deniz Kozanlı (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	-
	A.5	August 2022	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)
	A.6	October 2022	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)
Final Draft	B.0	February 2023	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003
FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
📠: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
15 COMMUNITY HEALTH AND SAFETY	3
15.1 Introduction.....	3
15.2 Legal Context	4
15.2.1 National and International Standards	4
15.3 Impacts.....	7
15.3.1 Air, Noise and Vibration	7
15.3.2 Traffic	12
15.3.3 Community Health and Safety	15
15.3.4 Life and Fire Safety.....	20
15.3.5 Infrastructure Safety	22
15.3.6 Security Requirements.....	23
15.3.7 Blasting.....	24
15.3.8 Unplanned Events/Major Accidents	26
15.3.9 Impact Significances for Construction and Operation Phases	27
15.4 Mitigation Measures.....	40
15.4.1 Air, Noise and Vibration	40
15.4.2 Traffic	41
15.4.3 Community Health and Safety	43
15.4.4 Life and Fire Safety.....	46
15.4.5 Infrastructure Safety	46
15.4.6 Security Requirements.....	47
15.4.7 Blasting.....	47
15.5 Residual Impacts	49
15.6 Summary of Analysis Outcome.....	49

LIST OF TABLES

Table 15-1. Number and type of the construction vessels / marine structures	16
Table 15-2. Construction Phase Impact Significances	28
Table 15-3. Operation Phase Impact Significances	33
Table 15-4. Vulnerabilities and Receptor Sensitivity	36
Table 15-5. Impact Significances.....	37
Table 15-6. Residual Impact Significance.....	49

LIST OF FIGURES

Figure 15-1. The social area of influence.....	7
Figure 15-2. Access Roads and Schools.....	13
Figure 15-3. Flyrock impact for controlled and worst-case scenarios.....	26

ABBREVIATIONS

API	American Petroleum Institute
APCV	Air Pollution Contribution Values
Ceyhan PDH-PP Project / Project	Ceyhan Propane Dehydrogenation - Polypropylene Production Facility and Jetty Project
Ceyhan PP A.Ş. or Project Company	Ceyhan Polipropilen Üretim A.Ş.
CPIR	Ceyhan Petrochemical Industrial Region
CPIR Port	Raw Material Supply, Storage and Port Facility Project
BOTAŞ	Turkish Petroleum Pipeline Company
BTC	Baku-Tbilisi-Ceyhan Crude Oil Pipeline
DSI	State Hydraulic Works
EBRD	European Bank for Reconstruction and Development
EEMUA	Engineering Equipment and Materials User Association
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EPRP	Emergency Preparedness and Response Plan
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
EU	European Union
FGS	Fire and Gas System
GHG	Greenhouse Gas
HAZOP	Hazard and Operability Study
IFC	International Finance Corporation
ISA	Instrumentation, systems and Automation
ISO	International Organization for Standardization
LOA	Length of vessel
LPG	Liquified Petroleum Gas
NFPA	National Fire Protection Association
O.G.	Official Gazette
PGA	Peak Ground Acceleration
PR	Performance Requirements
PS	Performance Standards
RP	Recommended practice
TS	Turkish Standard
WHO	World Health Organization

15 COMMUNITY HEALTH AND SAFETY

15.1 Introduction

This chapter provides an assessment of the Ceyhan Propane Dehydrogenation - Polypropylene Production Facility (the Project) activities that may impact nearby communities during the construction, operation and decommissioning phases and sets out the mitigation measures to avoid or minimize the risks together with the description of the residual impacts that are foreseen to remain. The Project site is in the vicinity of major industrial setting. The land use in the vicinity of the Project site is described in *Chapter 5: Land Use and Zoning*. The baseline socioeconomic conditions are described in *Chapter 14: Socioeconomics*.

In accordance with the requirements of International Finance Corporation (IFC) Performance Standard (PS) 4: Community Health, Safety and Security, European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 4: Health and Safety, Equator Principles IV and based on the findings of the Scoping Study the following issues relevant to the Project are covered in this chapter:

- exposure to dust, noise and vibration;
- terrestrial and marine traffic;
- community health;
- life and fire safety;
- infrastructure and machine/equipment safety;
- security requirements.

The main information sources that assisted the assessment study were as follows:

- IFC PS 4: Community Health, Safety and Security;
- EBRD PR4: Health and Safety;
- IFC General Environmental, Health and Safety (EHS) Guidelines;
- IFC EHS Guidelines for Large Volume Petroleum-based Organic Chemicals Manufacturing;
- IFC EHS Guidelines for Petroleum-based Polymers Manufacturing;
- EBRD Sub-sectoral Environmental and Social Guidelines: Manufacture of Plastic and Synthetics;
- IFC and EBRD Guidance Note on Workers' Accommodation: Processes and Standards;
- Project information provided by Ceyhan Polipropilen Üretim A.Ş. (the Project Company).

The risks and impacts of the Project, in the context of health and safety of off-site communities, will be managed through a set of management plans as listed in *Chapter 17: Environmental and Social Management* to be developed and implemented by Ceyhan PP A.Ş. These plans will address community health and safety issues and include measures to address the identified risks and ensure the disclosure of relevant Project-related information to enable the affected communities to understand the risks and impacts.

The plans related to protection of community health and safety will also include measures to prevent and respond to incidents and emergencies, as well as to protect the health, welfare and security of the community from any adverse effects related to generation of noise and dust, road traffic, safety and security operations, as explained further below. The approach to the assessment of impacts related to community health and safety has followed the methodology described in section 4.5.4 of *Chapter 4: Scope and Methodology of the ESIA and Stakeholder Engagement*, where relevant.

15.2 Legal Context

15.2.1 National and International Standards

The Project will comply with the following national regulations to mitigate the potential impacts of the Project on community health and safety:

- *Environmental Law (No: 2872)*
(Official Gazette date/no: 11.08.1983/18132);
- *Law on Industrial Region (No. 4737)*
(Official Gazette date/no: 19.01.2002/24645);
- *Public Health Law (No. 1593)*
(Official Gazette date/no: 06.05.1930/1489);
- *Environmental Impact Assessment Regulation*
(Official Gazette date/no: 29.07.2022/ 31907);
- *Law Pertaining to Principles of Emergency Response and Compensation for Damages in Pollution of Marine Environment by Oil and Other Harmful Substances (No. 5312)*
(Official Gazette date/no: 11.03.2005/25752);
- *Implementation Regulation on Law Pertaining to Principles of Emergency Response and Compensation for Damages in Pollution of Marine Environment by Oil and Other Harmful Substances*
(Official Gazette date/no: 21.10.2006/26326);
- *Regulation on Prevention of Major Industrial Accidents and Mitigation of Resulting Impacts*
(Official Gazette Date/No: 02.03.2019/30702);
- *Law on the Protection of Life and Property (No. 4922)*
(Official Gazette date/no: 14.6.1946/6333);
- *Regulation on Safety and Health Signs*
(Official Gazette date/no: 11.09.2013/28762);
- *Regulation on Road Transportation of Dangerous Goods*

- (Official Gazette date/no: 24.04.2019/30754);
- *Regulation on the Assessment and Management of Environmental Noise*
(Official Gazette date/no: 04.06.2010/27601);
- *Regulation on Environmental Noise Generation due to Equipment Used in Open Space*;
- (Official Gazette date/no: 30.12.2006/26392) *Industrial Sourced Air Pollution Control Regulation*
(Official Gazette date/no: 03.07.2009/27277);
- *Air Quality Assessment and Management Regulation*
(Official Gazette date/no: 06.06.2008/26898);
- *Regulation on the Control of Odorous Emissions*
(Official Gazette date/no: 19.07.2013/28712);
- *Regulation on Control of Exhaust Gas Emissions*
(Official Gazette date/no: 11.03.2017/30004);
- *Law on Groundwater (No. 167)*
(Official Gazette date/no: 23.12.1960/10688);
- *Law on Aquaculture (No. 1380)*
(Official Gazette date/no: 04.04.1971/13799);
- *Regulation on Aquaculture*
(Official Gazette date/no: 10.3.1995/22223);
- *Water Pollution Control Regulation*
(Official Gazette date/no: 31.12.2004/25687);
- *Regulation on Protection of Groundwater against Pollution and Deterioration*
(Official Gazette date/no: 07.04.2012/28257);
- *Regulation on Control of Pollution Caused by Hazardous Substances in Aquatic Environment*
(Official Gazette date/no: 26.11.2005/26005);
- *Regulation on Surface Water Quality*
(Official Gazette date/no: 30.11.2012/28483);
- *Regulation on Management of Quality of Bathing Waters*
(Official Gazette date/no: 25.09.2019/30899);
- *Regulation Concerning Water Intended for Human Consumption*
(Official Gazette date/no:17.02.2005/25730);
- *Waste Management Regulation*
(Official Gazette date/no: 02.04.2015/29314).

As Turkey is a candidate for accession to the European Union (EU), following key legislation in European Union and International Reference Documents are also considered to be relevant:

- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment
(Official Journal/Date: L124/16.4.2014; Entry into force: 25.01.2014);

- Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information (Official Journal: L41, 14.02.2003; Entry into force: 14.02.2003);
- Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods (Official Journal: L260/13, 30.09.2008; Entry into force: 20.10.2008);
- Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC Text with EEA relevance (Official Journal: L197/13, 4.7.2012; Entry into force: 24.7.2012);
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Official Journal/Date: L327/22.12.2000; Entry into force: 22.12.2000; last amended on 20.11.2014);
- Directive 2006/118/EC of the European Parliament and of the Council of 12 December of 2006 on the protection of groundwater against pollution and deterioration (Official Journal/Date: L372/19 27.12.2006; last amended on 11.07.2014);
- Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (Official Journal/Date: L152/11.06.2008; Entry into force: 11.06.2008; last amended on 18.09.2015);
- Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (Official Journal/Date: L189/18.07.2002; Entry into force: 18.07.2002; last amended on 26.07.2019).

In addition to the EU Directives, the following European Bank for Reconstruction and Development (EBRD) and International Finance Corporation (IFC) Guidelines will also need to abide with:

- IFC EHS General Guidelines;
- IFC EHS Guidelines for Large Volume Petroleum-based Organic Chemicals Manufacturing;
- IFC EHS Guidelines for Petroleum-based Polymers Manufacturing;
- EBRD Sub-sectoral Environmental and Social Guidelines for Manufacture of Chemicals and Manufacture of Plastics and Synthetics.

The Turkish regulatory framework requirements and the conditions set in the Equator Principles, IFC and EBRD guidance documents provide inherent mitigation measures against the impacts.

15.3 Impacts

The social area of influence of the Project is shown in Figure 15-1. Kurtpınarı, Kurtkulağı, Sarımazı and Gölovası neighbourhoods are expected to experience the potential land acquisition impacts and community health and safety impacts in addition to other environmental and social impacts. Therefore, they are considered within the Primary Social Area of Influence, which is 8 km. Furthermore, the overall Aol of the Project covers neighbourhoods within a radius of approximately 15 km in order to understand potential impacts and appropriate mitigation measures to minimize impacts that may affect local residents' life quality, e.g. stress impact caused by traffic movement, impact on infrastructure used by the villages.

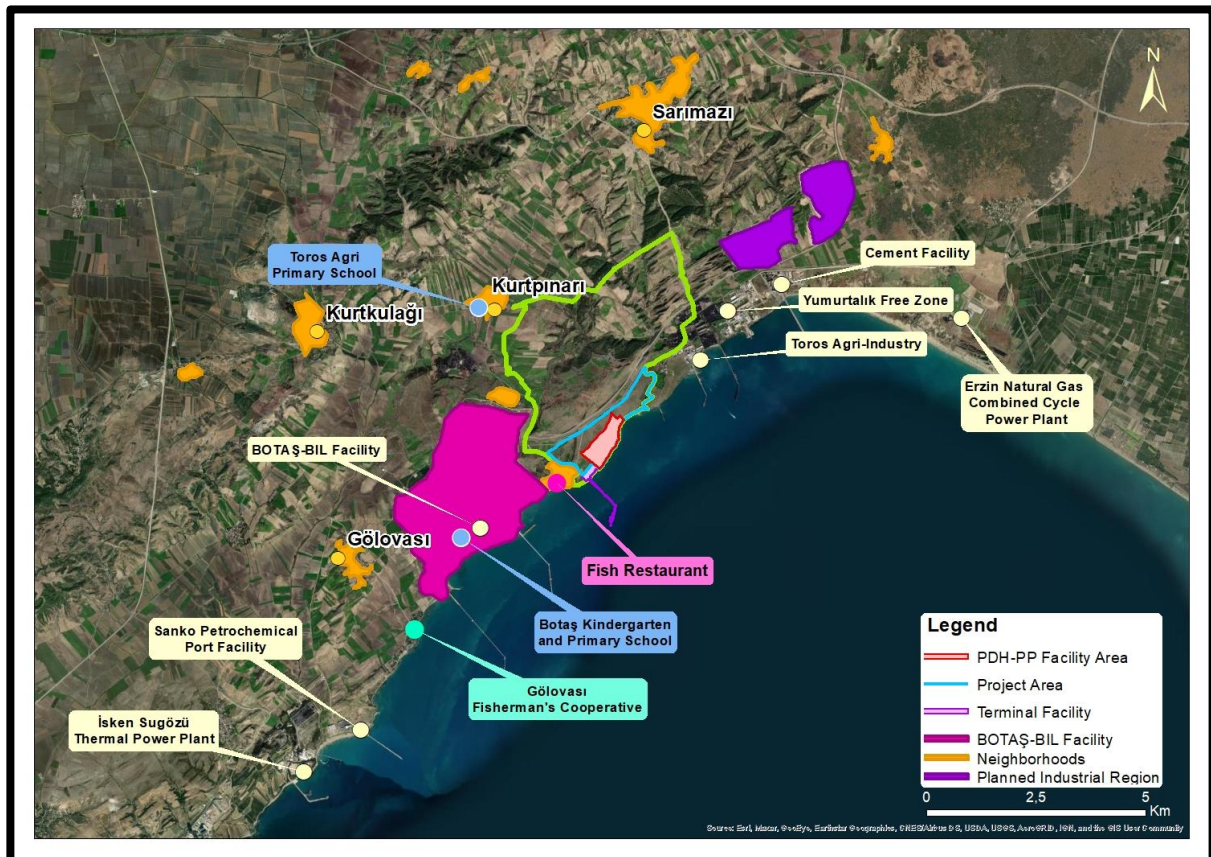


Figure 15-1. The social area of influence.

15.3.1 Air, Noise and Vibration

Impacts related to generation of air and noise emissions during construction and operation of the Project are addressed in appropriate chapters of this Environmental and Social Impact Assessment (ESIA) report (*Chapter 9: Air Quality and Chapter 10: Noise*). The summary of the impacts related to air and noise emissions both for terrestrial and marine sections of the Project are summarized in this section.

Air Quality

There will be air emissions during construction activities (including earthworks, operation of equipment, vehicle movements, construction of buildings). Air emissions sources during construction activities include:

- NO_x, SO₂ and CO emissions due to operation of construction vehicles;
- NO_x, SO₂ and CO emissions due to transportation of construction materials;
- dust formation from earth movements, excavation/blasting activities;
- dust formation from unpaved roads;
- dust formation due to transportation of excavated soils outside the Project site; and
- stockpiles open to wind.

According to Chapter 9, it is anticipated that the main impact on air quality during the construction period of the Project will be caused by dust emissions, in particular uncontrolled emission scenario. Uncontrolled emission scenario mainly considers lack or minimum level of mitigation measure implementation regarding dust emission avoidance or minimization. On the contrary, as part of controlled emission scenario, where the mitigations implemented effectively, potential dust ground level concentration decreases substantially. On the other hand, modelled ground concentration levels at sensitive receptors are still not in line with national limits and international standards.

Background dust concentration level at receptors is another important factor that effects the impact level. The Project site is also open to natural dust source such as Sharan Dust (long transport), uncultivated and baren lands. There are also industrial dust sources in the region such as coal fired thermal power plants, coal handling facilities and fertilizer facilities etc. Background level dust measurements (PM₁₀) were performed at receptors, which are located at 200 meters from the facility boundary. The results indicate that during the measurement period, ground level dust concentrations are below the international standards, as well as national limits.

As given above, results of the air quality modelling study show that PM10 maximum daily Air Pollution Contribution Values (APCV's) are exceeding the national limit values all year and yearly PM10 maximum APCV's are above the national, EU limits as well as WHO standards for construction phase. Similarly, PM deposition values are also above the limit values for the construction phase. Therefore, it is important to take necessary mitigation measures as explained in *Chapter 9: Air Quality* and stay in close connection with immediate affected stakeholders (e.g. Incirli residents, personnel of the surrounding facilities etc.) in order to protect their health and effectively respond to their potential grievances.

According to information received from the headman of Kurtpınarı during the field visits, there are around 130 households and a population of 800 people in Incirli. All households in Incirli can be affected due to dust emissions depending on the distance from the source of air emission (if mitigation measures are not implemented). Esentepe Kilyos Fish Restaurant and accommodation facilities of TOROS Tarım are other receptors considered in the impact area. Under normal conditions, impact of the dust emissions decreases with the distance from the source. In this regard, it is expected that impact on receptors (houses) located more southwest of the Incirli (close to the BOTAŞ Boundary) have less potential to be affected by dust emissions. After the expropriations of the CPIR zone were completed, there was no agricultural land used in the impact area. Therefore, impact due to dust emission is not expected on agricultural activities.

Depending on the PM10 modelling results, though the impact significance at baseline measurement locations, which are close to Project site boundaries, are changing from minor to major, it is important to mention that the emissions are expected to decrease with increased distance from the source of emissions. Therefore, receptors that are further away from the source of emissions have the potential to experience less impacts, and the impact significance is expected to be not significant considering annual APCV values, as well as to vary between minor to moderate at worst considering daily APCV values.

Transport of construction materials will result in emissions related to construction traffic which may have the potential to affect the ambient air quality. This type of transportation will be temporary and the significance of impacts might range between minor to major, depending on the amount of transportation and the location of receptors. It is expected that these impacts will be reduced to impacts of less significance with the implementation of measures as discussed in *Chapter 9: Air Quality*.

In general, construction dust emission mainly depends on:

- type of the construction activity (in particular, excavation activities cause high level of emissions);
- technique (i.e. blasting), equipment, vehicle used for construction works;
- Intensity of the construction works;
- size of the construction area;
- meteorological conditions regarding temperature, wind and precipitation condition; and
- surface conditions of the construction area and transport routes (i.e. unpaved roads).

Mitigation measures were targeted to minimize the dust emission levels by controlling these emission factors. These mitigations are provided in *Chapter 9: Air Quality*. Effective implementation of these mitigations and frequent monitoring play a great role in decreasing the potential impact related to dust emission. Meteorological conditions, in particular

precipitation, also limit the impact level. Impact period is also limited to the period of construction activities, which also decrease the impact magnitude. As discussed in Chapter 9, if the mitigation measures are implemented and relevant monitoring activities are conducted, residual impacts will be much lower than the national, EU and IFC limit values.

Impacts on air quality during the operation phase of the Project will be related to increase in emissions resulting from production of commodities, storage of commodities and chemicals, as well as emissions from increased road traffic. Additionally, there will be greenhouse gas (GHG) emissions from production units, i.e. energy consumption in the units.

During operation phase of the Project, it is expected that necessary exhaust/treatment systems will be included in the design of the Project site to eliminate emissions and no significant impacts will occur. There will be also impacts related to increase in emissions from road traffic during the operation of the Project. Air dispersion modelling study was undertaken for the NO₂, PM₁₀, PM deposition, SO₂, CO and VOC parameters which are considered significant emission sources from the mentioned systems. According to the results of the modelling studies following conclusions derived as:

- Daily and yearly APCV of PM₁₀ to be originated from operational activities in controlled working conditions are 11.61 µg/m³ and 1.23 µg/m³, respectively; with that they are below the national and international limit values;
- Operation phase NO₂ emissions comply with the emission standards;
- Operation phase SO₂ maximum APCV exceeds hourly emission limits 1 time in one year, which is within the acceptable exceedance by the standards (i.e., 24 times). Hourly and yearly emissions comply with national and international emission standards;
- Operation phase CO emission values are in compliance with the national and international emission standards;
- VOC emission values comply with both hourly and short-term national limit values (See *Chapter 9: Air Quality for further details*).

If the mitigations in ESMP and Chapter 9 are implemented, no physical and/or economic displacement is expected due impacts related to dust and air emissions. No impacts on community health are anticipated. According to baseline measurements and air quality models conducted within the scope of Chapter 9, residual impacts will be much lower than the national, EU and IFC limit values.

Noise

Same as with the air emissions, potential impacts are expected due to noise and vibration sourced by construction activities (such as piling, drilling etc.), construction machineries and construction vehicles.

In order to predict the impacts of the Project on receptors considering the existing background noise conditions, baseline noise measurements and a sound propagation modelling study was conducted. The locations for measurements are:

- Receiver Location 1 (R1): around one of the nearest residential area to the North-East of the Project site (Kurtpinar, Karatepe);
- Receiver Location 2 (R2): at the village to the North of the Project site (Kurtpinar, Esentepe);
- Receiver Location 3 (R3): at the village to the North of the Project site (Kurtpinar, Esentepe);
- Receiver Location 4 (R4): within the nearest residential area to the North of the Project site (Kurtpinar, Esentepe);
- Receiver Location 5 (R5): within the nearest residential area to the South-West of the Project site (Kurtpinar).

The results of the noise modelling revealed the following:

- Existing background daytime noise levels are below the IFC / WHO standards and national limits at all background noise measurement locations. On the other hand, except R4, night-time noise levels exceed the IFC / WHO standards as well as national limits at all other measurement locations;
- Background noise modelling study indicates that there is a potential for cumulative noise levels for both daytime and night-time to exceed the IFC / WHO standards at R2, R3, R4 and R5 for all scenarios;
- For all scenarios, the modelling results indicate that among the all daytime and night-time cumulative noise levels R2 has the highest exceedance of the IFC / WHO standards compared to other receptor locations;
- According to the estimated potential exceedance of IFC / WHO standards R1 is the only one with lower than 3 dBA¹ value, whereas for all the other receptors such as R2, R3 R4 and R5 show higher than 3 dBA value (*See Chapter 10: Noise for further details*).

Considering the measures described in *Chapter 10 Noise* are implemented, the noise levels in residential areas will not exceed national limits and international standards.

¹ According to the WHO noise standard, 3 dBA is given as maximum allowable increase at the locations where the background noise level is above the standards.

Vibration

Vibration calculations for construction phase reveal that, safe distance before vibration levels reach the 1 mm/s level is 65 meters for construction activities. Thus, no impact is expected from constructional vibration activities as long as necessary precautions are taken and proper warnings are delivered, since there are no receptors detected closer than 65 meters to the Project site. Similarly, vibration calculations for operation phase reveal that, safe distance before vibration levels reach to 0.14 mm/s level is 11 meters for operation activities. Thus, no impact is expected from operational vibration activities since there are no receptors detected closer than 11 meters to the Project site.

15.3.2 Traffic

Project Site and Terrestrial Part of Associated Facilities

The Project and Associated Facilities will have the potential to result in an increase in traffic load in local roads. Transportation of equipment and materials to the construction site will result in increase in traffic load which may pose risks to the community related to accidents, road safety and congestions that may occur near the Project site. These risks will be temporary for the duration of the construction phase and can be mitigated through measures identified in relevant chapters of this ESIA report.

There will be an additional traffic load with the commencement of the operation phase of the Project and Associated Facilities on the existing road network. The Traffic Study suggests a total of 84 vehicles including heavy vehicles, shuttle/minibuses and private vehicles, will be traveling due to the Project and Associated Facilities activities during the peak hour. As a result, the increase in the traffic load will be in the range of 24 to 138 % for future forecast and 95 to 138 % when the current conditions are considered. On the other hand, it is important to take into consideration that, the capacity of the road is found adequate both for current and future conditions with its capacity to carry 600 vehicles per hour.

It is assumed that approximately 35,000 personnel will be employed provided that the existing facilities continue their operation and planned developments in the region will become operational. It is assumed in the simulation study that almost half of the total number of employees use public transportation (buses and train). For this reason, if the planned road development/investment is subject to delay, the service performances will decrease accordingly, and the resulting impacts shall be assessed by the Project Company to define necessary mitigation measures. Maintaining safe operation phase traffic in the internal roads will be important due to nature of the operational processes. The relevant mitigation measures are discussed in *Chapter 11: Traffic Impact*.

It is possible to use Kurtpınarı location during the transportation of heavy loads and construction materials. At this point, Toros Tarım Primary School is located. This road is

already used by heavy vehicle traffic from other facilities in the region. The Project and Associated Facilities will create additional intensity on this road.

Traffic accidents caused by heavy vehicles can make detrimental impact on health, cause loss of life and economic losses. Traffic accidents involving heavy vehicles can be caused by various reasons, including driver's mistake, neglected maintenance of the vehicle, bad road conditions, bad weather conditions, etc.

As discussed in *Chapter 11: Traffic*, an increase in traffic on the road network is expected during construction stage of the Project. This will lead to an increased risk of traffic-related accidents that could lead to injuries or fatalities of other road users and, potentially, pedestrians. Vulnerable groups, such as children, the elderly and disabled people are particularly susceptible to potential traffic-related impacts. It should be noted that in the rural areas children might be left unattended, and local residents may also cross roads not at designated locations. The risks associated with traffic are also relevant with regard to children educating in Toros Tarım Primary School. More information on vulnerable groups within the Project Social Aol is provided in *Chapter 14: Socio-Economics*.

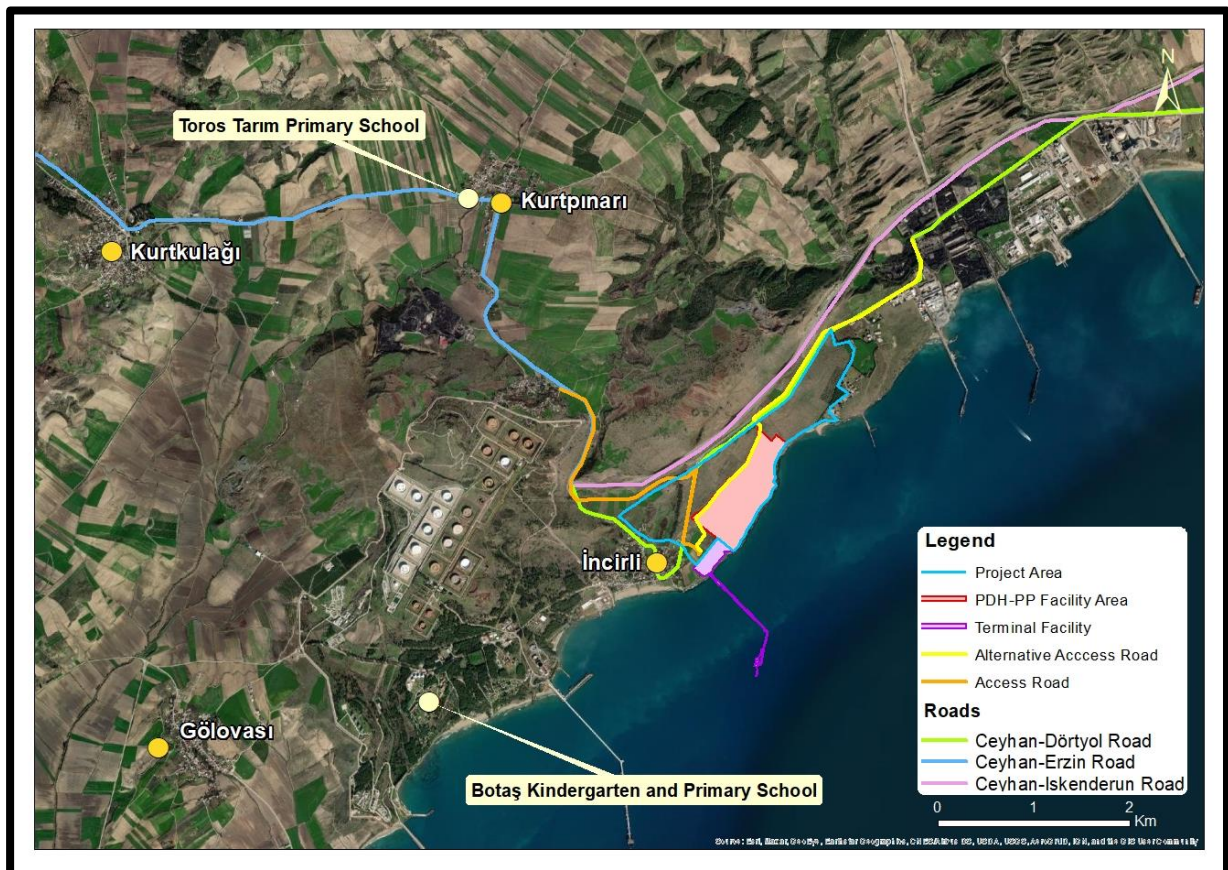


Figure 15-2. Access Roads and Schools

Marine Section of Associated Facility

During construction phase, construction material or equipment will not be directly transferred to the site via marine vessels. Therefore, temporary or permanent marine structures such as unloading platform, quay or pier will not be constructed. During jetty construction catamaran barges or platforms can be used for piling purpose. Marine traffic originating from the Project is not expected during construction and operation phases. However, the Associated Facility (Terminal Facility) are expected to cause marine traffic during the construction and operation phases. During the construction phase, the passage of fishermen will be blocked due to the activities in the sea.

There are 2 fishermen groups in the impact area. The closest of these is the area located in Incirli. There are 7 boats that go out to sea for fishing. Boat owners and employees conduct fishing activities as an additional income generating activity. They do not have a port where they moor their boats and they carry their boats to the shore in front of their houses with wheeled vehicles. During the field studies, it is understood that the fishermen in Incirli work are mostly employees of BOTAŞ or its (sub)contractors. During the interviews, it was identified that fishing is not the only source of income, but it constitutes almost 50 percent of the income sources.

In Golovasi, there are people whose only livelihood is fishing. There is a fishing cooperative in Golovasi. When talking to the head of the cooperative, it was learned that there were more than 20 active fishermen. Fishermen state that fishing areas shrinking because of the industrial development of the area, including BOTAŞ and İsken Sugözü Thermal Power Plant.

Fishing activities are conducted for 12 months. However, it decreases in summer due to fishing bans set by regulations.

Marine traffic may affect fishermen during the construction and operational period. The works during the construction period may affected the coastal fishery. The impact during this period may lengthen the ways of the fishermen to get from the shore to fishing areas. It is expected that a maximum of 2 ships will arrive at the Jetty site per month during operational period. If communication with fishermen is not carried out effectively, their nets may be damaged, and collisions may occur.

Propane will be imported through sea shipment to the Project site; therefore, there will be marine traffic during the operation phase of the Project. Cumulative impacts could be experienced considering the existing marine traffic in the region (especially resulting from vessel movement of the nearby facilities).

Risk assessment and modelling regarding vessel manoeuvring was performed for Raw Material Supply, Storage and Port Facility (CPIR Port) Project by Maritime Faculty, Dokuz Eylül University. The Jetty subject to assessment in this ESIA study (associated facility) is a part of CPIR Port; therefore, the assessment and the results of the marine traffic study have been

evaluated in this ESIA Report. The purpose of this study was to identify i) the manoeuvring risks to arise from the interaction between vessels and coastal structures based on the analytical data obtained from the preliminary findings of this study, through mathematical models in line with the type and tonnages of vessels, which are expected to berth/depart from the Facility and neighbouring facilities and ii) to identify objects and neighbouring coastal structure that can affect the current of surface layer. “Manoeuvring in bridge simulator” applied prevailing meteorological, oceanographic and topographical conditions in İskenderun Bay and its surroundings and marine traffic are modelled for virtual manoeuvring area. The study was performed in three stages namely i) 3-D Site Development, ii) Preliminary modelling, iii) Modelling considering the size of the CPIR Port of the Project site, number of berths, variety of vessels to be served.

The planned coastal facilities by Toros Agri Industry (to the east of the Project site) have also been taken into consideration during the 3-D simulation study. The interaction of the CPIR Port Project and planned development to be proposed by Toros Agri Industry were studied and it was found that the distance between the two facilities have enough space for vessels' maneuvering. It is assumed that space for berthing parallel neural is 200 m and the length of vessel (LOA) is 300 m. Moreover, scenarios were applied for safe manoeuvring of vessels for CPIR Port Project (including jetties). It is recommended in the modelling report that that drafting limitation shall be provided for safe navigation of vessels for the Jetty or the Jetty shall be positioned to the south of 20 m depth line for safe manoeuvring of vessels. In general, it was found that channel opening/spaces are suitable for big vessels and there are sufficient/safe distances with the existing neighbouring facilities and planned developments. The details of the Adana Ceyhan Port Preliminary Modelling Report including risk assessment and modelling regarding vessel manoeuvring for CPIR Port Project are discussed in *Chapter 11: Traffic Impact*.

15.3.3 Community Health and Safety

Construction Stage

Construction activities may pose certain risks to health and safety of local communities and other stakeholders in absence of adequate control of public access to the site. The closest residential community Incirli is located at 50 m distance from the Project site. The construction activities might pose safety risks if accessed by the local residents. In addition, blasting operations at the mining area during construction might be also dangerous to the local residents and land users (these are considered in separate subsection below).

Workers' influx is anticipated during construction of the Project and associated facilities (up to 4,500 workers). In addition, there will be accommodation in the camp area during the construction. The camp will be located at 50 m distance from the nearby residential area Incirli. The construction work timeframe is proposed to be 24 hours per day in shifts and 7 days a week. Construction activities will usually be conducted at daytime, however, when it is

necessary, the activities will be conducted also at night-time during construction phase of the Project. The construction site facilities (including offices, dormitory, canteen, activity hall, warehouse, utility centre, education hall etc.) will be located adjacent to the Project site to be used temporarily during construction phase of the Project. The mobilization area will be designed to accommodate 4,500 workers at peak.

Influx of workers from outside can cause impacts such as risk of social conflict, increase in illegal behaviour (such as drug use or theft), gender-based abuse, etc. Risks might be also associated with alcohol and/or drug use by the Project personnel. In particular, these risks are relevant to Incirli, which is located close to the Project site. This risk might be also relevant to the Incirli beach recreators if this beach is also used by the Project workers. In particular, the impact on Incirli and Incirli beach is relevant due to the presence of BOTAS activities close to this community (see Chapter 18).

In case of contacts between the in-migrants and local residents, a specific risk is associated with the spread of communicable diseases and in particular sexually transmitted diseases (STDs). These risks are relevant both to local residents and Project personnel. In particular, risks of HIV/AIDS, tuberculosis, as well as Covid-19 risks might be of particular importance.

The activities will be carried out at normal marine and weather conditions. Impacts of lights and signals of vessels installed in order to ensure navigation, environment, life and property safety and security will be temporary as they are limited to duration of the construction period. Potential light impacts will be mitigated by minimizing exterior lighting of vessels and reducing lighting density (except from navigational and safety lighting) (e.g. usage of timer where appropriate) during construction of the marine part. Therefore, no significant impacts on Incirli beach are anticipated. The number and type of the construction vessels / marine structures are presented in Table 15-1.

Table 15-1. Number and type of the construction vessels / marine structures

Production Activity	Amount	Working Location	Period (month)
Trestle Production			
Piling barge – 1	1	Piling	6
Materials barge-1	1	Piling	6
Crane Barge 1 – 300 Ton Crane	1	I Beam	4
Crane Barge 2 – 250 Ton Crane	1	General	7
Materials barge -2	1	General	7
Tugboat – 1000 Hp	1	General	8
Tugboat – 750 Hp	1	General	8
Diesel hammer	1	Piling	7
Vibro Hammer	1	Piling	7
Service Boat 1	1	General	8
Crane Barge – 300 Ton Crane	1	Module	

Production Activity	Amount	Working Location	Period (month)
Materials barge -1	1	Module	
Unloading, Breasting and Dolphen Structures			
Piling barge – 2	1	Piling	5
Materials barge-3	1	Piling	5
Crane Barge 3 – 250 Ton Crane	1	General	8
Materials barge -4	1	General	8
Tugboat 2- 1000 Hp	1	General	9
Diesel hammer-2	1	Piling	5
Vibro Hammer-2	1	Piling	5
Service Boat 2	1	General	9

As mentioned in Chapter 14, Incirli beach is located near the Project Area. Local people use it for swimming and sunbathing while local fishermen launch their boats there. Sea pollution from the Project (e.g. potential issues related to discharge of wastewater to the sea) could potentially lead to water-borne diseases. However, these risks are expected to be minimal given the measures discussed in *Chapter 8 Material Resources and Waste Management* are implemented and considering the temporary character of use of Incirli beach by the recreators/fishermen. No other risks associated with water-borne diseases at the construction stage are anticipated.

Impacts related to air, noise and vibration, as well as with traffic are considered in subsections above.

Operation Stage

Similar impacts associated with regard to operation activities and workers influx will be also relevant to the Project operation stage, though their significance will be lower due to the lower number of workers.

Hazard and operability study (HAZOP) studies were undertaken specifically for PDH and PP units and Utility & Offsite (e.g. raw water unit, cooling water unit, nitrogen system, fuel system, wastewater treatment etc.) of Ceyhan PDH-PP Project and Associated Facilities. The aim of HAZOP study is to identify potential hazards and operability problems that may be encountered during the operation of Ceyhan PDH-PP Project. The HAZOP studies were performed through “Guideword Method” by HAZOP team of the Project Company (including process engineers and safety engineers as well as mechanical, electrical, materials/corrosion, fire-fighting and other experts invited to assist the HAZOP team, as needed). HAZOP is a structured and systematic technique for examining a defined system, with the objective of:

- Identifying potential hazards in the system and the consequences of the occurrence of these hazards including health, safety and environmental as well as physical damage issues;

- Identifying potential operability problems with the system and in particular identifying causes of operational disturbances and production deviations likely to lead to interruptions in production and /or product quality problems.

As a result of HAZOP studies performed for PDH and PP units and Utility & Offsite of Ceyhan PDH-PP Project, several scenarios that could potentially lead to safety or operational problems were identified, which are expected to be mitigated by the suggested design/ procedural safeguards for different scenarios. Implementation of procedural and/or engineering modifications identified in a HAZOP study to mitigate risk, as HAZOP team suggested, gives assurance that the Plant will then be operated under some lower level of risk. However, reportedly, it is not guaranteed that no risk exists, nor does it guarantee that hazardous events or operating problems will not be encountered. Within the scope of the HAZOP studies, series of nodes (equipment, segment of lines and equipment i.e. propylene tanks, flare stack, cooling tower pumps etc.) were selected based on the units; for instance, total of 62, 31 and 25 nodes were selected and thoroughly studied specifically for PDH unit, PP unit and utility & offsite, respectively. Similarly, total of 104, 42 and 44 recommendations were proposed in the HAZOP studies performed for PDH unit, PP unit and utility & offsite of Ceyhan PDH-PP Project, respectively.

Apart from the HAZOP studies, hazardous area classification studies were performed for the units within Ceyhan PDH-PP Project considering the safety distances of spherical tanks, flare, jetty etc. Hazardous area classifications were made based on IEC 60079-Explosive Atmospheres Part 10-1: Classification of Areas – Explosive Gas Atmospheres and API RP 505 Recommended practice for classification of locations for electrical installations at petroleum facilities classified as Class I, Zone 0, Zone 1 and Zone 2. IEC 60079-10-1:2008 is concerned with the classification of areas where flammable gas or vapour or mist hazards may arise and may then be used as a basis to support the proper selection and installation of equipment for use in a hazardous area. Moreover, recommended practice (RP) which is “API RP 505” aims to provide guidelines for classifying locations Class I, Zone 0, Zone 1, and Zone 2 at petroleum facilities for the selection and installation of electrical equipment and applies to the classification of locations for both temporarily and permanently installed electrical equipment. This RP is applied where there may be a risk of ignition due to the presence of flammable gases, flammable liquid produced vapours, or combustible liquid produced vapours mixed with air under normal atmospheric conditions.

Adana Governorship, Provincial Directorate of Health has provided an opinion letter related to the Environmental Impact Assessment (EIA) application file of the terrestrial part of the Ceyhan PDH-PP Project and provided an assessment report attached to the letter (dated 23.01.2020). The following statements are provided in the opinion letter;

- According to the article 1/A (f) of Law on Industrial Regions (No: 4737) and article 3(m) of Regulation on Industrial Regions “Health protection zone is defined as area that is closed to any constructional activity within the industrial region premises (as

required by Public Health Law dated/no: 24.04. 1930/1593) and health protection zone that is proposed for Ceyhan Energy Specialized Region shall be taken into consideration”;

- Since the Project site is located close to the residential areas, necessary mitigation measures shall be undertaken in order to avoid adverse impacts on environment and community during operation phase of the Project;
- Provisions of the Turkish regulations shall be complied with in order to apply mitigation measures against to impacts related with air and noise emissions, soil and water quality;
- Necessary measures shall be undertaken considering the life and fire safety and incidents; emergency response plan shall be prepared, teams and necessary equipment shall be kept ready against unexpected incidents, occupational health and safety legislation shall be followed and provisions shall be complied with; trainings shall be provided especially on workplace accidents and occupational diseases.

According to the official correspondence and associated requirements presented in “Investigation and Explanation Report” of the Adana Ceyhan Energy Specialized Industrial Zone 1/5,000 scaled zoning plan and 1/1,000 implementation zoning plan, compliance with the requirements proposed in the official letter obtained from Provincial Directorate of Health (dated 01.03.2019) related with the health protection zone distances shall be followed. Two crude oil pipelines belonging to Turkish Petroleum Pipeline Company (BOTAŞ) and Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC) are crossing along the Ceyhan İskenderun Motorway Free Trade Zone Connection Road to the north of the Project site. Pursuant to the official letter obtained from BOTAŞ Petroleum Operations District Management in 17.04.2019 (see in Annex A), all the necessary technical, health and safety measures shall be taken within 200 m distance to the pipelines. Moreover, according to the plan notes of 1/1,000 scaled Implementation Zoning Plan (approved in 12.07.2019 with decision no: UİP38413), it is strictly prohibited to construct any structures within the BOTAŞ pipeline protection zone. Due to the fact that the protection zones, which is 200 m distance to the pipelines, is considered within the “Special Security Zone within the scope of Law No: 2565”, the provisions of the Law on Military Forbidden and Security Zones No: 2565 and Regulation on Military Forbidden Regions and Special Security Regions shall be taken into consideration.

Moreover, considering the protection zone to be applied around the Flare, the design of the flare has been made in accordance with the American Petroleum Institute (API) Standard 521 on Guide for Pressure-Relieving and De-pressuring Systems. The Project Company has issued a “Flare Radiation and Flameout Dispersion Study Report” in order to:

- predict the radiation and gas concentration levels at the boundary of the sterile area (i.e. protection zone), or at the bottom of a flare stack in cases where there is no sterile area, which are generated by operation of the flare system;

- assess whether predicted radiation and concentration levels exceed the flare design criteria;
- propose appropriate remedial design measures when any breach is identified.

The report estimates the impact of radiation and gas dispersion from the new flare stacks of the Project. For personal health and safety, the flare stack is designed in order not to make excessive radiation level or hazardous ambient condition on the ground at any operating cases. The Flare stack heights are selected as such the maximum radiation exposure level does not exceed 4.73 kW/m² outside the sterile area at 2 m aboveground considering personal exposure. Accordingly, the sterile area radius is selected as 165 m for the flare.

During operation phase of the Project, lighting impacts resulting from shipment activities are foreseen negligible considering the existing marine traffic and related impacts of other ships and marine vessels in the region.

Similar to the construction period, the influx of workers during the operation period may result in the risk of social conflict, increase in illegal behavior (such as drug use or theft), gender-based abuse, etc. Risks may also be related to the use of alcohol and/or drugs by Project workers. The spread of infectious diseases, and in particular sexually transmitted diseases (STDs), poses a particular risk if there is contact between staff and local residents. These risks apply to both local residents and Project workers. However, these risks will be lower due to smaller number of Project workers to be engaged during the operation phase.

Within the scope of the Project, wastewater will be treated, disinfected and removed by sea discharge. Apart from this, there will be no untreated wastewater discharge to the receiving environment. No significant risks related to water-borne diseases are anticipated.

The entire construction site will be lightened for safety and security reasons except from the time periods where the construction is stopped in certain periods for Terrestrial Part of the Project. A Lighting system that will ensure the control and safety during operation phase of the Project, for units such as buildings and jetty, will be installed. Lighting during the operation phase will be maintained at a low level in order not to disturb people and other living creatures and unnecessary lighting will be avoided. The light impacts that may be caused by the lighting of the buildings and tank areas will be minimized through impact mitigation measures such as curtaining of lights by reflecting.

15.3.4 Life and Fire Safety

Fire safety risks may occur during the construction phase of the Project which may affect particularly the construction workers and the nearby residents depending on the area over which the fire is spread. Fire safety risks will be managed through implementation of several mitigation measures explained in *Chapter 16: Labor and Working Conditions* and specifically preparation and implementation of an Emergency Preparedness and Response Plan during

the construction phase for terrestrial and marine activities. As a result, significant residual impacts related to fire are not expected.

The Project operations are exposed to life and fire safety risks, as they are accessible to the public. Of specific to the operation phase of the Project, A “Fire Protection Philosophy” and “Design Specification for Fire and Gas System” document have been prepared by the Project Company dated 13 February 2020 and 05 March 2020, respectively for Ceyhan PDH-PP Facility. The “Design Specification for Fire and Gas System” document includes the minimum requirements, codes and standards to be followed for the design and procurement of the Fire and Gas System (FGS) in Ceyhan PDH-PP Plant. FGS will be a dedicated system for fire and gas detection and will have protection functions, which provides personnel warning and allows immediate response to minimize damage caused by any emergency situation. FGS will include fire and gas systems in main control building, satellite instrument house and marine operating building; fire and gas detection and alarm devices for plant areas; and interface to building fire alarm control panels. The Facility will also be equipped with flammable gas detectors, toxic gas detectors, oxygen detectors, heat detectors, flame detectors, smoke detectors and manual alarm call point.

The firewater demand has been calculated as about 1,900 m³/h in case of a fire at the Liquefied Petroleum Gas (LPG) sphere tank farm; 200-600 m³/h for buildings; 700 m³/hr for Jetty area. There will be a dedicated firewater storage tank which will be designed in accordance with National Fire Protection Association (NFPA) 22. A fire station will be suitably positioned at a non-hazardous location but at the same time close to the process area. Fire station will be designed to provide accommodation for fire fighting vehicle, ambulance, mobile equipment etc.

Applicable firefighting, fire and gas detection and alarm devices in buildings are detailed in *Chapter 16: Labor and Working Conditions*.

The Project adopt standards related with national fire protection association (NFPA) and instrumentation, control and safety systems (i.e. Instrumentation, systems and Automation society (ISA), American Petroleum Institute (API), Engineering Equipment and Materials User Association (EEMUA)). The local code and standards are, among others, Turkish Standard (TS) TS4943: Safety standards in crude oil and petroleum products storage tank farms TS EN 12845+A1 Fixed firefighting systems – Automatic sprinkler systems – Design, installation and maintenance and TS EN 15004-5 Fixed firefighting systems – Gas extinguishing systems – Part 5: Physical properties and system design of gas extinguishing systems for HFC 227ea extinguishant.

The compliance with national legislation for fire safety and also international standards are reportedly already integrated into the design of the Project. The construction and operation phases of the Project and Associated Facilities have been designed in accordance with SEVESO compliance.

15.3.5 Infrastructure Safety

The risk of structural failure will likely increase in the event of natural hazards such as floods and earthquakes. As mentioned in *Chapter 7: Hydrology and Hydrogeology*, there is no surface water sources within the Project site; however, there is a dry river bed along the northeast boundaries of the Project site within the site boundaries of CPIR Port. An official letter was obtained from Investigation, Planning and Allocation Directorate of State Hydraulic Works (DSI) within the scope of the EIA study conducted for CPIR Port Project. Accordingly, a number of mitigation measures and precautions against flooding and water use are given in the official letter. Project Company of the CPIR Port is obliged to undertake necessary mitigation measures against flooding. If river crossing is planned to be applied on dry or flowing streams within and in the vicinity of the CPIR Port Project site, necessary study shall be undertaken in line with the provisions of the Regulation concerning Disaster on Engineering Structures along Roadways and the related construction activities should only start when the approval of the 6th Regional Directorate of DSI is granted on the hydraulic structures. The minimum size of culvert which is applied in the flood control facilities is 2mx2m. It was also stated that the form of the culverts prone to clogging due to the dragged materials (tree branches etc.); therefore, all kinds of works shall be made under the control of 6th Regional Directorate of DSI.

Since there are no surface water sources within the Project site, there is no flood risk inside the Project site. Additionally, according to the Pre-Geological-Geotechnical Report of Adana City, Ceyhan District, Kurtpınar Quarter, Ceyhan Petrochemistry Industrial Region PDH-PP Polypropylene Production Facility, Selensu Mühendislik, November 2018 (Selensu, 2018), it is stated that since the region is not within 100-years flood risk areas of any major rivers, the risk of flooding is found to be very low.

Adana is located between two important active fault lines. According to the Earthquake Hazard Map of Turkey, the Project site has a PGA value of 0.303 g and it lies close to areas classified as low to medium hazard. Detailed information is provided in *Chapter 6: Geology, Soils and Contaminated Land*. According to the Pre-Geological-Geotechnical Report of Adana City, Ceyhan District, Kurtpınar Quarter, Ceyhan Petrochemistry Industrial Region PDH-PP Polypropylene Production Facility, the Project site and its surroundings have frequently been exposed to earthquakes of varying magnitudes due to the activity of surrounding active faults (i.e. Ecemiş Fault in the north and Karataş-Yumurtalık fault zone). Within 100 km diameter around the Project site, 48 earthquakes have occurred with a magnitude of 4.5-4.9; 19 earthquakes have occurred with a magnitude of 5.0-5.4; 7 earthquakes have occurred with a magnitude of 5.5-5.9; 2 earthquakes have occurred with a magnitude of 6.0-6.4 between 1915-2015 according to the records of Boğaziçi University Kandilli Observatory. As a result of seismic risk analysis conducted for Project site, the return period of earthquake with a magnitude of 5.0 is 7 years whereas the return period of earthquake with a magnitude of 5.5 is 8 years. Similarly, the probability of having an earthquake of 6.0 in 10 years is 62.8% and the probability of period of having an earthquake of 6.0 in 50 years is 99.3%.

Impacts on the integrity of structures and functionality of the Project (e.g. collapse of the buildings/structures) from earthquake loads might occur following an earthquake event of high magnitude if the designs did not consider the resulting earthquake loads. This might result in a *high* impact magnitude on the environment as well as on the community and workers' health and safety following accidents, spills, fire, etc. related to the seismic incident during construction and operation.

Since the Project site lies in an area with seismic risk ranging from minor to moderate, the sensitivity is also minor to moderate. As such the resulting impact significance prior to implementation of mitigation measures is expected to be from minor to moderate. It is stated that by the Project Company, the Project design has been taken into account the relevant Turkish regulatory requirements related to seismic design and risk assessment and also the findings of the site specific geological/geotechnical investigation study. The Building Earthquake Regulation of Turkey (Official Gazette (O.G.) date/no: 18.03.2018/30364) will be complied with during all construction works at the Project site. Strict adherence to the design codes and standards are required. Similarly, provisions of Technical Earthquake Regulation on Construction of Coastal and Marine Structures, Railways, Airports (O.G. date/no: 18.08.2007/26617) will be followed during construction of the marine section. As reported by the project Company, propane tank, which is associated facility, is designed as such seismic isolators will be used to reduce seismic risks. The impact significance related to seismic risks is considered negligible given that the structures will be designed and built according to appropriate legislation and standards and seismic isolators will be placed at the propane tank.

15.3.6 Security Requirements

At this stage, the Project site is fenced and there are security personnel at the gates. Vehicles and people are kept under control at the entrance to the Project site. The Project Company will perform necessary security arrangements in accordance with the Turkish regulatory requirements during construction phase of the Project.

Security personnel will be provided by the Project Company and EPC during the construction phase of the Project. According to the latest information, security personnel will be assigned as unarmed. During the operation period, CPIR management company will be responsible for provision of security services. Since the CPIR area is considered a strategic zone, security personnel will be armed. Maritime safety will be provided by the Coastal Safety. The total number of security personnel to be assigned is currently unknown.

As described above, the Project will engage security personnel throughout the Project lifecycle. Security personnel will be engaged to ensure safety of personnel and Project facilities, as well as local communities (these might be exposed to risks in case of unauthorized access to construction or hazardous industrial sites).

Safety impacts and conflicts might occur in case of abuse of authority by security personnel. In particular, this is relevant if responsibilities of the security personnel are not clearly defined.

The impacts may be caused by inadequate behavior of security personnel, e.g. inappropriate use of force, offensive language with regard to workers or local residents or land users.

The Project Company has developed Health, Safety and Environmental Plan for terrestrial part of the Project to define obligations to be undertaken during the performance of contracted activities for the Project. According to this Plan, regarding the security during both construction and operation phase of the Project, contractors will establish and implement a Health and Security Program. This program will be in compliance with all applicable regulations, statutory and the Owner's requirements to protect materials, equipment, facilities or operations. Contractor will at all times take all necessary precautionary measures and conduct all operations which will minimize the risk of loss, theft or damage by vandalism, sabotage or otherwise to any aspect of the Project.

The security of the working areas has significant importance in relation to the Project. The Project Company will prepare a Security Management Plan (SMP) for the Project considering the construction and operation phases of the Project. The SMP will comply with the requirements of IFC's 2017 Good Practice Handbook on Use of Security Forces when implementing its policies. The Handbook sets out practical, project-level guidance for companies to better understand and implement the requirements outlined in Performance Standard 4. The SMP will identify the top security risks and mitigation measures. It will provide training, code of conduct, and supervision of security personnel. The security personnel will undergo the relevant trainings. The SMP will involve a special code of conduct for the guidance and 24 hours of the security personnel which considers the impacts their security arrangements might have on local communities and help establish good relations with the external stakeholders to gain their trust and collaboration. The security personnel will respect and obey the Code of Conduct of the Project. The performance and behaviors of the personnel will be monitored and appropriate disciplinary will be taken against members who breach the Code. While ensuring the security of the Project, the security personnel will act respectfully and consistently to respect human rights. Ceyhan PP A.Ş. will place and check all warnings and signs present and required to be placed as a security measure in the designated spaces within the Project area (construction areas, laboratory, office, wastewater treatment area, process units, road, doors, etc.).

15.3.7 Blasting

During the construction period of the Project, blasting is planned for topsoil stripping. Impacts such as vibration, airblast and flyrock are expected during blasting works. For blasting, experts from the Department of Mining Engineering at Istanbul University conducted a study dated 2021 (Blasting Excavation Design Based on Risk Analysis within the Scope of Ceyhan PDH-PP Facility Construction). This study includes vibration, airblast and flyrock impacts and mitigation recommendations. In the study, it was reported that the closest house to the blasting area is 247 meters away. According to this report, PPV (Peak Particle Velocity) is 2.29 mm/s considering the closest house to the activity area. According to "Regulation on the Evaluation

and Management of Environmental Noise”, 5 mm/s is the limit value and the vibration caused by the Project is below the limit value. No impact on houses is expected due to vibration.

Pressure (sound) waves propagating in the atmosphere as a result of blasting are higher than normal air pressure. When evaluated based on the house closest to the blasting area, the air pressure to occur was found to be 129.4 dB. In the study, the US Federal Regulation on Use of Explosives was taken as a reference, and it was lower than the limit value of 133 dB. After the blast excavations have started in the field, measurements will be made for the evaluation brought into the “National Regulation on the Evaluation and Management of Environmental Noise” related to vibration.

The flyrock into the air in the blasting works occurs as a result of the explosive not being sufficiently embedded in the rock mass. If adequate safety zones are not created, people, equipment or buildings may be damaged. The worst-case scenario is when there is an unnoticeable geological weakness or space in the rock mass. According to the research, it has been calculated that the stones can be thrown up to 600 meters if the mitigations are not followed. In general, mitigations are related to the implementing good practices for blasting activities. For example, applying the clamping length equal to the load distance, checking structural anomalies such as geological faults open joints, weak zones like clay veins, fractures, placing less explosive material at these structural weak locations, and charging blasting holes gradually will minimize the potential flyrock risk. According to Blasting Excavation Design Based on Risk Analysis Study performed by Istanbul University, the flyrisk zone can be decreased to 50 m if the given mitigation measures are implemented. There will be a guard band for this distance. Flyrock impact area for controlled and worst-case scenario is shown in Figure 15-3.

Considering the worst-case scenario, the following social receptors fall within the 600 meters blasting zone: nearly 20 residential houses and the fish restaurant in Incirli. Land plots used for agricultural purposes also fall within this 600 meters zone – however, no agricultural activities on these land plots are currently conducted (after land acquisition). Fishermen at the nearshore marine area can also be affected by flyrock if mitigation measures are not implemented.

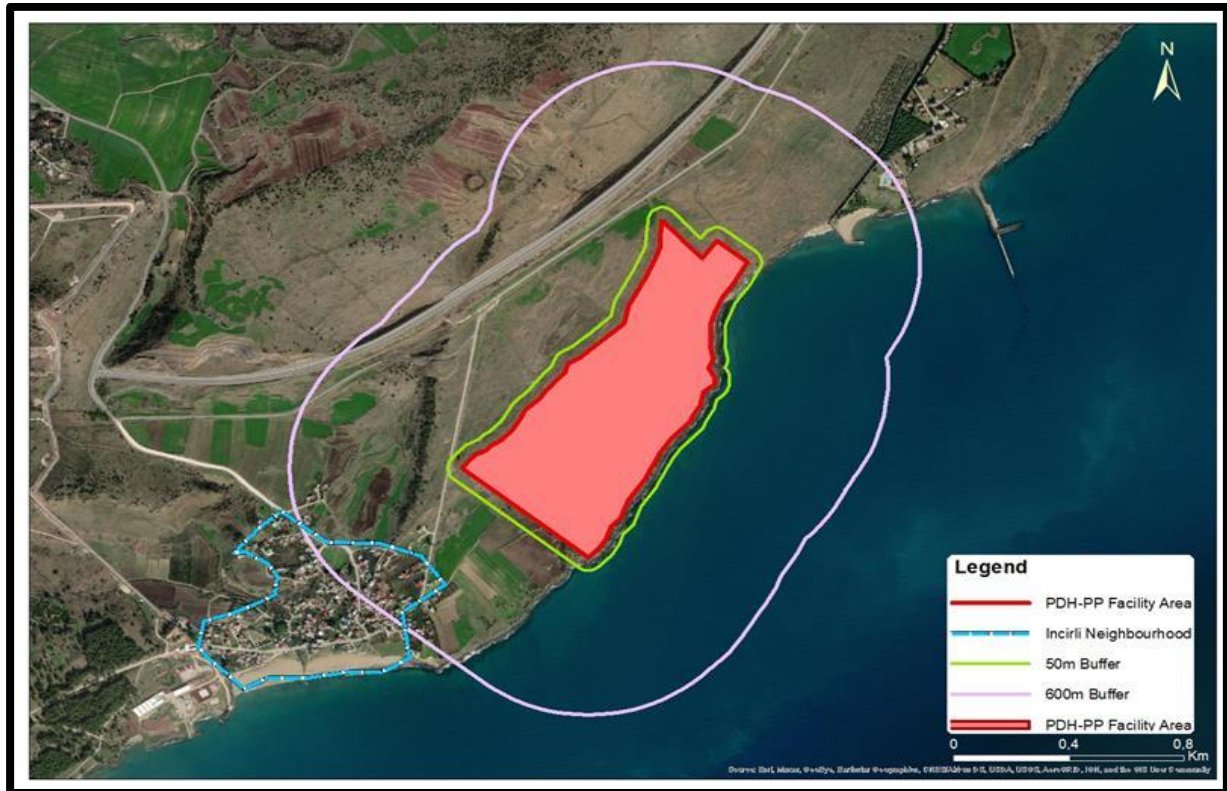


Figure 15-3. Flyrock impact for controlled and worst-case scenarios

No blasting impacts are expected during the operation period.

15.3.8 Unplanned Events/Major Accidents

Flood, spill, erosion and earthquake risks may arise from unplanned events and major accidents during both construction and operation phases of the Project. Flood, erosion and earthquake risks are natural, while spill risks may arise both from the nature of the construction works and because of the Project's chemical storage.

According to the Preliminary Geological - Geotechnical Report for PDH-PP Polypropylene Production Plant in Ceyhan Petrochemical Industrial Zone, Kurtpinar Neighborhood, Ceyhan Petrochemical Industrial Zone, Ceyhan, Ceyhan District of Ceyhan Province, prepared by Selensu Engineering, in the assessment of the Project site in terms of natural disasters other than earthquake risk, it is stated that the flat topography of the site prevents disaster risks such as rockfalls and landslides. In addition, since the area is not located within the 100-year flood risk areas of any major rivers, it has been determined that the flood risk is significantly low. See *Chapter 7: Hydrology and Hydrogeology* for a detailed assessment of this topic.

Project site lies close to areas classified as low to medium hazard classes. According to the Earthquake Hazard Map of Turkey, the Project site has a PGA value of 0.303 g (10% exceedance probability in 50 years period, i.e., 475 years recurrence period). According to the correlation of the PGA with the Mercalli scale for the classification of the intensity of the potential earthquakes regarding the perceived intensity the PGA value of 0.303 g corresponds

to an earthquake with potential moderate to heavy damage on structures with very strong to severe perceived shaking. See *Chapter 7: Geology-Soils-Sediments and Contaminated Land* for a detailed assessment of this topic.

Poor environmental management during the construction phase may create adverse impacts on soil quality particularly due to events such as accidental spills of liquid cement and other chemicals, and compaction of topsoil. Spills of hazardous material such as oil, fuel, or similar materials (e.g., during fuel loading for machinery operating at the site) create risks of contamination of land, particularly during the construction activities and storage of construction equipment and materials directly on soil ground. Any such events that may cause contamination of the soil in the Project site and/or its associated facilities would cause an exceedance of the maximum admissible concentrations defined by Turkish Regulation on Soil Pollution Control and Point Source Contaminated Sites-RSPC (Soil Pollution Control Regulations). Hence, stringent impact mitigation measures need to be taken to prevent any adverse impacts that may arise due to the activities discussed above to minimize the magnitude of the impacts. See *Chapter 7: Geology-Soils-Sediments and Contaminated Land* and *Chapter 8: Material Resources and Waste Management* for a detailed assessment of this topic.

As a national legal obligation, the Project Company has to process all chemical inventories through the national registration system (Environmental Information System) within the scope of the Regulation on "Reducing the Risks of Major Industrial Accidents". Project Company must update the Emergency Response Plan for substances having hazardousness above the threshold value according to national legislation.

15.3.9 Impact Significances for Construction and Operation Phases

Table 15-2 shows the summary of the respective Community Health and Safety Impact assessment for construction phase of the Project:

Table 15-2. Construction Phase Impact Significances

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to air, noise and vibration	Negative Direct	Definition	During the construction period, air, noise and vibration risks are evaluated as local, taking into account the project site and the access roads to the site.	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Considering the background dust in the region, the construction activities to be carried out in the context of the project and terminal facilities have the potential to affect the region intensely if appropriate mitigations are not implemented.	There will be dust, noise and vibration generation during construction activities (including earthworks, equipment operation, vehicle movements, building construction).	-	Due to the potential nature and intensity, the relevant impacts are expected to be reversible in the short/mid-term by nature. With the cessation of the activity at the source of the impact, it can be restored in a short time.
		Score	Local	Long	High	Frequent	N/A	Short/mid-term
		Value	2	4	4	4	-	2
	Impact Magnitude (G+D+I+F (or L)) x R	28						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to terrestrial and marine traffic	Negative Direct	Definition	The Project and Terminal Facility will cause traffic in the Project site and on the highways around the Project site. Marine traffic will remain regional.	Considering that the construction period will last 38 months, road traffic will continue throughout the construction. Construction information about the Marine section was requested from the Project Company.	Terrestrial traffic will increase due to the construction activities of the Project. However, this increase complies with legal standards.	Project related terrestrial traffic load will increase regionally. It is planned to last for 38 months.	-	After the finish of the construction works, there will be no traffic related the Project. In addition, the project site is close to the national connection roads.
		Score	Regional	Long	Medium	Recurrent	N/A	Short term
		Value	3	4	3	3	-	1
	Impact Magnitude (G+D+I+F (or L)) x R	12						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on community health	Negative Direct	Definition	Community health impacts during the construction period will be regionally limited.	The construction period is limited to 38 months. With the completion of the construction, no impact on community health is expected.	Expected impacts on community health is within legal standards or accepted practices and is likely to result in tangible changes to the social component.	The public health impacts of the construction period are expected to last 38 months and a large number of events distributed over time.	-	Activities concerning community health during the construction period (lighting activities at sea and labor influx) will end with the completion of the construction. However, if the necessary precautions are not taken, it can leave irreversible impacts for the communities.
		Score	Regional	Long	Medium	Frequent	N/A	Irreversible
	Value	3	4	3	4	-	5	
	Impact Magnitude (G+D+I+F (or L)) x R	70						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on life and fire safety	Negative Direct	Definition	Life and fire risks impacts during the construction period will be locally limited	The construction period is limited to 38 months. therefore, life and fire risks are limited to 38 months.	During the construction phase of the project, depending on the area where the fire has spread, risks may arise that may affect especially construction workers and local people. Risks to life may arise if adequate security is not provided at the construction site and the public is not prevented from entering this area.	-	The risk to life or fire is likely to occur at any time during the construction phase of the Project.	After the finish of the construction works, there will be no risk associated with the construction of the Project. It may not be possible to reverse the life safety and fire related impacts of the necessary plans and procedures are not followed.
		Score	Local	Long	Very High	N/A	Likely	Irreversible
		Value	2	4	5	-	3	5
	Impact Magnitude (G+D+I+F (or L)) x R	70						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on infrastructure safety	Negative Direct	Definition	Project related seismic movements have the potential to have regional impact.	Considering that the construction period will take 38 months, the impacts will be limited to 38 months.	Expected impacts is within legal standards or accepted practices and is likely to result in tangible changes in social components.	-	Since there is no surface water source in the project site, there is no flood risk. If the designs do not take into account the resulting earthquake loads, it may cause high impact sizes.	With the completion of the construction, there will be no additional pressure on seismic risks.
		Score	Regional	Long	Medium	N/A	Likely	Short/mid-term
		Value	3	4	3	-	3	2
	Impact Magnitude (G+D+I+F (or L)) x R	26						
Impacts related to security personnel	Negative Direct	Definition	Impacts related to security personnel during the construction period will be locally limited.	The construction period is limited to 38 months. With the completion of the construction, no impact expected.	Expected impacts is within legal standards or accepted practices and is likely to result in tangible changes in social components	-	If training for security personnel is disrupted, serious risks to the community can occur.	Potential impacts will disappear with the end of construction. Potential impacts can be reverted soon after the solution is found.
		Score	Local	Long	Medium	N/A	Likely	Short/mid-term
		Value	2	4	3	-	3	2
	Impact Magnitude (G+D+I+F (or L)) x R	24						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to blasting	Negative Direct	Definition	Impacts related to blasting during the construction period will be locally limited.	Blasting is planned to last in 10 months.	Expected impacts is within legal standards or accepted practices and is likely to result in tangible changes in social components	-	It is possible that it will happen if necessary blasting measures (such as guard band) are not taken.	Restoration work is expected to take more than one year if the impact materializes.
		Score	Local	Short	Medium	N/A	Likely	Mid-term
	Value	2	2	3	-	3	3	
	Impact Magnitude (G+D+I+F (or L)) x R	30						

Table 15-3 shows the summary of the respective Community Health and Safety Impact assessment for operation phase of the Project:

Table 15-3. Operation Phase Impact Significances

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to air, noise and vibration	Negative Direct	Definition	The dust and noise impacts that will arise during the operation phase will be limited locally. No impact on vibration are expected.	Impacts will cease after the operational life span of the project.	Expected impacts is within legal standards or accepted practices and is likely to result in tangible changes in social components.	Dust and noise generation will continue at certain levels throughout the project.	-	Potential impacts are expected to be reversible with rehabilitation and/or restoration activities in a short/mid-time.
		Score	Local	Long	Medium	Frequent	N/A	Short/mid-term
		Value	2	4	3	4	-	2

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
	Impact Magnitude (G+D+I+F (or L)) x R		26						
Impacts on terrestrial and marine traffic	Negative Direct	Definition	Impacts is expected to remain at the local level.	Impacts will cease after the operational life span of the project.	During the operation period of the Project, the intensity of land and sea traffic will decrease.	Terrestrial and marine traffic will continue at certain levels throughout the project.	-	Potential impacts are expected to be reversible with rehabilitation and/or restoration activities in a short time.	
		Score	Local	Long	Low	Frequent	N/A	Short-term	
		Value	2	4	2	4	-	1	
	Impact Magnitude (G+D+I+F (or L)) x R		12						
Impacts on community health	Negative Direct	Definition	Impacts is expected to remain at the local level.	If community health-related measures are not taken impacts may continue for very long-term.	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	If the plans and procedures prepared for the Project are not followed, the likelihood of impacts will increase.	Potential impacts are expected to be reversible with rehabilitation and/or restoration activities in more than a year after the construction period, there will be a serious decrease in the number of workers.	
		Score	Local	Very long	High	N/A	Likely	Short/mid-term	
		Value	2	5	4	-	3	2	
	Impact Magnitude (G+D+I+F (or L)) x R		28						

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts on life and fire safety	Negative Direct	Definition	Impacts is expected to remain at the local level.	life and fire safety risks will exist throughout the operational period.	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	If the plans and procedures prepared for the Project are not followed, the likelihood of impacts will increase.	It may not be possible to reverse the life safety and fire related impacts of the necessary plans and procedures are not followed.
		Score	Local	Very long	High	NA	Likely	Irreversible
		Value	2	5	4	-	3	5
	Impact Magnitude (G+D+I+F (or L)) x R		28					
Impacts on infrastructure Safety	Negative Direct	Definition	Seismic risks during the Project operation are evaluated to be on a regional scale considering potential combined incidents such as accidents, spills, fire, etc. related to the seismic incident along with the damage to the Project structures	Seismic risks will exist throughout the operational period.	If the plans and procedures prepared for the Project are not followed, the intensity of the impacts may increase.	-	Seismic risks will be throughout the operational period of the project.	Potential impacts are expected to be reversible with rehabilitation and/or restoration activities in more than a year.
		Score	Regional	Very long	High	NA	Likely	Short/mid-term
		Value	3	5	4	-	3	2
	Impact Magnitude (G+D+I+F (or L)) x R		30					
Impacts related to Security Personnel	Negative Direct	Definition	It is expected that risks arising from security personnel will remain at the local level.	Security personnel related risks will exist throughout the operational period.	Intense impact is expected in the absence of training on security personnel.	-	The event is likely to occur at any time during the operational period of the Project.	Potential impacts are expected to be reversible with rehabilitation and/or restoration activities in more than a year.

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
		Score	Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
		Score	Local	Very long	High	NA	Likely	Short/mid-term
		Value	2	5	4	-	3	2
		Impact Magnitude (G+D+I+F (or L)) x R		28				

Table 15-4 shows vulnerabilities and receptor sensitivity.

Table 15-4. Vulnerabilities and Receptor Sensitivity

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Local communities Kurtpınarı, Kurtkulagi, Sarımazı and Gölovası neighbourhoods, land users	Medium	They may be affected by potential impacts such as: <ul style="list-style-type: none"> Air, noise and vibration; Terrestrial traffic; Labor influx; Life and Fire risks; Conflicts with security guards. 	3
Facilities and businesses in the impact areas (BOTAS, Toros Agri Industry, Restaurants)	Medium	They may be affected by potential impacts such as: <ul style="list-style-type: none"> Air, noise and vibration, Terrestrial and marine traffic, Life and Fire risks. 	3
İncirli and Gölovası Fishermen	High	They may be affected by potential impacts such as: <ul style="list-style-type: none"> Marine traffic, <p>Especially among the fishermen in Gölovası, there are people whose only livelihood is fishing.</p>	5

Table 15-5 shows impact significances.

Table 15-5. Impact Significances

Potential Impact	Project Phase	Impact Magnitude	Sensitivity Value	Total Value	Impact Significance	
					Score	Description
Impacts of Air, Noise and Vibration on Kurtpınarı, Kurtkulagi, Sarımazı and Gölovası neighbourhoods (Construction and Operation Phases)	Construction	28	3	84	Medium	It has an impact significance that is within the applicable standards. No vibration expected during the operation period.
	Operation	26	3	78	Medium	
Impacts of Terrestrial Traffic on Kurtpınarı, Kurtkulagi, Sarımazı and Gölovası neighbourhoods (Construction and Operation Phases)	Construction	12	3	36	Low	Possible impacts are expected on the Project site access roads, but the impact level is low when
	Operation	12	3	36	Low	
Impacts of Labor Influx on Kurtpınarı, Kurtkulagi, Sarımazı and Gölovası neighbourhoods (Construction and Operation Phases)	Construction	70	3	210	High	During the peak period, 4500 people will be employed at the Project site. The labor influx can have high negative impacts on the community. During the operation period, 321 people are planned to work.
	Operation	30	3	90	Medium	
Impacts of life and fire risk on Kurtpınarı, Kurtkulagi, Sarımazı and Gölovası neighbourhoods	Construction	70	3	210	High	Failure to provide security in the Project site and not restricting the public's access to the site may lead to life risks. If fire precautions are not taken, flammable materials in the field pose a risk.

Potential Impact	Project Phase	Impact Magnitude	Sensitivity Value	Total Value	Impact Significance	
					Score	Description
(Construction and Operation Phases)	Operation	28	3	84	Medium	
Impacts of Conflict with Security Personnel on Kurtpınarı, Kurtkulagi, Sarımazı and Gölovası Neighbourhoods (Construction and Operation Phases)	Construction	24	3	72	Low	Abuse of power by security guards can lead to conflict with communities and/or workers.
	Operation	28	3	84	Medium	
Impacts of Air, Noise and Vibration on Facilities and Businesses in the Impact Area (Construction and Operation Phases)	Construction	28	3	84	Medium	It has an impact that is within the applicable standards. No vibration expected during the operation period.
	Operation	26	3	78	Medium	
Impacts of Terrestrial and Marine Traffic on Facilities and Businesses in the Impact Area (Construction and Operation Phases)	Construction	12	3	36	Low	Possible impacts are expected on the Project site access roads, but the impact level is low when necessary precautions are taken.
	Operation	12	3	36	Low	

Potential Impact	Project Phase	Impact Magnitude	Sensitivity Value	Total Value	Impact Significance	
					Score	Description
Impacts of Life and Fire Risks on Facilities and Businesses in the Impact Area (Construction and Operation Phases)	Construction	70	3	210	High	If fire precautions are not taken, flammable materials in the field pose a risk.
	Operation	28	3	84	Medium	
Impacts of Marine Traffic on Incirli and Gölovası Fishermen (Construction and Operation Phases)	Construction	12	5	60	Low	Marine traffic will not be intense during construction and operation periods.
	Operation	24	5	120	Medium	
Impacts of Blasting on Kurtpınarı, Kurtkulagi, Sarımazı and Gölovası neighbourhoods (construction phase)	Construction	30	3	90	Medium	Blasting activities may cause impacts such as vibration, airblast and flyrock if mitigation measures are not taken.
Impacts of Blasting on Facilities in the impact area (construction phase)	Construction	30	3	90	Medium	Blasting activities may cause impacts such as vibration, airblast and flyrock if mitigation measures are not taken.
Impacts of Blasting on Incirli and Gölovası Fishermen (construction phase)	Construction	30	5	150	High	Fishermen might be affected by the blasting activities due to flyrock.

15.4 Mitigation Measures

The potential risks and impacts to the community shall be managed appropriately during construction and operation phases of the Project through the following measures:

- All relevant health and safety regulations will be followed during construction and operation of the Project in order to minimize accidents that may have impacts on the community and to control potential Project related releases and/or emissions;
- The SEP will be implemented to ensure engagement with affected communities and other stakeholders (including vulnerable groups). A grievance management system will be in place that will enable the community to raise concerns during the lifetime of the Project. More specifically, the security staff at the construction site will be informed about the Grievance Mechanism and in case a local person wants to submit a comment or grievance, the security personnel will be able to convey this person to the responsible staff;
- During all phases of the Project, both internal and external audits (by independent experts and potentially by related governmental authorities) will be conducted and additional preventive/ mitigation measures will be developed to address any noncompliance identified during these audits. The audits will cover traffic safety audits, fire safety audits, waste management audits, Occupational Health and Safety (OHS) audits, etc.

15.4.1 Air, Noise and Vibration

Construction Stage

- An Air Quality Control Monitoring Plan will be prepared and implemented during the construction phase of the Project;
- Transfer roads will be sprayed with water as necessary (for example using mobile watering bowsers) to prevent significant dust emissions especially in dry weather conditions;
- Necessary measures (covering materials, water suppression, etc.) will be taken to avoid and/or minimize dust emissions during the construction phase;
- A Noise Control and Monitoring Plan will be prepared and implemented during the construction phase of the Project;
- The Project Company will develop a Community Health, Safety & Security Plan, with commitments to implement the following key measures to protect the community from adverse effects during construction (noise, dust, other emissions risks with material and hazardous substances and accidents);

- Construction activities will be planned in a way considering the nearby communities and necessary consent will be obtained from Adana Provincial Directorate of Environment, Urbanization and Climate Change for undertaking construction activities during evening and night time, if needed;
- Drivers of trucks and vehicles will adhere to defined speed limits and will be warned against creating unnecessary noise by using horns during the construction phase;
- The Project Company will develop and update a Community Health, Safety & Security Plan, with commitments to implement the following key measures to protect the community from adverse impacts during construction phase (noise, dust, other emissions risks with material and hazardous substances and accidents).

Operation Stage

- An Air Quality Control Monitoring Plan will be prepared and implemented during the operation phase of the Project;
- A Noise Control and Monitoring Plan will be prepared and implemented during the operation phase of the Project;
- The Project Company will develop and update a Community Health, Safety & Security Plan, with commitments to implement the following key measures to protect the community from adverse impacts during and operation phase (traffic noise and air quality).

15.4.2 Traffic

Project Site and Terrestrial Part of Associated Facilities

- Only vehicles, whose legally required vehicle and exhaust inspection certificates are available, will be allowed at site. Transportation impacts during construction will be minimized as far as possible with the establishment of a Construction Traffic Management Plan;
- Necessary precautions will be taken and the residents will be informed as necessary in Incirli neighbourhood in order to ensure their safety; in particular when the schools are open. These precautions will be planned in coordination with relevant public authorities;
- Information brochures (which include the relevant contact details for any potential grievances to be communicated to the Project) will be distributed to all the residential buildings and to the Muhtar of the surrounding neighbourhoods;
- It is possible to transport the product resulting from production by train. Therefore, the pressure on road traffic will be reduced;
- Kurtpinari location, where Toros Tarım Primary School is located, can be used for the transportation of heavy loads and construction materials. The school will also be considered in the Traffic Management Plan, and traffic signs and speed limits will be

evaluated accordingly. These precautions will be planned in coordination with relevant public authorities;

- All operators of construction vehicles will be given educational seminars on traffic safety;
- Information brochures (which include the relevant contact details for any potential grievances to be communicated to the Project) will be distributed to all the residential buildings, all schools, especially Toros Tarım Primary School and to the Muhtar of the surrounding neighbourhoods;
- Communities will be informed about power cuts and transportation routes. School buses organisation will be informed and official institutions will be in contact. Stakeholders may need different communication channels. For this, the community will be informed through advertisements and brochures in areas frequently used by local people such as mosques, health centers, headman's offices, marketplaces;
- The transport of heavy materials will be carried out by specified transport vehicles and related safety protection measures will be applied, drivers with professional knowledge and skilled driving skills will be engaged, as well as specialized personnel to accompany drivers in the transport of heavy materials;
- Safety training, speed limit control, GPS location management, regular control, prohibition of tired vehicle use, strict transportation plan, continuous working time limit are recommended for the safety of heavy vehicle drivers and road travellers;
- A follow-up mechanism will be established to continuously monitor and inspect the speed control of heavy vehicles, the routes they use, and the transportation routes. Regulations and laws regarding the transportation of materials and cargo by heavy vehicles will be implemented and additional measures will be undertaken;
- The load limits, maintenance and measurements of the vehicles will be controlled, and environmental and social security measures will be taken. All drivers and operators of heavy equipment, including crane operators, and bus drivers are required to submit to a drug and alcohol test as part of their pre-employment medical examination and may be selected at any time for random assessment and testing for the duration of their employment in line with the requirements of the approved project Drug and Alcohol Policy. All drivers shall be required to submit to a drug and alcohol test if required in the event of a road traffic accident, regardless of fault;
- All necessary mitigation measures will be included in the heavy material transport plan in more detail.

Marine Section of Associated Facilities

- A Marine Traffic Management Plan (that will take into account terrestrial and marine traffic) will be prepared and implemented covering construction and operation phase of the Project;

- Meteorological conditions at the Project site shall be continuously monitored, it will be appropriate to postpone the docking manoeuvres in cases where the Hs value of wave height exceeds 1.5 meters when the southern seas rise;
- Necessary precautions will be taken and the residents will be informed as necessary in Incirli neighbourhood in order to ensure their safety; in particular when the schools are open. These precautions will be planned in coordination with relevant public authorities;
- Information brochures (which include the relevant contact details for any potential grievances to be communicated to the Project) will be distributed to all the residential buildings and to the Muhtar of the surrounding neighbourhoods;
- Up-to-date information on activities at sea will be conveyed to fishermen in Incirli and Gölovası.

15.4.3 Community Health and Safety

Construction Stage

- Development and implementation of Community Health, Safety and Security Plan for the Project construction stage;
- Protective barriers / fences with warning signs will be provided at the construction sites;
- Security personnel will be provided at the main construction sites and/or regular patrol inspections shall be arranged in the area to prevent unauthorized access;
- Development and implementation of the Code of Conduct which will include but not be limited to the following aspects:
 - Respect and polite attitude to the local residents and other stakeholders;
 - Prevention of harm to property of local residents and local environment;
 - Restrictions on use of alcohol and drugs;
 - Neutral attitude and non-involvement in any situations which may lead to potential conflict;
 - Prohibition of use of dogs;
 - Respect to cultural heritage of the local population;Provision of induction training for personnel of the Company and contractors on the issues of interaction with local people;
- Development and implementation of Accommodation Management Plan to ensure that accommodation services of adequate quality are provided to the Project workers (including provision of leisure facilities, shops, etc. to minimize contacts with local residents);
- Training will be implemented to make personnel aware of the risk of transmitted diseases (particularly HIV/AIDS, tuberculosis, STDs), and on availability of

confidential consultation services at the medical center(s) – particularly when an infection is suspected;

- Specific healthcare clinics providing sexual health testing will be identified for the Project and communicated to workers;
- Condoms will be available to the workers on open access at the on-site medical center(s) where any worker may take it anonymously;
- Provide hygiene materials for free and monitor the use of preventive tools for Covid-19. Conduct periodic medical checks for personnel and provide opportunity for vaccination and/or other mitigating measures when required;
- Coordinate with BOTAS regarding potential impacts on Incirli community and Incirli beach (Chapter 18);
- Coordination with CPIR Management Company and BOTAŞ will be conducted on the potential impacts of any spillage or leakage that may occur on the Incirli beach. Emergency Preparedness and Response Plan will be implemented. Subject-specific training will be given to emergency response teams. CLO will categorize incoming notifications and complaints regarding emergency response, spillage issues as urgent and will take the necessary actions immediately;
- Conducting information disclosure and consultation activities with communities and other stakeholders in line with the Stakeholder Engagement Plan (SEP). The stakeholder engagement activities will include the community meetings with the vulnerable and marginalized groups such as children and young persons (including visits to schools) and local postings to inform the public regarding the relevant hazards for particular locations;
- Details of the nature of the emergency will be communicated and the EPRP Plan will be published and made accessible for the local communities;
- The structural elements and components of the Project will be designed and built according to national regulations and international best practice. All structures will be built taking into account the regulatory requirements. Regarding design of the buildings within the Project site, the Building Earthquake Regulation of Turkey (O.G. date/no: 18.03.2018/30364) will be complied with during all construction works at the terrestrial section within the Project site. Strict adherence to the design codes and standards are required. Similarly, provisions of Technical Earthquake Regulation on Construction of Coastal and Marine Structures, Railways, Airports (O.G. date/no: 18.08.2007/26617) will be followed during construction of the marine section. As reported by the Project Company, propane tank is designed as such seismic isolators will be used to reduce seismic risks. The impact significance related to seismic risks can be taken as negligible given that the structures will be designed and built according to appropriate legislation and standards and seismic isolators will be placed at the propane tank;

- Pursuant to Regulation on Prevention of Major Industrial Accidents and Mitigation of Resulting Impacts (O.G. Date / No: 02.03.2019/30702), a Safety Management System shall be established, and Safety Report and Internal Emergency Plan shall be prepared. The abovementioned Emergency Preparedness and Response Plan to be developed within the scope of the ESMS system will be integrated into the internal emergency plan;
- Close contact with affected stakeholders (Incirli residents, businesses, staff of surrounding facilities, fishermen etc.) should be maintained in order to respond effectively to potential grievances.

Measures related to blasting activities are described below in Section 15.4.7.

Measures related to GBVH and alcohol/drug use are described *Chapter 14: Socioeconomics*.

Operation Stage

- Details of the nature of the emergency will be communicated and the EPRP Plan will be published and made accessible for the local communities;
- All hazardous materials will be stored in designated areas having secondary containment and handled with care by authorized staff in order to prevent potential spills in accordance with the Hazardous Material Management Plan and Hazardous Material Management Program to be prepared and applied; Provide hygiene materials for free and monitor the use of preventive tools for Covid-19;
- Conduct periodic medical checks for personnel and provide vaccination and/or other mitigating measures when required;
- Training will be implemented to make personnel aware of the risk of transmitted diseases (particularly HIV/AIDS, tuberculosis, STDs), and on availability of confidential consultation services at the medical center(s) – particularly when an infection is suspected;
- A Community Health, Safety and Security Plan is required for the operation phase and should include detailed risks, mitigation measures and monitoring actions associated with the specific phase of the Project. A SEP and a grievance mechanism procedure should be part of the O-ESMS.

Measures related to GBVH and alcohol/drug use are described *Chapter 14: Socioeconomics*.

15.4.4 Life and Fire Safety

Construction Stage

- The Management System of the Project will contain an Emergency Preparedness and Response Plan (EPRP) that considers the role of communities and community infrastructure as appropriate in responding to emergency events;
- Coordinate with emergency responders to ensure that appropriate first aid is provided in the event of accidents;
- Provide trainings to personnel on first aid.

Operation Stage

- Coordinate with emergency responders to ensure that appropriate first aid is provided in the event of accidents;
- Disaster Management Plan including crisis management and unplanned events will be prepared for the operation phase of the Project;
- Provide trainings to personnel on first aid.

15.4.5 Infrastructure Safety

Construction Stage

- A Life and Fire Safety Plan will be prepared under EPRP identifying major fire risks, applicable codes, standards and regulations, and mitigation measures. This plan will need to be approved by a third party acceptable to IFC and EBRD prior to the construction of the facilities to ensure compliance with local and international standards.

Operation Stage

- A Life and Fire Safety Plan will be prepared under EPRP identifying major fire risks, applicable codes, standards and regulations, and mitigation measures. This plan will need to be approved by a third party acceptable to IFC and EBRD prior to the construction of the facilities to ensure compliance with local and international standards;
- An “Emergency Preparedness and Response Plan” will be developed for emergency cases that consist of incidents such as accidents, explosions, fires, gas leakages, hazardous chemical/biological and liquid waste spills, disease outbreaks and similar that occur unexpectedly due to equipment/infrastructure failures, employee errors, natural disasters (flooding, landslides, earthquakes, storms), sabotage and similar,

both for terrestrial and marine parts of the Project in line with national regulations and international standards.

15.4.6 Security Requirements

Construction Stage

- A Security Management Plan will be developed and implemented during the construction phase of the Project. Security will be provided in a manner that does not jeopardize the community's safety or Ceyhan PP A.Ş.'s relationship with the community and that is consistent with national requirements;
- International best practices will be applied to hiring, training and mobilizing security staff. Ceyhan PP A.Ş. will ensure that security personnel have not been involved in past abuses and are adequately trained. Force will only be sanctioned in preventive or defensive circumstances in proportion to the threat and security will operate within the law. The grievance mechanism will allow communities to express concerns in accordance with requirements of IFC and EBRD standards;
- As part of the Community Health, Safety & Security Plan the Project Company will develop and implement a series of security measures, particularly for the Construction stage of the Project; these will include the installation of sufficient and adequate site boundary and access controls near settlements to prevent unauthorized entry to construction.

Operation Stage

- A Security Management Plan will be developed and implemented during the operation phase of the Project. Security will be provided in a manner that does not jeopardize the community's safety or Ceyhan PP A.Ş.'s relationship with the community and that is consistent with national requirements;
- International best practices will be applied to hiring, training and mobilizing security staff. Ceyhan PP A.Ş. will ensure that security personnel have not been involved in past abuses and are adequately trained. Force will only be sanctioned in preventive or defensive circumstances in proportion to the threat and security will operate within the law. The grievance mechanism will allow communities to express concerns in accordance with requirements of IFC and EBRD standards.

15.4.7 Blasting

Construction Stage

- "Blasting Excavation Design Based on Risk Analysis within the Scope of Ceyhan PDH-PP Facility Construction" plan prepared by the experts of the Department of Mining Engineering at Istanbul University will be followed:

- Preliminary design models will be applied for blasting;
- Safety bands will be created at distances suitable for the designs in order to avoid flyrock;
- Two sequential throws will be made, but 3 or more sequential throws may also be applied when necessary. But it will be essential that each hole be fired with separate delays;
- Records of firings will be kept;
- Rock behavior and environmental impacts will be measured with trial shots. Necessary corrections will be made after trial shots in unexpected situations.
- As per the national regulations, explosives are to be transferred to and used at the site on daily basis. Storage of the explosives is not allowed at the site. Storage of residues and surplus at site are also not allowed. Hazardous materials are to be transported by licensed companies in line with national requirements;
- Development of database of Project stakeholders that might be potentially affected by the blasting operations (such as local residents, land users, fishermen, etc.);
- Local residents and land users shall be informed on time and place of blasting works well in advance (using such means of communication as SMS, phone calls, email and posting information on notification boards);
- Warning signs will be installed with indication of planned place and time of hazardous works, including blasting. The signs will be installed at a safe distance from the facilities under construction and along access roads to prevent unauthorised access;
- During blasting works, the Project workers will be present at a safe distance at the areas of potential presence of the local residents / land users to prevent them from accessing the safety area;
- In collaboration with shoreline security authorities, the Project will develop and implement measures to ensure security of fishermen potentially using the nearshore area to prevent their presence during blasting operations;
- Appointing Community Liaison Officer (CLO) serving as a focal point for communication between the Project, local residents and other stakeholders. Any stakeholder might contact CLO for any queries related to the Project's activities, including blasting activities;
- The grievance mechanism will also provide opportunity for timely identification of any issues related to safety of local communities.

No blasting activities are anticipated during the Project operation.

15.5 Residual Impacts

If the ESMS is implemented properly during construction phase and operation phase which will cover the implementation of all mitigation measures mentioned above and ensure are shown in Table 15-6.

Table 15-6. Residual Impact Significance

Subject	Residual Impact Construction and Operation Phase	
	Construction	Operation
Dust, Noise and Vibration	Low	Low
Terrestrial and Marine Traffic	Negligible	Negligible
Community Health	Medium	Low
Life and Fire Safety	Medium	Low
Infrastructure Security	Low	Low
Security Requirements	Low	Low

Again, even though the residual impacts will decrease with the implementation of mitigation measures, the consideration of worst-case scenario is still valid for the assessment strategy, therefore, the impacts that may have irreversible consequences are classified as Medium.

15.6 Summary of Analysis Outcome

Risks and impacts related to community health and safety associated with the Project include safety risks, risks related to increased traffic, dust and noise, life and fire safety, infrastructure safety and provision of security services. These risks and impacts are relevant to both construction and operation stages of the Project. In addition, community health and safety risks during the Project operation are associated with blasting activities. The risks and impacts of the Project, in the context of health and safety of off-site communities, will be managed through a set of management plans listed in *Chapter 15: Environmental and Social Management* to be developed and implemented by the Project Company. In addition, a Construction and Operation Traffic Management Plan, Noise Control and Monitoring Plan, Air Quality Control and Monitoring Plan and Security Management Plan will be developed and implemented for the Project. Life and Fire Safety will be included in the EPRP.

During all construction works, the Building Earthquake Regulation of Turkey will be complied with.

An “Emergency Preparedness and Response Plan” will be developed and implemented for emergency cases that consist of incidents that occur unexpectedly due to equipment/infrastructure failures, employee errors, natural disasters (flooding, landslides, earthquakes, storms), sabotage and similar, both for terrestrial and marine parts of the Project in line with national regulations and international standards. Pursuant to Regulation on Prevention of Major Industrial Accidents and Mitigation of Resulting Impacts, a Safety Management System shall be established, and Safety Report. Internal Emergency Plan will be

included in the EPRP. The minimum requirements to be considered during the preparation of Safety Report, Safety Management System and Internal Emergency Plan are presented in Annex 2, 3 and 4 of the Regulation on Prevention of Major Industrial Accidents and Mitigation of Resulting Impacts, respectively.

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (CHAPTER-16)

FEBRUARY 2023
ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Version	Revision	Date	Prepared By	Quality Management By	Checked By	Approved By
Draft	A.0	March 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.1	April 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.2	June 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.3	October 2021	Şeyma Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.4	December 2021	Şeyma Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	
	A.5	August 2022	Şeyma Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)
	A.6	October 2022	Şeyma Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)
Final Draft	B.0	February 2023	Şeyma Geyik (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003

FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
☎: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
16. LABOUR AND WORKING CONDITIONS.....	3
16.1 Introduction.....	3
16.2 Regulatory Framework.....	3
16.2.1 IFC and EBRD Requirements for Labour and Working Conditions.....	3
16.2.2 ILO Fundamental Conventions.....	5
16.2.3 Turkish Health and Safety Regulations.....	6
16.2.4 Gaps between International Standards and Turkish Legislation.....	8
16.3 Project Workforce.....	14
16.4 Labour Conditions.....	19
16.4.1 HR Policy.....	19
16.4.2 Employment Contract.....	19
16.4.3 Working Hours.....	20
16.4.4 Non-Discrimination and Code of Conduct.....	20
16.4.5 Grievance Mechanism.....	21
16.4.6 Child Labour and Forced Labour.....	22
16.4.7 Non-Employee Workers and Supply Chain.....	22
16.5 Working Conditions.....	23
16.5.1 Workers Accommodation.....	23
16.5.2 Health and Safety.....	26
16.6 Impact Assessment.....	28
16.6.1 Labour and Working Conditions.....	28
16.6.1.1 Construction Phase.....	28
16.6.1.2 Operation Phase.....	29
16.6.2 Workers' Accommodation.....	29
16.6.2.1 Construction Phase.....	29
16.6.2.2 Operation Phase.....	30
16.6.3 Health and safety.....	30
16.6.3.1 Construction Phase.....	30
16.6.3.2 Operation Phase.....	30
16.7 Mitigation Measures.....	38
16.8 Residual Impacts.....	44
16.9 Summary of Analysis Outcome.....	45

LIST OF TABLES

	<u>Page</u>
Table 16-1. Requirements under IFC/EBRD for Labour and Working Conditions	4
Table 16-2. ILO Fundamental Conventions	6
Table 16-3. Gaps between International Standards and Turkish Legislation.....	9
Table 16-4. Estimated Number of the Project Personnel	16
Table 16-5. Types of mobilization buildings	24
Table 16-6. Fire-fighting, fire and gas detection and alarm devices	32
Table 16-7. Construction Phase Impact Significances	33
Table 16-8. Operation Phase Impact Significances	35
Table 16-9. Vulnerabilities and Receptor Sensitivity	36
Table 16-10. Impact Significances.....	36
Table 16-11. Construction Phase Residual Impact Significance	45
Table 16-12. Operation Phase Residual Impact Significance	45

LIST OF FIGURES

	<u>Page</u>
Figure 16-1. Construction Site	25

16. LABOUR AND WORKING CONDITIONS

16.1 Introduction

This chapter provides assessment of impacts associated with labour and working conditions, as well as provides relevant mitigation and monitoring measures. The chapter is developed considering the following standards and documents:

- International Finance Corporation (IFC) Performance Standard (PS) 2: Labour and Working Conditions;
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 2: Labour and Working Conditions;
- EBRD PR4: Health and Safety;
- International Labour Organization (ILO) Fundamental Conventions;
- IFC and EBRD Guidance Note on Workers' Accommodation: Processes and Standards;
- IFC General Environmental, Health and Safety (EHS) Guidelines;
- IFC EHS Guidelines for Large Volume Petroleum-based Organic Chemicals Manufacturing and IFC EHS Guidelines for Petroleum-based Polymers Manufacturing;
- EBRD Sub-sectoral Environmental and Social Guidelines: Manufacture of Plastic and Synthetics; and
- Turkish Labour, Health and Safety Legislation.

The Equator Principles refer to the IFC sustainability framework (IFC Performance Standards, Guidance Notes and Industry Specific Guidelines) and Environmental, Health and Safety Guidelines (General Environmental, Health and Safety Guidelines and Industry Sector Guidelines) under Principle 3.

16.2 Regulatory Framework

16.2.1 IFC and EBRD Requirements for Labour and Working Conditions

IFC PS2, EBRD PR2 and PR4 set out policies and standards of international good practice related to labour and working conditions. The objectives of these standards are:

- to establish, maintain and improve worker-management relationship;
- to promote fair treatment, non-discrimination and equal opportunity among workers, and ensure compliance with national labour and employment laws;

- to protect the workforce by addressing child labour and forced labour;
- to promote safe and healthy working conditions, and to protect and promote the health of workers.

The relevant requirements of IFC and EBRD standards are summarized in Table 16-1.

Table 16-1. Requirements under IFC/EBRD for Labour and Working Conditions

PS2/PR2/PR4 Provisions	Summary of the Requirements
<i>Working Conditions and Management of Working Relationship</i>	
Human Resources (HR) Policy	Client to adopt a HR policy that is consistent with PS2/PR2. Under the policy, the client will inform employees of their rights. It will be clear and will be made available at start of employment. Turkish law requires provision of worker contracts for all contracts exceeding one month, and probation and notice periods to be in place. The Project's Labour Management Plan (LMP) includes the Project Company's commitment to not undertake unfair or arbitrary dismissal of workers. The Labour Management Plan (LMP) is to elaborate commitments on terms of employment as listed in the Policy.
Working Relationship	Working conditions and terms of employment will be clearly documented and communicated to employees and contracted workers.
Working Conditions and Terms of Employment	If the client is a party to a collective bargaining agreement, the terms of the agreement will be respected. Where not, working conditions and terms of employment will at least comply with national law. In addition, the client will comply with the ILO conventions on the abolition of child labour, elimination of forced labour, elimination of discrimination and freedom of association and collective bargaining. Where a client provides accommodation for Project workers, the client will put in place and implement policies governing the quality and management of the accommodation and provision of services. The client will identify migrant workers and ensure that they are engaged on substantially equivalent terms and conditions to non-migrant workers carrying out the same work.
Workers' Organizations	Where national law recognizes workers' rights to associate and bargain collectively, the client will comply with the national law and engage with workers' organizations and provide them with information needed for meaningful negotiation in a timely manner. Where the law is restrictive, the client will enable alternative means of expression, including a mechanism for grievances.
Non-Discrimination and Equal Opportunity	The employment relationship will be based on the principle of equal opportunity and fair treatment, and will not discriminate with respect to hiring, compensation, working conditions and terms of employment, access to training, promotion, termination of employment or retirement and discipline. The client will also comply with EU requirements on non-discrimination related to employment.
Retrenchment	The responsible party will develop a plan to mitigate the adverse impacts of retrenchment in line with national law and good industry practice and based on the principles of non-discrimination and consultation.
Grievance Mechanism	The client will provide a grievance mechanism for workers, inform the workers about the mechanism at the time of hire and make it easily accessible to them. The mechanism should be transparent and well understood and should address concerns promptly at an appropriate level of management. The mechanism should not impede access to other judicial or administrative remedies that might be available under law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.
<i>Protecting the Workforce</i>	
Child Labour	The client will not employ children in a manner that is exploitative, is likely to be hazardous, or to interfere with child's education, or to be harmful to child's health or development. The client will follow national laws as applicable, but children below the age of 18 will not be employed in dangerous work. All work of persons under the age of 18 shall be subject to an appropriate

PS2/PR2/PR4 Provisions	Summary of the Requirements
	risk assessment prior to the work commencing and regular monitoring of health, working conditions, and hours of work.
Forced Labour	The client will not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements or trafficking in persons. Trafficking in persons is defined as the recruitment, transportation, transfer, harbouring, or receipt of persons, by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Women and children are particularly vulnerable to trafficking practices
Occupational Health and Safety (OHS)	
Health and Safety	The client will provide the workers with a safe and healthy work environment, taking into account inherent risks and hazards. Steps will be taken to prevent accidents, injury and disease arising from, associated with or occurring in the course of work by minimizing the causes of hazards as far as practicable. In line with good international industry practice, the client will address identification of hazards; provision of preventative and protective measures; training of workers; documentation and reporting of accidents, diseases and incidents; and emergency prevention, preparedness and response arrangements. The client will also comply with the relevant European Union (EU) Occupational Health and Safety (OHS) requirements and when such requirements do not exist, relevant IFC OHS guidelines. Moreover, the client will maintain an OHS management system in line with good international practice.
Non-Employee Workers and Supply Chain	
Non-Employee Workers	The client will use commercially reasonable efforts to apply the requirements of the standards to non-employee workers directly contracted, except for provisions under Retrenchment and Supply Chain in PS2 and for provisions under Retrenchment, Supply Chain and Security Personnel Requirements in PR2. The client will ensure that non-employee workers have access to an effective grievance mechanism that meets the requirements of PR 2. In cases where the third party is not able to provide a grievance mechanism, the client will provide an effective grievance mechanism to serve workers engaged by the third party.
Supply Chain	The client will address child labour and forced labour in its supply chain consistent with the provision under Child Labour and Forced Labour.

16.2.2 ILO Fundamental Conventions

Labour and working conditions related IFC and EBRD standards are in part guided by a number of ILO Conventions, and they require complying with four core labour standards of ILO including child labour, forced labour, non-discrimination and freedom of association and collective bargaining. Furthermore, ILO has identified eight conventions as "fundamental (or core)", covering subjects that are considered as fundamental principles and rights at work. These fundamental conventions are presented in Table 16-2, all of which are ratified by Turkey. Project Company will comply with the requirements of these conventions during the construction and operation phases of the Project for their employees and subcontractors. Moreover, Project Company will use commercially reasonable efforts to apply these requirements of the Conventions to the employees of (sub)contractors.

Table 16-2. ILO Fundamental Conventions

Convention Name	Key Provisions
C29: Forced Labour (Ratification by Turkey: 1998)	<ul style="list-style-type: none"> Forced or compulsory labour not permitted Existing practices to be suppressed in the shortest possible time Regulated by governments that are signatories to the convention
C 87: Freedom of Association and Protection of the Right to Organize (Ratification by Turkey: 1993)	<ul style="list-style-type: none"> Workers and employers have the right to establish and join organizations of their choice, subject to the rules of the organization concerned Regulated by governments that are signatories to the convention
C98: Right to Organize and Collective Bargaining (Ratification by Turkey: 1952)	<ul style="list-style-type: none"> Workers to be protected against anti-union discrimination in the workplace Workers' and employer's organizations to be protected from acts of interference Regulated by governments that are signatories to the convention
C 100: Equal Remuneration (Ratification by Turkey: 1967)	<ul style="list-style-type: none"> Men and women to receive equal remuneration for work of equal value, consistent with the provisions of the applicable remuneration methods Regulated by governments that are signatories to the convention
C 105: Abolition of Forced Labour (Ratification by Turkey: 1961)	<ul style="list-style-type: none"> Forced labour not to be used for political ends, for economic gain, as a form of discipline or punishment, or in the context of discrimination Regulated by governments that are signatories to the convention
C111: Discrimination (Ratification by Turkey: 1967)	<ul style="list-style-type: none"> Equal opportunity in respect of employment and opportunity to be pursued in a manner appropriate to national practice Discrimination based on race, colour, sex, religion, political opinion, nationality not permitted Exclusion or preference in respect of the requirements of a specific job is not discrimination Regulated by governments that are signatories to the convention
C138: Minimum Age (Ratification by Turkey: 1998)	<ul style="list-style-type: none"> Child labour to be progressively abolished where it is still practiced Signatories to determine a locally appropriate minimum age, not less than 15 years or 14 in specific circumstances Regulated by governments that are signatories to the convention
C182: Worst Forms of Child Labour (Ratification by Turkey: 2001)	<ul style="list-style-type: none"> Elimination of child exploitation through slavery, prostitution, pornography, illicit services or work which is harmful to health, morals or safety Regulated by governments that are signatories to the convention

16.2.3 Turkish Health and Safety Regulations

Labour and working conditions related IFC and EBRD standards require complying with the national laws and regulations that are applicable to projects with regard to labour and working conditions and health and safety. An Environmental, Health and Safety and Social (EHSS) legislation review has been undertaken as part of the Environmental and Social Impact Assessment (ESIA) study (see Annex B) including review of the Turkish Labour Law and Occupational Health and Safety Legislation as listed below:

Occupational Health and Safety

- *Occupational Health and Safety Law (No: 6331)*
(Official Gazette date/no: 30.06.2012/28339);
- *Occupational Health and Safety Risk Assessment Regulation*

- (Official Gazette date/no: 29.12.2012/28512);
- *Regulation on the Provisions of Occupational Health and Safety Training of Employees* (Official Gazette date/no: 15.05.2013/28648);
 - *Regulation on Occupational Health and Safety Services* (Official Gazette date/no: 29.12.2012/28512);
 - *Communiqué on Danger Class Lists Related to Occupational Health and Safety* (Official Gazette date/no: 26.12.2012/28509);
 - *Regulation on Duties, Authority, Responsibilities and Trainings of Occupational Health and Safety Specialists* (Official Gazette date/no: 29.12.2012/28512);
 - *Regulation on the Occupational Health and Safety Committees* (Official Gazette date/no: 18.01.2013/28532);
 - *Regulation on the Health and Safety Measures to be taken in Workplace Buildings and Additions* (Official Gazette date/no: 17.07.2013/28710);
 - *Regulation on Health and Safety at Construction Works* (Official Gazette date/no: 05.10.2013/28786);
 - *Regulation on the Tasks, Authority, Responsibility and Education of On-Site Doctor and Other Health Personnel* (Official Gazette date/no: 20.07.2013/28713);
 - *Regulation on Health and Safety Requirements in the Use of Work Equipment* (Official Gazette date/no: 25.04.2013/28628);
 - *Regulation on Manual Handling* (Official Gazette date/no: 24.07.2013/28717);
 - *Regulation on Protection of Buildings from Fire* (Official Gazette date/no: 19.12.2007/26735);
 - *Regulation on the Emergency Cases in Workplaces* (Official Gazette date/no: 18.06.2013/28681);
 - *Regulation on the Use of Personal Protective Equipment in Workplaces* (Official Gazette date/no: 02.07.2013/28695);
 - *Regulation on Safety and Health Signs* (Official Gazette date/no: 11.09.2013/28762);
 - *First Aid Regulation* (Official Gazette date/no: 29.07.2015/29429);
 - *Regulation on the Protection of the Workers against Risks Relevant to Noise* (Official Gazette date/no: 28.07.2013/28721);
 - *Regulation on the Protection of the Workers against Vibration Risks* (Official Gazette date/no: 22.08.2013/28743);
 - *Regulation on the Control of Dust Emissions* (Official Gazette date/no:05.11.2013/28812);

- *Regulation on Occupational Health and Safety in Temporary or Fixed Term Employment* (Official Gazette date/no: 23.08.2013/28744);
- *Regulation on Health and Safety Measures in Works with Chemical Substances* (Official Gazette date/no: 12.08.2013/28733);
- *Regulation on Protection of Workers from Dangers of Explosive Environments* (Official Gazette date/no: 30.04.2013/28633);
- *Regulation on Machinery Safety* (Official Gazette date/no: 03.03.2009/27158) (last amended on 01.01.2017);
- *Regulation on Occupational Training of the Employee to Work in Dangerous and Very Dangerous Class Workplace* (Official Gazette date/no:13.07.2013/28706);
- *Law on the Protection of Life and Property (No. 4922)* (Official Gazette date/no: 14.6.1946/6333).

Labour and Working Conditions

- *Labour Law (No: 4857)* (Official Gazette date/no: 10.06.2003/25134);
- *Regulation on Working Duration Related to Labour Law* (Official Gazette date/no: 06.04.2004/25425);
- *Regulation on Excess Work and Work in Excess Periods on Labour Law* (Official Gazette date/no: 06.04.2004/25425);
- *Regulation on Special Principles in Works Carried out by Employing Workers in Shifts* (Official Gazette date/no: 07.04.2004/25426);
- *Regulation on the Minimum Wage* (Official Gazette date/no: 01.08.2004/25540);
- *Regulation on Suspension of Work in Workplaces* (Official Gazette date/no: 30.03.2013/28603) (Official Gazette date/no: 06.08.2013/28730);
- *Regulation on the Works in Which Workers Shall Work Maximum Seven and Half Hours or Less in a Day in Terms of Health Rules* (Official Gazette date/no: 16.07.2013/28709);
- *Regulation on the Procedures and Principles for the Employment of Children and Young Persons* (Official Gazette date/no: 06.04.2004/25425).

16.2.4 Gaps between International Standards and Turkish Legislation

Table 16-3 presents the gaps between Turkish Legislation and International Standards.

Table 16-3. Gaps between International Standards and Turkish Legislation

Aspect	IFC PS2	National Legislation	GAP & Relevance to the Project
Human Resources (HR) Policy:	The Project Company must have a transparent and consistent HR policy. Moreover, the Project Company must provide employees with information regarding their rights under national labour and employment law, including their rights related to wages and benefits. It must also document and communicate their working conditions and terms of employment.	As specified in Labour Code of Turkey, the employment of Project workers will be based on the principles of non-discrimination and equal opportunity. There will be no discrimination with respect to any aspects of the employment relationship, such as recruitment, compensation, working conditions and terms of employment, access to training, promotion or termination of employment.	Terms and conditions of employment are specified in the labour law and meet international requirements, but there is no requirement in the law to establish a HR policy and to include a code of conduct. HR policy will be established to cover the operation and construction period and all recruitment will be carried out according to the standards given in this policy. The contractor personnel who will work on the Project will also be recruited in accordance with this policy and it will be ensured that all employees have equal rights and conditions.
Employment	Project Company should assess with whom they are considered to be in an employment relationship and identify the types of workers. The employment relationship is the legal link between employers and employees. It exists when a person performs work or provides services under certain conditions in return for remuneration. It is through the employment relationship, however defined, that reciprocal rights and obligations are created between the worker and the employer. ILO Recommendation No. 198, paragraph 13, provides indicators to determine the existence of an employment relationship for direct and contracted workers.	<p>According to Turkish Labor Law, the employer is required to have a written contract with the employees for employment with duration of one year or more. In cases when a written contract is not made, the employer is under obligation to provide the employee with a written document, within two months at the latest, showing the general and special conditions of work, the daily or weekly working time, the basic wage and any wage supplements, the time intervals for remuneration, the duration (if it is a fixed term contract) and conditions concerning the termination of the contract.</p> <p>Regarding working hours and conditions, employer will comply with the Turkish laws and regulations. According to Regulation on Working Duration Related to Labor Law, the maximum working duration is 45 hours a week, and the daily working duration cannot exceed 11 hours in any case. According to Regulation on Excess Work and Work in Excess Periods, excess work is defined as “those works that</p>	<p>Turkey has ratified the ILO Convention and provides international standards for employment and working conditions. However, risks may arise, especially in the case of a fixed-term contract workers. These risks relate to the granting of overtime pay and right to leave. In order to reduce these risks, a Labor Management Plan will be prepared and equal rights of all employees will be guaranteed by the HR policy.</p> <p>There is also Project specific potential risk that due to project construction works, contracted workers may perform overtime time hours above the annual limit set by the Labor Law.</p>

Aspect	IFC PS2	National Legislation	GAP & Relevance to the Project
		<p>exceed 45 hours a week”, and work in excess periods is defined as “those works that are lower than 45 hours a week according to a contract and when the work exceeds this working period set in the contract and becomes 45 hours a week”. Pursuant to article 4 of the subject regulation, the wage for each hour of the excess work is paid by increasing the hourly wage of normal working condition by 50%, and the wage for each hour of the work in excess periods is paid by increasing the hourly wage of normal working condition by 25%.</p>	
<p>Freedom of Association and Collective Bargaining:</p>	<p>PS2 guarantees the right to organize and the right to bargain collectively even where national law is silent or where such collective agreements do not exist or the national law restricts workers’ organisations.</p> <p>The Project Company must not discriminate or retaliate against workers who participate in such organisations and bargain collectively and must engage with such worker representatives. For example, refusing to hire workers who have been members or leaders of workers’ organisations at other firms (for reasons unrelated to qualifications or job performance) would constitute discrimination. Furthermore, the client must respect collective bargaining agreements (CBA) in place. When such agreements do not exist, it must, at a minimum, comply with national law to define working conditions and terms of employment.</p>	<p>The Turkish Constitution is a guarantor of trade union rights. It affirms the right for employees ‘to form labor unions without obtaining prior permission’ and ‘to become a member of a union’ (Article 51).</p> <p>Article 34 of the Constitution asserts the right to hold ‘unarmed and peaceful meetings and demonstration marches without prior permission’. Articles 53 and 54 affirm the right of workers to ‘conclude collective bargaining agreements and ‘to strike if a dispute arises during the collective bargaining process.</p>	<p>The national standard meets international requirements. No discrimination or retaliation against workers who join these unions and engage in collective bargaining is anticipated. For example, refusing to hire workers who have been members or leaders of workers’ organisations at other firms (for reasons unrelated to qualifications or job performance) would constitute discrimination (IFC, 2007c: 41). Furthermore, the Project Company must respect CBA in place. When such agreements do not exist, it must, at a minimum, comply with national law to define working conditions</p> <p>and terms of employment. Employees’ right to join the union and bargain collectively will be guaranteed by the HR policy.</p>
<p>Non-Discrimination and Equal Opportunity:</p>	<p>The Project Company must not interfere with the principle of non-discrimination based on ILO Conventions No. 100 and 111. Therefore, the Project Company must base the employment relationship on the principle of equal opportunity and fair treatment and must not discriminate with respect to aspects of the employment relationship.</p>	<p>Turkish Labor Law forbids discrimination due to race, language, gender, political views and opinion and religion. In accordance with the equal treatment principle covered in article 5 of the Turkish Labor Law, employers should treat part time workers with the same rights as full time workers and indefinite period workers to</p>	<p>National legislation is in line with international standards on non-discrimination and equal opportunity, but equal working conditions and non-discrimination will be detailed in the HR policy. In particular, it will be ensured that no one is discriminated against due to age,</p>

Aspect	IFC PS2	National Legislation	GAP & Relevance to the Project
		definite period workers unless there are genuine reasons for not doing so.	gender, sexual orientation, physical disability or political opinion.
Retrenchment:	When a client anticipates the elimination of a significant number of jobs, it will develop a plan to mitigate the adverse impacts of retrenchment on employees in consultation with employees, their organisation and, in some cases, the government. Where national law or an existing CBA stipulates that retrenchment is a subject of collective bargaining, the client should allow time for good faith bargaining as well as to implement the terms of applicable CBAs.	<p>According to the Labour Law 14857 Article 29, when the employer contemplates collective terminations for reasons of an economic, technological, structural or similar nature necessitated by the requirements of the enterprise, the establishment or activity, she/he shall provide the union shop-stewards, the relevant regional directorate of labour and the Public Employment Office with written information at least 30 days prior to the intended lay-off. A collective dismissal occurs when,</p> <p>a) in establishments employing between 20 and 100 employees, a minimum of 10 employees; and</p> <p>b) in establishments employing between 101 and 300 employees, a minimum of 10 percent of employees; and</p> <p>c) in establishments employing 301 and more workers, a minimum of 30 employees, are to be terminated in accordance with Article 17 on the same date or at different dates within one month</p>	In the event of retrenchment in accordance with international legislation, the Project Company will develop a plan to mitigate the adverse impacts of retrenchment on employees in consultation with employees, their organisation and, in some cases, the government. Information on retrenchment will be given in the HR policy.
Grievance Mechanism:	The Project Company must provide a grievance mechanism for workers and their organisations to raise workplace concerns. However, it is important to underline that this mechanism is not a substitute for other arbitration procedures, such as those provided through national law or collective agreements.	There is no specific grievance mechanism in Turkish Law. Employees can make complaints to the project authorized personnel or to CİMER, which is generally used in Turkey, but there is no structured grievance mechanism system. There is also no provision to provide a grievance mechanism for contractor's workers.	Turkish legislation and International Legislation differ in terms of grievance mechanism. The grievance mechanism to be established in accordance with the IFC PS1 and EBRD PR 10 will be established as soon as possible in the process by the Project Company.

Aspect	IFC PS2	National Legislation	GAP & Relevance to the Project
Child and Forced Labour:	The Project Company will not employ child and forced labour and will respect national laws for the employment of minors. This provision also is placed in the Exclusion List which defines the types of projects that IFC does not finance.	<p>Turkish Labor Law sets provisions related to child labor and forced labor. According to the Turkish Labor Law, it is forbidden to employ children under the age of fifteen. Children and young employees under the age of eighteen must not be employed on industrial work / construction works / construction site.</p> <p>The minimum age for all construction workers is 18 years old. Workers who have not received relevant occupational training for the work they are responsible for must not be employed on heavy and dangerous work during the night.</p>	<p>Turkish Labor Law does not cover fully forced labour issues required by PS 2. According to IFC PS 2, client should also monitor the status of workers working in third parties and in the supply chain. If a situation such as forced labor is encountered, appropriate steps will be taken to remedy the situation. On the other hand, the Constitution of the Republic of Turkey, Art. 18 prohibits forced labor. Turkey has ratified the ILO Convention No. 29 on Forced Labor and ILO Convention No. 105 on the Abolition of Forced Labor.</p> <p>Art. 80 of the Penal Code penalize human trafficking and Art. 117 penalize violation of the freedom to work and labor.</p> <p>Turkish Labour Law sets provisions related to child labour and forced labour. According to the Turkish Labour Law, it is forbidden to employ children under the age of fifteen. All prohibitions on child labour and forced labour will be specified in the HR policy.</p>
Occupational Health and Safety:	The Project Company must provide the workers with a safe and healthy work environment and address health and safety issues in a manner consistent with good international industry practice. In addition, Project Company will extend a safe and healthy work environment to permanent workers and to any other workers who provide project-related services on the client's premises or work sites.	<p>The employer to ensure the safety and health of workers in every aspect related to the work. The employer takes measures necessary for the safety and health protection of workers, including prevention of occupational risks and provision of information and training, as well as provision of the necessary organization and means and to ensure that the measures are adjusted taking account of changing circumstances and aim to improve existing situations (The Law of Turkish on Occupational Health and Safety, Article 4).</p> <p>The employer to carry out a risk assessment or get one carried out (The Law of Turkish on</p>	The Law of Turkish on Occupational Health and Safety (numbered 6331) provides for provisions on occupational health and safety, and applies to direct and contracted workers, including foreign workers. It is also governed by Labour Law (numbered 4857). However, within the scope of compliance with international standards, an OHS management plan should be prepared and this plan should be implemented for all workers who will work directly or indirectly.

Aspect	IFC PS2	National Legislation	GAP & Relevance to the Project
		<p>Occupational Health and Safety, Article 4 and 5).</p> <p>The employer to take appropriate measures to ensure that workers other than those who have received adequate information and instructions are denied access to areas where there is life-threatening and special hazard (The Law of Turkish on Occupational Health and Safety, Article 4).</p> <p>The employer to provide occupational health and safety services including activities related to the protection and prevention of occupational risks (The Law of Turkish on Occupational Health and Safety, Article 5, 6 and 7).</p>	

16.3 Project Workforce

During the peak period of the construction period, the number of employees will be 4,500 and the total number of labor force to be employed during the operation phase of the Project is 321. There is no detailed information about the project workforce requirements (e.g. skilled, semi-skilled, unskilled and expatriates) to be employed during the construction and operation period of the project.

During the construction period of the Project, Tecnicas Reunidas S.A, Rönesans Industry Facilities Construction Industry and Trade Inc. and Treunidas İnşaat Taahhüt Inc. will be the main contractor for construction works as Engineering, Procurement and Construction (EPC) Contractor, which will be responsible for the detailed design, engineering and procurement, Additionally, EPC Contractor will be responsible for transportation of all materials to the site, civil works, erection, pre-commissioning, commissioning and handover of the Project. As the current construction planning same EPC Contractor will also construct the Project and Terminal Facility. Due to that reason the Mobilization Area including all construction camp facilities will also be used for construction of the Terminal Facility.

In addition, during the construction period Project Management Company (PMC) Contractor will be Worley, Industrial Engineering Solutions Company. The Project Management Company (PMC) will be responsible for ensuring that the EPC complies with the Environmental, Health and Safety performance of the ESIA, ESMP and other relevant plans and procedures defined in the ESMS. The role of the PMC Contractor is to achieve Project goals and Project objectives from Environmental and Social aspect by leading, guiding, coordinating and synchronizing the professional inputs from various specialist consultants.

Core personnel working for two SPV's which are investor of the Project and associated facilities will continue during Operation Phase of the Project. The key personnel provided by EPC contractor and PMC will be replaced with personnel of the Operation and Maintenance Companies (O&MC) responsible for the operation of the Project and associated facilities. These are:

- EHS Manager (O&M Company): Responsible for managing infrastructure and superstructure projects regarding environmental and social governance issues and member of the E&S Committee on behalf of the Employer;
- Human Resources/Labour Manager (O&M Company): Responsible for managing all matters relating to human resources management for the Employer. Responsible for employee relations, communication with employer and EPC Contractor workforce representatives / committees and co-ordination of the workforce grievance mechanism together with the Human Resources Lead;
- CLO (O&M Company): Responsible for reporting and supervising EPC Contractor's CLO on social activities, stakeholder engagement and grievance management and consultation

on land acquisition, providing affected communities with information on the timing of key activities, and identifying and responding to grievances.

The number of direct, indirect, and associated facility employees to work during different periods of the Project construction is given in Table 16-4. It is predicted that the peak number of the construction workers will be engaged during the 20th month. The number of workers provided in the table below shows the minimum number of workers. However, it is estimated that the number of workers may rise up to 4,500. For this reason, accommodation camp will be built for 4,500 people.

Table 16-4. Estimated Number of the Project Personnel

Activity		Months																			
		-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Site Preparation	Month/ Personnel	225	572	884	902	875	579	193	0	0	0	0	0	0	0	0	0	0	0	0	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PDH	Month/ Personnel	0	0	0	0	0	0	0	0	0	0	0	17	33	61	86	114	228	324	498	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		553	843	928	977	1070	1083	1141	1097	1060	1051	952	863	698	613	465	277	126	24		
PP	Month/ Personnel	0	0	0	0	0	0	0	0	0	0	0	12	26	43	64	82	138	203	291	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		324	433	459	466	457	427	397	345	323	321	320	328	314	305	265	205	92	21		
Buildings	Month/ Personnel	0	0	0	0	0	0	0	0	0	0	0	31	56	98	195	210	293	336	373	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		387	408	430	435	433	410	404	390	380	272	269	220	192	144	47	49	0	0		
Offsite&Utility	Month/ Personnel	0	0	0	0	0	0	0	0	0	0	0	81	111	294	425	499	726	857	1048	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		1209	1273	1430	1437	1387	1246	1165	1035	951	794	724	609	373	251	74	4	0	0		
Associated Facilities		Months																			
Terminal Facility	Tank Farm Area	Month/ Personnel	0	0	0	0	0	0	0	0	17	29	93	111	161	195	229	229	251	263	269
			18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
			252	259	230	183	160	102	96	112	140	162	177	195	174	210	194	165	74	8	
Jetty	Month/ Personnel	0	0	0	21	21	75	69	104	117	152	154	154	154	160	154	154	179	191	222	

Chapter 16: Labour and Working Conditions

		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		188	183	136	95	35	28	38	36	35	56	55	50	25	26	0	0	0	0		
Indirect Personnel		Months																			
Project Management	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Technical Office	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	3	3	10	10	11	11	11	11	11	11	12	12	12	12	13	13	13	13
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	8	8	7	7	
Procurement	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	-	-	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1		
Warehouse & Logistic	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	-	-	-	-	-	-	6	6	6	6	6	6	6	7	7	7	7	7
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7		
Civil Works	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	3	3	6	6	7	7	24	24	21	21	21	21	21	21	21	21	19	19
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		19	19	19	16	16	16	16	16	16	16	16	16	16	16	16	14	14	11	11	
Mechanical Installation	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		5	5	5	5	5	5	5	5	5	8	8	8	6	6	4	4	4	4		
Piping Works	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	-	-	-	-	-	-	-	-	1	1	1	1	1	14	14	18	18	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		18	18	18	18	18	18	18	18	18	15	12	12	11	11	7	7	5	5		
Steel Works	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		3	3	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-	-		
Electric & Instrumentation	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		5	5	5	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
QA/QC	Month/Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	1	1	4	4	4	4	10	10	13	18	18	20	20	26	26	29	29	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		31	31	31	31	31	31	31	32	32	33	34	34	34	34	34	23	23	23	23	

Chapter 16: Labour and Working Conditions

HSE	Month/ Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	1	1	5	5	5	5	14	14	15	15	15	15	15	15	15	15	15	15
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
Administrative Staff	Month/ Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	2	2	4	4	5	5	20	20	20	20	20	20	20	20	20	20	20	20
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	12	12
Support Personnel	Month/ Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	0	-	-	5	5	5	5	7	7	7	7	7	7	7	7	7	7	7	7
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
TOTAL	Month/ Personel	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		225	572	895	933	931	690	302	144	231	279	346	510	695	962	1264	1419	1946	2316	2843	
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
		3060	3548	3761	3743	3690	3445	3391	3165	3040	2809	2647	2415	1923	1696	1165	820	397	158		

16.4 Labour Conditions

16.4.1 HR Policy

Project Company shall have a HR Policy in place that is tailored to suit the needs of the Project as part of the Environmental and Social Management System (ESMS) to cover environmental, health and safety and social issues associated with labour and working conditions for the construction and operation phases.

HR policy and Labor Management Plan (LMP) will address the requirements of IFC PS2, EBRD PR2 and EBRD PR4, and Project Company will implement the HR policy and LMP appropriate to its size and workforce during the construction and operation phases of the Project. The HR Policy will also apply to the Project (sub)contractors. All construction site facilities will be constructed in accordance with the specifications and regulations of the Turkish and international Environmental, Health and Safety (EHS) standards. Project Company will ensure that accommodation of workers and provision of basic services to workers are managed in line with the Guidance Note on Workers' Accommodation published by IFC and EBRD (Workers' Accommodation: Processes and Standards).

16.4.2 Employment Contract

IFC PS2 and EBRD PR2 require documenting and communicating to all employees their working conditions and terms of employment, including their entitlement to wages and any benefits. According to Turkish Labour Law, the employer is required to have a written contract with the employees for employment with duration of one year or more. In cases when a written contract is not made, the employer is under obligation to provide the employee with a written document, within two months at the latest, showing the general and special conditions of work, the daily or weekly working time, overtime payment, rest day, the basic wage and any wage supplements, the time intervals for remuneration, the duration (if it is a fixed term contract) and conditions concerning the termination of the contract. Contracts will be orally explained to all workers in their native language where necessary to ensure workers understand their rights before any employment contract is signed.

Employees will have the right to join the unions of their choice and to bargain collectively, and these rights will be guaranteed by the HR policy.

The project company will request work permits from all employees. Project Company will have a written contract with all employees complying with the requirements of the Turkish Labour Law and therefore will fulfil the requirements of PS2 and PR2 with regard to employment contracts.

16.4.3 Working Hours

Regarding working hours and conditions, Project Company will comply with the Turkish laws and regulations. According to Regulation on Working Duration Related to Labour Law, the maximum working duration is 45 hours a week, and the daily working duration cannot exceed 11 hours in any case. According to Regulation on Excess Work and Work in Excess Periods, excess work is defined as “those works that exceed 45 hours a week”, and work in excess periods is defined as “those works that are lower than 45 hours a week according to a contract and when the work exceeds this working period set in the contract and becomes 45 hours a week”. Pursuant to Article 4 of the subject regulation, the wage for each hour of the excess work is paid by increasing the hourly wage of normal working condition by 50%, and the wage for each hour of the work in excess periods is paid by increasing the hourly wage of normal working condition by 25%.

Project Company will ensure to communicate to all employees and workers the working durations including the conditions and wages related to excess works as appropriate.

16.4.4 Non-Discrimination and Code of Conduct

Project Company will strictly prohibit discrimination against any employee or applicant for employment because of the individual’s race, colour, religion, gender, sexual orientation, gender identity or expression, national origin, age, disability, veteran’s status, foreign or immigrant employee status or any other characteristic protected by law.

Turkish Labour Law forbids discrimination due to race, language, gender, political views and opinion and religion. In accordance with the equal treatment principle covered in Article 5 of the Turkish Labour Law, employers should treat part-time workers with the same rights as full-time workers and indefinite period workers with the same rights as definite period workers unless there are genuine reasons for not doing so. Project Company will comply with the Turkish Labour Law and will base the employment relationships on the principle of equal opportunity and fair treatment, the Turkish standards will fulfil the requirements of IFC PS2 and EBRD PR2 with regard to avoiding non-discrimination.

The Project Company will prepare a Code of Conduct to help protect both the Project Workers and the Project Company. The Code of Conduct will be consequently developed as a guide for the Project workers, including (sub)contractors workers, and include commitments that will be taken on as their duties. The Code of Conduct will provide guidance to establish a good relationships with all stakeholders and promote the respect of human rights, local communities and their cultural sensitivities, in compliance with national legislations and international instruments. The Code of Conduct will define daily operations, core values, and overall the Project culture. In addition to these, the Code of Conduct will be designed to assure respect, dignity and fair treatment of local communities and other stakeholders of concern.

The code of conduct is intended to ensure that the presence of workers who will work during construction and operation does not cause any disturbance/conflict in local communities and their interactions with community members do not lead to inappropriate behavior. Also Code of Conduct will provide information on Gender Based Violence (GBV), Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH).

According to the Code of Conduct, the Project workers will be informed on how they should behave in the working area and when interacting with the community on a daily basis. All of the Project workers including subcontractors' will sign the Code of Conduct along with their employment contract, which includes punitive measures against GBV, SEA, and SH upon starting employment.

Existing workers will sign the same document in addition to the employment contract signed in the beginning of their employment. The Company will keep the signed copy of the Code of Conduct in the personnel file of the relevant worker.

The Project Company will organize awareness-raising meetings to train Project Management Unit and Contractor Management Unit personnel on this subject.

The Contractors will be obliged to give code of conduct training to their worker so that the presence of workers who will work during the construction period do not result in any disturbance/conflict within the local communities and their interaction with community members do not result in inappropriate behaviors/misconducts.

The Project Company will be responsible for checking that all employees are informed and trained on this subject before the contractors start work. The training given on the code of conduct will be controlled and reported by the Environmental and Social Experts during each quarterly monitoring period.

16.4.5 Grievance Mechanism

IFC PS2 and EBRD PR2 require providing a grievance mechanism for workers and their organizations. Project Company will develop a Grievance Mechanism for the construction and operation phases where grievances of employees related to environment, health and safety, and other issues are handled, and the workers are informed about the grievance mechanism at the time of employment, during regular trainings and using other methods (for example, publication of posters with relevant information).

Some grievances may require immediate action, for example where they are related to an urgent safety issue or to local people's livelihoods. These complaints will be evaluated on the day the complaint is received and a relevant response will be sent to the complainant. Actions taken regarding complaints that cannot be resolved within the same day will be notified to the complainant and information will be provided about the process.

Other complaints are to be considered within 30 days of receipt, with the reply being communicated using the address/telephone number specified by the complainant (if provided).

It should be noted that all individuals are free to raise their grievances anonymously when requested. For the recording of the complaint, it is however important to specify contacts that can be used by the Company to send a reply.

Project Company will ensure that non-employee (contractors' and subcontractor's workers) workers have access to an effective grievance mechanism that meets the requirements of the PR2. It is particularly important as the national legislation lacks relevant provisions on grievance management. In cases where proponents of associated activities are not able to provide a grievance mechanism, the client will provide an effective grievance mechanism to serve workers engaged for associated facilities.

16.4.6 Child Labour and Forced Labour

Turkish Labour Law sets provisions related to child labour and forced labour. According to the Turkish Labour Law, it is forbidden to employ children under the age of fifteen. Children and young employees under the age of eighteen must not be employed for industrial work during the night. Young employees who have not reached the age of sixteen, children and workers who have not received relevant occupational training for the work they are responsible for must not be employed on heavy and dangerous work. Forced labour is prohibited by the Turkish Labour Law. Project Company will comply with the provisions of Turkish Labour Law with regard to child labour and forced labour.

16.4.7 Non-Employee Workers and Supply Chain

In accordance with labour and working conditions related IFC and EBRD Standards, Project Company will use reasonable efforts to apply the requirements of the standards to non-employee workers. It will also establish policies and procedures for monitoring and management of third-party employers and will use commercially reasonable efforts to incorporate these requirements in contractual agreements with such third party employers. The Company is also to ensure that the third-party workers have access to grievance mechanism.

As stated in the Workforce Section, the EPC contractor will be the main contractor for construction works. However, in the current situation, the subcontractors that will work under the EPC contractor are not defined. The Project Company will include up-to-date contractor information while preparing the Purchasing and Supplier Evaluation Procedure and Subcontractor Management and Monitoring Plan.

Ensuring the described requirements is particularly relevant for the Project as the national legislation is lacking relevant provisions with regard to monitoring and management of labour and working conditions of third party workers. The Company will develop the Environmental,

Health, Safety and Security Policy that will apply to all the Company and (sub)contractors engaged for the Project. A Human Resources Policy will be also developed providing relevant provisions regarding the PS 2. The Company will make commercially reasonable efforts to ensure these policies are attached to the contracts concluded with the Project (sub)contractors.

The Project will also develop the Subcontractor Management and Monitoring Plan to ensure monitoring and management of its subcontractors. The specific Labour and Working Conditions Management Plan and OHS Management Plan will be also developed and implemented to ensure compliance with the international requirements. The Project will also ensure that all the Project workers (including contractors' and (sub)contractors' workers have access to grievance mechanism).

International standards also have provisions on the Project primary supply chain, which primarily relate to risks of child and forced labour, as well as health and safety risks. The Project should make efforts to monitor its primary supply chain and implement necessary actions as necessary. By the time of this report preparation, no information on the Project suppliers was available.

To ensure these requirements are met, the Project will develop and implement a Supply Chain Management Plan that will also include Purchasing and Supplier Evaluation Procedure. Details on how the Project Company plans to ensure the procurement of local materials and the use of local suppliers to the widest possible extent will be included in the Supply Chain Management Plan. Criteria used, Key Performance Indicators (KPIs) and Target Values (TVs) will be included among the details to manage and monitor use of the local market. The Supply Chain Management Plan will also provide details to ensure that international requirements are met by the Project's primary supply chain. Relevant provisions should be made in contractual agreements between the Project Company and suppliers, which are to be specified by the Supply Chain Management Plan.

16.5 Working Conditions

16.5.1 Workers Accommodation

The construction work timeframe is proposed to be 24 hours per day in shifts and 7 days a week. Construction activities will usually be conducted at daytime, however, when it is necessary, the activities will be conducted also at night-time during construction phase of the Project.

All construction site facilities shall be constructed in accordance with the specifications and regulations of the Turkish and IFI Environmental, Health and Safety (EHS) standards. The Project Company shall ensure that accommodation of workers and provision of basic services to workers are managed in line with the guidance note on worker's accommodation published by International Finance Corporation (IFC) and European Bank for Reconstruction and

Development (EBRD) (Worker's Accommodation: Processes and Standards). Accommodation services to be provided to (sub)contractors' workers should also meet these standards. The Project Company will be responsible for ensuring this.

During the construction phase, Project Company will provide appropriate facilities to those employees who will need on-site accommodation. The construction site facilities (including offices, dormitory, canteen, activity hall, warehouse, utility center, education hall, etc.) will be located near the Project site and will be used temporarily during construction phase of the Project only.

Workers' accommodation arrangements will not restrict workers' freedom of movement or of association. The site will host at its peak 4,500 workers including 12 dormitories with a capacity of 390 each (making a total of 4680 beds). Accommodation facilities will include a canteen & cafeteria, a prayer room, social areas, and medical facilities.

The types of construction site facilities are given in Table 16-5, and location of the Mobilization Area is shown in Figure 16-1.

Table 16-5. Types of mobilization buildings

Building Type	Area (m ²)	Remarks
Heating center	600	-
Generator area	100	-
Dormitories	790 (each)	A total of 12 buildings (3 storey) each having a capacity of 390 beds
Prayer room	450	1 storey
Fire department	230	-
Social area	-	Also used as an emergency assembly area
Doctor's office	230	-
Training center	-	2 storey
Camp Chief's Office	-	-
Canteen	152	1 storey
Cafeteria	-	2 buildings each having a capacity of 750 seats
Kitchen	-	
Office buildings	-	Designated for EPC-C personnel (100 persons) and subcontractors (125 persons)

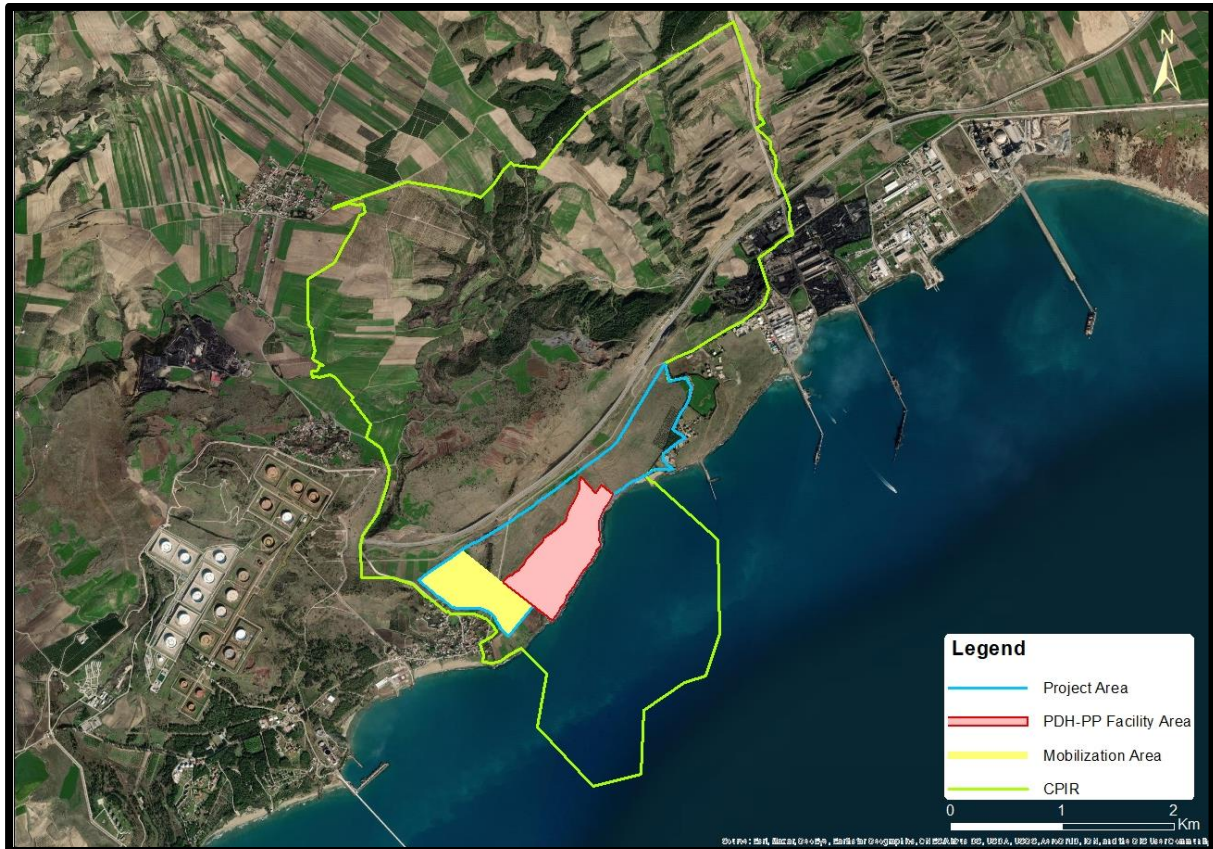


Figure 16-1. Construction Site

Accommodation services provided will be in line with national legislation requirements and international good practice. According to the Guidance Note by IFC and the EBRD, giving special attention to the following issues¹ with regard to housing is expected:

- Adequate space allocated per person (floor area; cubic volume; or size and number of rooms);
- Supply of safe water in workers' dwelling in such quantities as to provide for all personal and household uses;
- Adequate sewage and garbage disposal systems;
- Appropriate protection against heat, cold, damp, noise, fire and disease-carrying animals, and in particular, insects;
- Adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting;
- A minimum degree of privacy both between individual persons within the household and for the members of the household against undue disturbance by external factors;
- Necessary provisions for any health, fire safety or other hazards or disturbances and local facilities as well as the provision of first aid and medical facilities;

¹ILO Workers' Housing Recommendation 115.

- Workers' freedom of movement to and from the employer-provided accommodation shall not be unduly restricted.

Where accommodation services are provided for single workers or workers separated from their families, additional housing standards should be considered:

- A separate bed for each worker;
- Separate gender accommodation;
- Adequate sanitary facilities;
- Common dining rooms, canteens, rest and recreation rooms and health facilities.

There will be no accommodation during the operation period.

16.5.2 Health and Safety

Occupational health and safety considerations during construction phase of the Project are common to those of most civil facilities construction and mechanical works. The health and safety hazards during the construction phase may affect material/equipment providers, cleaning and maintenance personnel and workers involved in waste management handling, treatment and disposal.

The specific hazards during the operation phase of the Project have been primarily highlighted to include process safety, fire and explosions, chemical hazards and confined spaces.

IFC PS2 and EBRD PR4 require providing workers with a safe and healthy work environment, taking into account inherent risks and hazards specific to the work. Project Company will develop an ESMS which considers IFC PS2 and EBRD PR4 requirements for the management of health and safety issues. The management system will ensure that all applicable health and safety legislative requirements are met during construction phase and operation phases. Project Company will also ensure contractually that construction workers will comply with health and safety rules. It will be communicated to the workers during toolbox talks that failing to comply with health and safety (H&S) rules will result in penalties and potentially in termination of labour contract.

A series of design standards are adopted during the design of the Project components, i.e. the American, British, International Electrotechnical Commission (IEC), as well as Institute of Electrical and Electronics Engineers Standards Association (IEEE Std.) standards in addition to European Norms and EU Directives at a minimum. The selected design standards are presented in *Chapter 2: Project Description Including Alternatives*. Additionally, the Project adopts standards related to national fire protection association (NFPA) and instrumentation, control and safety systems (i.e. Instrumentation, Systems and Automation society (ISA), American Petroleum Institute (API) and Engineering Equipment and Materials User Association (EEMUA)). The local code and standards are Turkish Standard (TS) TS4943:

Safety standards in crude oil and petroleum products storage tank farms, TS 862: standard for hand fire extinguishers, TS International Organization for Standardization (ISO) 15420: Standard for gas extinguishing systems.

Hazard and operability study (HAZOP) studies were undertaken specifically for PDH and PP units and Utility & Offsite (e.g., raw water unit, cooling water unit, nitrogen system, fuel system, wastewater treatment etc.) of Ceyhan PDH-PP Project. The aim of HAZOP study is to identify potential hazards and operability problems that may be encountered during the operation of Ceyhan PDH-PP Project. The HAZOP studies were performed through “Guideword Method” by HAZOP team of the Project Company (including process engineers and safety engineers as well as mechanical, electrical, materials/corrosion, fire-fighting and other experts invited to assist the HAZOP team, as needed). Apart from the HAZOP studies, hazardous area classification studies were performed for the units within Ceyhan PDH-PP Project considering the safety distances of spherical tanks, flare, etc. Hazardous area classifications were made based on IEC 60079-Explosive Atmospheres Part 10-1: Classification of Areas - Explosive Gas Atmospheres and API RP 505 “Recommended practice for classification of locations for electrical installations at petroleum facilities classified as Class I, Zone 0, Zone 1 and Zone 2”. IEC 60079-10-1:2008 is concerned with the classification of areas where flammable gas or vapour or mist hazards may arise and may then be used as a basis to support the proper selection and installation of equipment for use in a hazardous area. Moreover, recommended practice (RP) which is “API RP 505” aims to provide guidelines for classifying locations Class I, Zone 0, Zone 1, and Zone 2 at petroleum facilities for the selection and installation of electrical equipment and applies to the classification of locations for both temporarily and permanently installed electrical equipment. This RP is applied where there may be a risk of ignition due to the presence of flammable gases, flammable liquid produced vapours, or combustible liquid produced vapours mixed with air under normal atmospheric conditions. The details related with the hazard and operability study are presented in *Chapter 15: Community Health and Safety*.

The mitigation measures discussed in Section 16.7 will be part of the ESMS procedures and related instructions for the construction and operation phases. The ESMS are detailed in *Chapter 17: Environmental and Social Management*.

16.6 Impact Assessment

16.6.1 Labour and Working Conditions

16.6.1.1 Construction Phase

During the peak of the construction period, the number of employees will be 4,500. Considering the high number of employees, if the working conditions are not managed well, it may cause the following impacts:

Labour relations

- Lack of contract;
- Working without insurance;
- Unfair condition;
- Unfair remuneration;
- Unlawful employment;
- Forced labour;
- Child Labour.

Discrimination

- Gender Discrimination/Gender based violence;
- Discrimination due to race, nationality, etc.

Lack of grievance mechanism

- Failure to record complaints;
- Verbal receipt of complaints;
- Culture of silence at work;
- Sexual abuse and harassment.

The risks are particularly relevant for the construction stage during involvement of the Project (sub)contractors and the gaps between national requirements and international standards. In particular, the key gaps relate to lack of grievance mechanism, lower workers' accommodation standards, lack of control over workers engaged by third parties. The Company will need to make effort to ensure the international standards are applied to all the Project workforce (including contractors' workers), and that in cases where the Turkish legislation differs from the international standards, the more stringent apply to the Project. Relevant measures to ensure that are described in Section 16.7

16.6.1.2 Operation Phase

Total number of workforce to be employed during operation phase of the Project is 321. This number includes personnel to be employed by the Project Company and its subcontractors. The impacts related to the working conditions determined during the construction period are valid during the operation period.

- Lack of contract;
- Discrimination;
- Lack of grievance mechanism.

16.6.2 Workers' Accommodation

16.6.2.1 Construction Phase

As discussed above, during the peak of the construction period, the number of employees will be 4,500.

During the construction phase, Project Company will provide appropriate facilities to those employees who will need on-site accommodation. The construction site facilities (including offices, dormitory, canteen, activity hall, warehouse, utility center, education hall etc.) will be located close to the Project site.

The presence of worker camp sites close to the host local people and the creation of accommodation areas may reveal social and cultural problems, and social events that may constitute a crime if precautions are not taken.

The potential risks that may arise in this context have been defined below.

Risk of provision of accommodation services of inadequate quality

- Provision of inadequate living conditions;
- Lack or inadequate quality of sanitary facilities, etc.;

Increased Risk of Illicit Behavior and Crime

- Theft risk;

Risk of Social Conflict

- Social conflicts arising from language and cultural differences;
- Conflicts that may arise between local residents and workers;

Gender Based Violence and Harassment

- Potential risks related to improper behaviour of workers with regard to women.

16.6.2.2 Operation Phase

No accommodation services will be provided to workers during the operation period.

16.6.3 Health and safety

16.6.3.1 Construction Phase

The construction activities will pose certain health and safety risks to the employees involved. These risks will include physical hazards (i.e. use of machinery and vehicles, working with moving machinery and vehicles, working at height), trip and fall hazards, chemical hazards (i.e. direct contact with fuels, chemicals or contaminated soil), dust emissions resulted by excavation and noise emissions (vehicular traffic and machinery operation). In particular, the health and safety risks are relevant to the Project (sub)contractors' workers if such risks are not managed properly.

There are also risks related to the Project supply chain, which relate to potential use of child and/or forced labour, as well as to potential OHS risks. Relevant measures should be implemented in order to prevent them.

16.6.3.2 Operation Phase

Total number of workforce to be employed during operation phase of the Project is 321. This number includes personnel to be employed by the Project Company and its subcontractors.

The operation activities will pose specific health and safety risks for the employees involved in certain Project facilities. These potential risks are summarized as follows:

- Physical risks related with process safety such as the use of equipment, machinery and vehicles;
- Health and safety risks related with confined spaces and working at height;
- Chemical risks from exposure to hazardous materials, hazardous waste and gases used in process units, handling of feedstocks and fuel spills (unloading tankers at the berth and during fueling activities);
- Health and safety risks related with fire and explosions;
- Exposure to noise and air emissions;
- Ergonomic risks;
- Psychosocial risks including violence and shift work.

According to the IFC Environmental, Health and Safety Guidelines for Petroleum-Based Polymers Manufacturing, of specific to the operation phase of the Project, it is important to undertake process safety management due to industry-specific characteristics, complex chemical reactions, use of hazardous materials (e.g. toxic and reactive materials, flammable or explosive compounds) and multi-step reactions. Due to the improper management of the process operations (i.e. improper dosing of reactants or failure during stirring or heat exchange), reactor explosions and hazard runaway polymerization might occur. Therefore, process safety management including process controls, provision of backup emergency power, cooling, inhibitor addition system and blowdown tanks are recommended.

Entry to confined spaces by workers due to improper management may lead to fatalities. Reactors in the polymer manufacturing facilities are considered as confined spaces which shall be accessible during maintenance activities. Therefore, the Company shall prepare and implement confined space entry procedures.

Moreover, attention must be paid during the handling and transportation of chemicals (i.e. potential inhalation, dermal contact). Therefore, workers training, work permit systems, use of protective equipment and installation of toxic gas detection systems with alarms shall be undertaken as protection measures. Plastic manufacturing is exothermic; therefore, reaction temperatures and oxygen levels shall be controlled. On the other hand, fine polymeric dust might explode if suspended in air in high concentrations. Due to the high combustion heat of polymers, control measures shall be undertaken to eliminate fire risks especially in storage areas.

A “Fire Protection Philosophy” (published on 13 February 2020) and “Design Specification for Fire and Gas System” (published on 05 March 2020) have been prepared by Project Company for the Project. The “Design Specification for Fire and Gas System” document includes the minimum requirements, codes and standards to be followed for the design and procurement of the Fire and Gas System (FGS). FGS will be a dedicated system for fire and gas detection and will have protection functions, which provides personnel warning and allows immediate response to minimize damage caused by any emergency situation. FGS will include fire and gas systems in main control building, satellite instrument house and marine operating building; fire and gas detection and alarm devices for plant areas; and interface to building fire alarm control panels (FACP). The FGS will initiate safety actions to prevent fire and gas hazards through fire water pumps, activation of deluge valves, activation of fire extinguishing systems with clean agent inside the building, shutdown or trip signals to/from other systems (i.e. emergency shutdown system and personnel warning). The Facility will also be equipped with flammable gas detectors, toxic gas detectors, oxygen detector, heat detector, flame detector, smoke detector and manual alarm call point. Applicable firefighting, fire and gas detection and alarm devices in buildings are presented in Table 16-6.

Table 16-6. Fire-fighting, fire and gas detection and alarm devices

Building/Unit	Applicable Fire and Gas Detection and Alarm Devices ²	Fire-fighting Equipment ³
Guard house 1	MCP	FE
Guard house 2	MCP	FE
Logistic guard house	MCP	FE
Administration building	FACP, SD, MCP, AA&VA, GDF	FE, SP, HR
Canteen building	FACP, SD, HD, MCP, AA&VA, GDF	FE, HR
Fire station and medical center	LCD display, FACP, SD, MCP, AA&VA	FE, FT, HR
Laboratory building	FACP, SD, HSSD, MCP, AA&VA, FM, GDF, GDO	FE, FM, HR
Control building	FGS, LCD display, FACP, SD, HSSD, MCP, AA&VA, FM, GDF, loud speaker	FE, FM, HR
Substation	FGS, FACP, SD, HSSD, MCP, AA&VA, FM, GDF&GDT, loud speaker	FE, FEW, FM
Extrusion building	FD, MCP, AA&VA	FE, SP or WS, HR
Product PP Warehouse	FACP, SD, SD open path type, MCP, AA&VA	FE, SP, HR
Workshop and warehouse	FACP, SD, MCP, AA&VA	FE, HR
Chemical storage	SD-open path type, MCP, AA&VA, FM	FE, SP, HR
Marine operating building	FGS, FACP, SD, HSSD, MCP, AA&VA, FM	FE, FM
WWTP dehydrator building	MCP	FE

The firewater demand has been calculated as about 1,900 m³/h in case of a fire at the Liquefied Petroleum Gas (LPG) sphere tank farm; 200-600 m³/h for buildings. There will be a dedicated firewater storage tank which will be designed in accordance with NFPA 22. A fire station will be suitably positioned at a non-hazardous location but at the same time close to the process area.

A fire station will be established in the Project site as close as possible to the process area. Fire station will be designed to provide accommodation for fire fighting vehicle, ambulance, mobile equipment etc.

HAZOP studies were undertaken specifically for PDH and PP units and Utility &Offsite (e.g. raw water unit, cooling water unit, nitrogen system, fuel system, wastewater treatment etc.) of Ceyhan PDH-PP Project to identify potential hazards and operability problems and hazardous area classification studies were performed and defined for the units within Ceyhan PDH-PP Project considering the safety distances of spherical tanks, flare etc.

² FGS: Fire and gas system; FACP: Fire alarm control panel; SD: Smoke detector; HSSD: High sensitive smoke detector; HD: Heat detector; FD: Flame detector; GDF: Gas detector-flammable; GDT: Gas detector-toxic; GDO: Gas detector-oxygen; MCP: Manual alarm call point; AA&VA: Audible alarm and visible alarm; FM: Clean agent gas extinguishing system

³ SP: Sprinkler system; HR: Hose reel; FM: FM-200 Extinguisher; FE: Potable fire extinguisher; FEW: Wheel fire extinguisher; WS: Water spray system; FT: Fire vehicle.

Table 16-7 shows the summary of the impact significances during construction phase. Impact significances are determined based on the methodology given in Chapter 4 of this ESIA Report.

Table 16-7. Construction Phase Impact Significances

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to labour conditions	Negative Direct	Definition	The construction works will be in the Project site, but considering the supply chain and transportation to the Project site, the impact area is considered regional.	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	Working conditions will be regulated according to legal standards, but it is likely to result in tangible changes in the social components.	-	Considering the high number of workers to work during the peak period, impacts related to working conditions can be expected.	Potential impacts related to labour conditions are expected to be irreversible.
		Score	Regional	Long	Medium	N/A	Likely	Irreversible
		Value	3	4	3	-	3	5
	Impact Magnitude (G+D+I+F (or L)) x R	65						
Impacts related to Workers' accommodation	Negative Direct	Definition	Accommodation facility will be in the project site and its impact will be in the project site	Considering that the construction period will take 38 months, the accommodation facility will serve throughout the construction.	Accommodation facility will be regulated according to legal standards, but it is likely to result in tangible changes in the social components.	.	Considering the high number of workers to be employed during the peak period, impacts on the accommodation facility can be expected.	Potential impacts related to accommodation facilities are expected to be reversible in the short to medium term.
		Score	Project Site	Long	Medium	-	Likely	Short/mid-term
		Value	1	4	3	-	3	2

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)							
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)	
	Impact Magnitude (G+D+I+F (or L)) x R		22						
Impacts related to health and safety	Negative Direct	Definition	Impacts on worker health and safety during the construction period will be limited to workers working at the project site.	The construction period is limited to 38 months. With the completion of the construction, no impact on employee health is expected.	The impact on health and safety is within legal standards or accepted practices and is likely to result in tangible changes to the social component.	-	If necessary, precautions are not taken during the construction of the project, serious risks are likely to occur in terms of worker health and safety.	If necessary precautions are not taken and major accidents/injuries occur, the impact is irreversible.	
		Score	Project Site	Long	Medium	N/A	Likely	Irreversible	
	Value	1	4	3	-	3	5		
	Impact Magnitude (G+D+I+F (or L)) x R		55						

Table 16-8 shows the summary of the impact significances during operation phase. Impact significances are determined based on the methodology given in Chapter 4 of this ESIA Report.

Table 16-8. Operation Phase Impact Significances

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to labour condition	Negative Direct	Definition	During the operation phase, the works will be conducted at the Project site.	The operational period will last for 49 years. During this period, impacts on working conditions may occur.	Working conditions will be regulated according to legal standards, but it is likely to result in tangible changes in the social components.	-	Considering the number of workers, effects related to working conditions can be expected.	Potential impacts related to labour conditions are expected to be irreversible
		Score	Project Site	Long	Medium	N/A	Likely	Irreversible
		Value	1	4	3	-	3	5
	Impact Magnitude (G+D+I+F (or L)) x R	55						
Impacts related to health and safety	Negative Direct	Definition	Impacts on worker health and safety during the operation period will be limited to workers working at the project site.	The impacts will cease after the operating period is over.	The impact on health and safety is within legal standards or accepted practices and is likely to result in tangible changes to the social component.	-	If necessary, precautions are not taken during the operation of the Project, serious risks are likely to occur in terms of worker health and safety.	If necessary precautions are not taken and major accidents/injuries occur, the impact is irreversible
		Score	Project Site	Long	Medium	N/A	Likely	Irreversible
		Value	1	4	3	-	3	5
	Impact Magnitude (G+D+I+F (or L)) x R	55						

Vulnerabilities and Receptor Sensitivity is presented in Table 16-9.

Table 16-9. Vulnerabilities and Receptor Sensitivity

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Project Workers(including contractors and supply chain etc.)	Medium	Working conditions that do not comply with national and international standards. Physical hazards (i.e. use of machinery and vehicles, working with moving machinery and vehicles, working at height), trip and fall hazards, chemical hazards (i.e. direct contact with fuels, chemicals or contaminated soil), dust emissions resulted by excavation and noise emissions (vehicular traffic and machinery operation); Health and safety and OHS risks.	3

Table 16-10. Impact Significances

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts of Construction Activities on Labour Condition	65	3	195	High	The presence of nonconformities in working conditions is considered an impact of high importance. These impacts may cause irreversible impacts such as infringement of rights of employees, exposure to harassment, failure to communicate grievances, child labour.
Impacts of Construction Activities on Workers' Accommodation	22	3	66	Low	Potential short-term, local impacts are not expected to be significant, especially given that workers will be accommodated at the Project site and there will be no accommodation after the construction period.
Impacts of Construction Activities on Health and Safety	55	3	165	High	Nonconformities in health and safety conditions are considered impacts of high importance. Failure to comply with the required laws and mitigation measures may result in accidents, injuries, and death.

Potential Impact	Impact Magnitude	Sensitivity	Impact Significance		
			Value	Score	Description
Impacts of Operation Activities on Labour Condition	55	3	165	High	The presence of nonconformities in working conditions is considered an impact of high importance. These impacts may cause irreversible impacts such as loss of rights of employees, exposure to harassment, failure to communicate grievances, child labour and human trafficking.
Impacts of Operation Activities on Health and Safety	55	3	165	High	Nonconformities in health and safety conditions are considered impacts of high importance. Failure to comply with the required laws and mitigation measures may result in accidents, injuries, and death.

16.7 Mitigation Measures

The following mitigation measures will be applied to manage labour and working conditions during construction and operation phases of the Project including the health and safety of the employees:

- The Project Company will develop a HR Policy to cover the key provisions of IFC PS 2 and EBRD PR2. The HR Policy will also apply to all Project (sub)contractors and attached to all the contracts (including supply chain) concluded; The Contractor personnel who will work on the Project will also be recruited in accordance with this policy and it will be ensured that all employees have equal rights and conditions.
- Equal conditions for all employees will be guaranteed by the HR policy and Labour Management Plan.
- All mitigation measures given within the scope of the Project are valid for the contractor and supply chain employees. The Project Company is responsible for the contractors to comply with the specified standards and mitigations;
- The Project Company will ensure that international standards are applied to all Project workforce (including (sub)contractors' employees) and where Turkish legislation differs from international standards, the stricter one will apply to the Project;
- All prohibitions on child labour and forced labour will be specified in the HR policy;
- There will be no discrimination or retaliation against workers who join these unions and engage in collective bargaining. For example, refusing to hire workers who have been members or leaders of workers' organisations at other firms (for reasons unrelated to qualifications or job performance) would constitute discrimination (IFC, 2007c: 41). Furthermore, the Project Company must respect CBA in place. When such agreements do not exist, it must, at a minimum, comply with national law to define working conditions and terms of employment. Employees' right to join the union and bargain collectively will be guaranteed by the HR policy;
- In the event of retrenchment in accordance with international legislation, the Project Company will develop a plan to mitigate the adverse impacts of retrenchment on employees in consultation with employees, their organisation and, in some cases, the government. Information on retrenchment will be given in the HR policy;
- Workers will have contracts in place prior to commencement, setting out working conditions, terms of employment and EHS responsibilities;
- All of the Project Workers including subcontractors will sign the Code of Conduct along with their employment contract, which includes punitive measures against GBV, SEA, and SH upon starting employment;

- The Project Company will organize awareness-raising meetings to train all Project Management Unit and Contractor Management Unit personnel on this subject;
- Code of Conduct will be developed in compliance with the national legislation. Hard copies will be provided both in English and the native languages of the workforce;
- All workers (including expats) will be trained in their native languages about the Code of Conduct and dismissal policy in particular in criminal cases;
- Occupational Health and Safety Management Plan will be prepared by Project Company for both phases of the Project to ensure OHS issues are properly managed;
- A grievance mechanism will be developed for employees and included in the ESMS. Employees will be informed about this mechanism at the time of hiring. All employees will be trained on the use and scope of the grievance mechanism. Project Company will ensure that non-employee (subcontractor's workers) workers have access to an effective grievance mechanism that meets the requirements of the PR2. In cases where the third party is not able to provide a grievance mechanism, the Project Company will provide an effective grievance mechanism to serve workers engaged by the third party and associated facility;
- Subcontractors will also be required to follow the requirements of IFC PS2 and EBRD PR2/4. Contracts to be signed with subcontractors will include EHS requirements. A "Subcontractor Management and Monitoring Plan" will be prepared and implemented by the Project Company;
- All workers (including subcontractors) will be trained on health and safety, and "Emergency Preparedness and Response Plan" to respond timely to potential incidents;
- Insurance will be provided to all workers under Social Security Institution;
- Supply Chain Management Plan, including Purchasing and Supplier Evaluation Procedure will be developed and implemented;
- The Project will develop and implement Personnel Selection and Employment Procedure. This will include the aim to provide opportunities for employment of local workforce to the extent possible, considering unskilled, semi-skilled and skilled workforce. It will also include provisions on non-discrimination and equal opportunities during the employment process. It will include provisions on the extent to which under 18-year-old workers might be used and the protections that will be in place to ensure international standards apply. It will also include provisions on the ban of forced labour;
- All accidents and incidents will be recorded. The efficiency of health and safety practices will be monitored through internal and external audits and corrective actions will be taken if required.

Of specific to construction phase, the following mitigation measures will also apply:

- Workers' accommodation will be managed in line with the provisions of IFC PS2 and EBRD PR2 provisions and the Guidance Note on Workers' Accommodation published by IFC and EBRD (Workers' Accommodation: Processes and Standards), and a relevant procedure will be set out in the ESMS. Accommodation services to be provided to (sub)contractors' workers should also meet these standards. The Project Company will be responsible for ensuring this. A Workers' Accommodation Camp Management Plan will be developed by the Project Company;
- All construction site facilities shall be constructed in accordance with the specifications and regulations of the Turkish and IFI Environmental, Health and Safety (EHS) standards. Project Company shall ensure that accommodation of workers and provision of basic services to workers are managed in line with the guidance note on worker's accommodation published by International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD) (Worker's Accommodation: Processes and Standards);
- Labour and Working Conditions Management Plan will be developed and implemented for the Project construction stage;
- Dust emissions and noise generation will be minimized to the extent possible with the implementation of mitigation measures mentioned in Chapter 9: Air Quality and Chapter 10: Noise;
- Workers (including subcontractors) will be provided safety briefings every day before the work starts and provided with necessary personal protective equipment;
- Work permits will be required for high-risk activities such as working at heights, operation of heavy equipment and similar.

Of specific to operation phase, the risk and mitigation measures will ensure that the following items are considered at a minimum:

- Project Company will place and check all warnings and signs present and required to be placed as a security measure in the designated locations within the Project site. Moreover, Project Company will perform necessary security arrangements in accordance with the Turkish regulatory requirements;
- Project Company will ensure that the employed personnel fully obey all the published process instructions/manuals related to (but not limited to) safety, provisions of contract and other relevant legislation;
- Risks from hazardous material and hazardous wastes will be minimized through the Hazardous Material Management Plan and Waste Management Plan. These plans will be developed, implemented and monitored;

- Project Company will ensure that all the personnel undergo the training as stipulated in the health and safety legislation;
- Project Company will ensure that the installations, equipment, systems, buildings and utilities do not form a threat to anyone in terms of work health and safety;
- Confined space entry and working at height procedures will be prepared and implemented. Entry to confined spaces and working at height will be controlled and avoided where possible;
- Emergency Preparedness and Response Plan will be prepared and implemented to respond timely to the incidents for terrestrial and marine sections of the Project;
- The measures related to Disaster Management, which includes crisis management against unplanned events (spill, fire, leakage, etc.), will be evaluated within the EPRP and the plan will be implemented;
- Indoor air quality monitoring will be conducted, and signage will be placed to locations where there are elevated levels of emissions and personal protective equipment (PPE) is required;
- Leak Detection and Repair (LDAR) programme will be applied where necessary.

In addition, fire safety measures will be taken by performing the following steps at a minimum:

- The design of the storage areas will be in accordance with internationally accepted standards including, for example, appropriate ventilation, air temperature control and protection from direct sunlight;
- The Facility will also be equipped with flammable gas detectors, toxic gas detectors, oxygen detector, heat detector, flame detector, smoke detector and manual alarm call point;
- FGS, which is the dedicated system for fire and gas detection, will be developed and will have protection functions, which provides personnel warning and allows immediate response to minimize damage caused by any emergency situation;
- Due to the nature of the polymers as being slow oxidative aging by heat or light, polypropylene will be kept in closed packaging;
- Good housekeeping practices will be applied during the operation phase of the Project. In this context, “First in First out” management procedure for the products together with frequent inspections and good housekeeping shall be applied. Aged materials should be traced, evaluated for safety, and separated for disposal;
- The buildings in the Project site will be designed, constructed, and operated in full compliance with the Regulation on the Protection of Buildings from Fire;
- Fire detection systems will meet the requirements of NFPA 72;

- Breathing apparatus, self-contained breathing apparatus, lifebuoy (in line with SOLAS requirements), safety shower and eyewash station, wind sock will be present at dedicated locations in the Project site to provide personnel protection and rescue purposes in line with NFPA.
- A fire station will be established in the Project site. Additionally, fire fighting vehicle, ambulance, mobile equipment etc. will be kept ready during the operation phase of the Project;
- When local standards are not sufficiently detailed and are incomplete, internationally accepted life and fire standards (NFPA standards and European Standards (EN) standards) will be applied. For this reason, mapping of Turkish requirements for life and fire safety will be conducted by the Project Company in order to identify the areas of improvement and incorporate them into the design based on the international standards. Project Company will demonstrate that the buildings as well as life and fire safety systems and equipment will be designed and installed appropriately at the facilities;
- EPRP will be prepared in a way to include issues related to Life and Fire Safety. This Plan will be prepared identifying major fire risks, applicable codes, standards and regulations, and mitigation measures. This plan will need to be approved prior to the construction of the facilities to ensure the compliance with local and international standards;
- Emergency services and neighbouring community shall be communicated during the implementation of plans to respond to major incidents.

The following mitigation measures will be implemented to manage accommodation conditions during construction:

- Workers will be paid adequately to prevent theft potential;
- Workers will be paid into bank accounts;
- Local recruitment will be prioritized where possible and practical;
- Worker accommodation facilities should be include leisure areas to reduce the interaction of the workers with the local communities;
- All workers (including expats) will be trained in their native languages about the Code of Conduct and dismissal policy in particular in criminal cases;
- Code of Conduct will be developed in compliance with the national legislation. Hard copies will be provided in English and the native languages of the workforce. The Construction Workers' Code of Conduct shall be clearly displayed at the different Project Areas and posted in the Contractor's vehicles and machinery driving cabs;

- Contractor's personnel should be aware and acknowledge their understanding of the Worker's Code of Conduct and the associated provisions;
- The Workers' Code of Conduct should be applied by all Contractors' personnel prior to the start of any physical work at any Project Area. Compliance with the Code of Conduct shall be a condition in all workers' employment contracts. All workers (including expats) will be trained in their native languages about the Code of Conduct;
- Should the Contractor's personnel repeatedly commit any of the listed offences despite awareness of the Code of Conduct, and this is without prejudice to any legal action by any public authority for non-compliance with applicable regulations, then this would be regarded to be serious misconduct. Serious misconduct shall result in immediate dismissal from any Project Area. Acts requiring the implementation of a disciplinary procedure and where repeated failure or where the severity of such cases may result in serious misconduct and instant dismissal are as follows:
 - Drunkenness during working hours, leading to risks for the safety of local inhabitants, customers, users and personnel;
 - Punishable statements or attitudes, and sexual harassment in particular;
 - Violent behaviour and physical aggression;
 - Intentional damage to the assets and interests of others, or the environment;
 - Repeated negligence or imprudence leading to damage or prejudice to the environment, the population or properties, particularly breaching provisions intended to prevent the spreading of STD and AIDS;
 - Drug (including marijuana use);
 - Entering property of neighbouring people without permission of the landowners or those cultivating/renting the land.
- Serious misconduct, and therefore instant dismissal, shall also apply if workers are found to be involved in any of the following activities: drug trafficking, deliberate and severe pollution. Anyone found to be committing such offences shall be immediately dismissed as of the first report of misconduct detected, in application of the Code of Conduct and labour laws;
- The Contractor will establish a record for each case of serious misconduct, and a copy will be provided to the Contractor's personnel in question, indicating all action taken to terminate the misconduct by the Contractor's personnel in question and to bring the attention of other Contractor's personnel to the type of incident detected. This record will be provided to the Implementation Consultant as an attachment to monthly progress report;
- Personnel Selection and Employment Procedure will be prepared and implemented to prevent spontaneous influx of job seekers;

- Employment capacity and the qualifications required for the construction will be disclosed to the public to prevent unrealistic expectations.;
- Cooperation will be developed with the local municipalities and local employment agencies;
- Mitigation measures will aim to prevent burden on the communal services within the social area of influence;
- Worker accommodation will be established to reduce pressure on the facilities of the local communities;
- Worker accommodation will be in compliance with the Guidance by IFC Workers' Accommodation: Processes and Standards, including its provisions related to:
 - Basic collective social/rest spaces such as multi-purpose halls, designated areas for radio, TV, cinema;
 - Standards for nutrition and food safety;
 - Laundry, canteen and cooking facilities;
 - Medical facilities;
 - Rooms/dormitory toilet, shower/bathrooms and other sanitary facilities;
 - Dedicated places for religious observance;
 - Access to public phones at affordable/ public prices (that is, not inflated);
 - Internet services;
- Grievance Mechanism will be developed and gender-based complaints and necessary measures will be taken accordingly;
- Discrimination behaviour or practice arising from any reason such as gender, age, ethnicity, religion, language, race, physical characteristics, and disability will be recorded and examined;
- All staff will be trained to prevent gender-based violence and promote a gender-sensitive work environment. Trainings will cover at a minimum risk related to:
 - Gender discrimination;
 - Sexual harassment;
 - Child labour;
 - Force labour; and
 - Human trafficking.
- A zero-tolerance process will be in place for discrimination against female workers.

16.8 Residual Impacts

If the ESMS is implemented properly during both construction and operation phases which will cover the implementation of all mitigation measures mentioned above and ensure are shown in Table 16-11. and Table 16-12.

Table 16-11. Construction Phase Residual Impact Significance

Subject	Construction Phase Residual Impact
Impacts related to Labour and Working Conditions	Low
Impacts related to Workers' Accommodation	Negligible
Impacts related to Health and Safety	Low

Table 16-12. Operation Phase Residual Impact Significance

Subject	Construction Phase Residual Impact
Impacts of Operation Activities on Labour and Working Conditions	Low
Impacts related to Health and Safety	Low

16.9 Summary of Analysis Outcome

Project Company will fulfil the requirements of PR2/PS2/PR4 by adopting and implementing an HR policy appropriate to its size and workforce during the construction and operation phases of the Project. A sound worker-management relationship will be established and maintained in line with the relevant national legislation and IFC and EBRD requirements. A grievance mechanism will be developed for employees.

Project Company will develop an ESMS that considers IFC PS2 and EBRD PR4 requirements for the management of health and safety issues. The management system will ensure that all applicable national health and safety legislation as well as the requirements of PR2/PS2/PR4, IFC EHS General Guidelines, etc. are met during construction and operation phases of the Project.

Subcontractors will also be required to follow the requirements of PR2/PS2/PR4 and contracts to be signed with subcontractors will include EHSS requirements.

Of specific to the operation phase of the Project, it is important to undertake process safety management due to industry-specific characteristics, complex chemical reactions, use of hazardous materials (e.g. toxic and reactive materials, flammable or explosive compounds) and multi-step reactions. A confined space entry procedure, Emergency Preparedness and Response Plan and Occupational Health and Safety Management Plan will be developed and implemented.

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (CHAPTER-17)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Version	Revision	Date	Prepared By	Quality Management By	Checked By		Approved By
Final Draft	B.0	February 2023	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Simon Taylor (RINA)	Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003

FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
☎: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
17. VISUAL	2
17.1 Introduction	2
17.2 Baseline Conditions	3
17.3 Changes in Landscape Structure	3
17.4 Visual Impact Assessment	4
17.4.1 Construction Phase	5
17.4.2 Operation Phase	5
17.5 Mitigation Measures	16
17.6 Residual Impacts	16
17.7 Summary of Analysis Outcome	16

LIST OF TABLES

	<u>Page</u>
Table 17-1. Construction Phase Impact Significances	12
Table 17-2. Operation Phase Impact Significances	13
Table 17-3. Vulnerabilities and Receptor Sensitivity	14
Table 17-4. Impact Significances	14

LIST OF FIGURES

	<u>Page</u>
Figure 17-1. Viewshed Analyses Map	6
Figure 17-2. Photo from Incirli Quarter	7
Figure 17-3. View from Incirli Quarter	7
Figure 17-4. Highway Photo from 1 km away from the Project	8
Figure 17-5. Highway View from 1 km away from the Project	9
Figure 17-6. Photo from the Toros Agri	10
Figure 17-7. View from the Toros Agri	10
Figure 17-8. View of 4 km away from the Project from the Sea	11

17. VISUAL

17.1 Introduction

This chapter describes and discusses the visual impacts, lanscape structure and appearance for the Project site and Associated Facilities. The background information and likelihood of impacts are also presented and assessed in the following sections, with the relevant mitigation measures proposed accordingly.

Baseline lanscape structure and appearance within the Project surroundings was identified through the site visits (conducted in March and June 2022) and review of aerial photographs.

Google Earth Satellite Images and site visit photographs were used as information source for the assessment.

The study area for the visual impact assessment covers the following Project components and their close proximities:

- Project site, including:
 - PDH-PP Production Facility,
 - Mobilization Area: the mobilization area will be used temporarily during the construction phase of the Project; it will be rented from the Management Company. After the completion of the Project construction, the site will be decommissioned and evacuated by the Project Company to its owner;
 - Temporary topsoil and overburden deposition areas: the site will be used temporarily for the deposition and management of the topsoil and overburden excavated during the Early Works of the Project. After the use of the topsoil for the Project landscaping activities and the transfer of the overburden material to lised disposal site or permitted activity such as beckfilling of CPR Port backfilling, the site will be decommissioned and evacuated by the Project Company to its owner.
- Project Associated Facilities:
 - Jetty Facility: the Jetty area will be constructed as part of the CPIR. Jetty will be used for raw material transfer to the PDH-PP Plant during the operation phase of the Project,
 - Propane Storage Tank: Propane storage tank, which will operate to supply raw material to the Project, will be connected to jetty.

The details and locations of the Project components are presented in Chapter 2.

17.2 Baseline Conditions

The Project and associated facilities are planned to be developed in the premises of the CPIR, which is located in Ceyhan district of Adana province in the south of Turkey along the Mediterranean shore.

The Project site has an inclined topography; the elevation difference ranges from sea level to 55 m. The shoreline of the Project site extends along the rocky coast for approximately 1.5 km.

The Project site is surrounded by industrial facilities, rural residential areas, scattered vacant lands, forest and forestation areas located in the Ceyhan Petrochemical Industrial Region (CPIR) area, to the south of E90 Motorway (i.e. Adana-Şanlıurfa Road) and Ceyhan İskenderun Motorway Free Trade Zone Connection Road.

Some parts of the Project site included agricultural fields and olive groves; some parts are covered by Mediterranean-type bushes while other parts are covered by small annual plants. The shoreline is rocky in natural pattern.

The dominant land use in the surrounding area of the Project site includes industrial facilities, scattered vacant lands, forestation and forest areas located in the CPIR area, as well as rural residential areas. Furthermore, there is a fish restaurant (outside the site boundaries) and a number of residential houses located to the southwest of the Project site near the shore.

The lands in the region along the coastal zone are classified as marginal agricultural lands (i.e., lands suitable only for conventional agriculture due to limitations in soil capability or unfavorable agricultural conditions such as stoniness, steepness, and poor drainage characteristics) regarding adequacy to be used for agricultural purposes.

The landscapes in the region are associated with coastal zone, elevated hilly nature territory, marginal agricultural lands, industrial facilities, and roads.

17.3 Changes in Landscape Structure

As noted above, the nature territory of Project area and surroundings includes coastal zone, elevated hilly nature territory and marginal agricultural lands.

The attractiveness of the coastal zone has already become mostly nonexistent within the Project area and surroundings due to the presence of numerous industrial and storage facilities and roads. Coastal landscapes directly affected by the Project are not distinctive, are not protected, and have no special aesthetic value.

This section gives an estimate of how the Project activities might influence on how the receptors perceive their immediate surroundings.

The primary environmental issues that are projected to have the biggest visual impact on the Project area and its surroundings are the development of the Project resulting in the

construction of buildings and structures; localized vegetation destruction within the Project footprint and damage to vegetation at the Project site boundary; construction of associated facilities including building the jetty facility and propane storage tank; increase in landscape illumination due to the use of artificial lights installed on stationary structures.

To determine the visibility of the Project components and associated facilities from the region surrounding the Project site, a screening examination was conducted and Zone of Visual Influence was determined as the area within which the Project components are expected to be visible and was influenced by topography. Viewshed analysis, which determines the likelihood of an object being visible from particular viewpoints, was used for the screening evaluation, which took into account the planned height and location of the Project components including associated facilities (taking into account topography but not existing structures or buildings).

Marginal agricultural lands in the Project's footprint will be most affected and will be replaced by fully developed areas and built surfaces. A certain impact is also expected to affect coastal landscape due to construction of associated facilities (Jetty and Propane Storage Tank).

Less significant impact will be the loss of derivative shrub-herb-grass communities that mainly result in their fragmentation by utility corridors.

The Project currently includes a Main Flare with a stack height of 154 m above ground level. In order to predict the visibility of the Flare, a viewshed analysis was completed. The results of the viewshed analysis indicate that at Incirli, Main Flare will be visible to almost all residents.

At Incirli, views towards Propane Storage Tank will be partly obscured by a ridge located behind the settlement.

At Kurtpınarı and Karatepe, views towards Project area and associated facilities will be obscured by ridges located behind the settlements.

The proposed changes in the landscape structure of the coast is not limited to the construction of the Project and its associated facilities: adjacent areas will house numerous facilities within CPIR. Some of those facilities will be in direct line of sight of Incirli and Kurtpınarı.

17.4 Visual Impact Assessment

Visual impacts are considered to constitute an intrusion into (or change to) an existing view arising from the Project components to individual receptors' views, e.g. local residents.

Zone of Visual Influence is determined as the area within which the Project components are expected to be visible and is influenced by topography. Zone of Visual Influence for the Project was plotted using desktop study by taking into account topography but not existing structures or buildings) and based on results of the site visits.

The key potential impacts of the scheme upon the baseline landscape and visual resources have been identified and assessed, and where appropriate mitigation measures proposed to reduce or eliminate significant impacts.

17.4.1 Construction Phase

During the construction period, construction activities will have effect on the landscape in terms of:

- Site grading;
- Habitat removal; and
- Construction of the units.

These activities will cause permanent modifications on the landscape of the Project Area. Construction activities will also cause temporary impacts on the landscape. These are:

- Erection of the construction camp;
- Formation of soil stockpiles and other temporary storage areas;
- Movement of mechanical equipment;
- Establishment of auxiliary power generators;
- Parking of construction machinery and vehicles; and
- Dust generation from construction activities.

Additionally, construction related traffic (i.e. in terms of traffic and construction workers) will be frequent in the area and may cause a visual nuisance to other road users and landowners in the area.

17.4.2 Operation Phase

During the Operational Phase, impacts would be felt primarily from locations within the terrestrial environment, with the possibility of additional impacts from unplanned events.

The above-ground landfall facilities would be operational throughout the Project's lifecycle, resulting in a permanent impact on the landscape during the Operational Phase. There would be a permanent change in land use for the area occupied by the permanent landfall facilities.

For the purposes of this assessment, it is assumed that all areas cleared for construction will have been replanted with vegetation (except for those areas directly over the PDH-PP area, which must be kept clear) (except for low growing vegetation such as grasses).

Within the Survey Area for the Project, potential visual receptor locations have been selected to illustrate typical views for the majority of the receptors, referred to as representative viewpoints; these locations are shown on Figure 17-1.

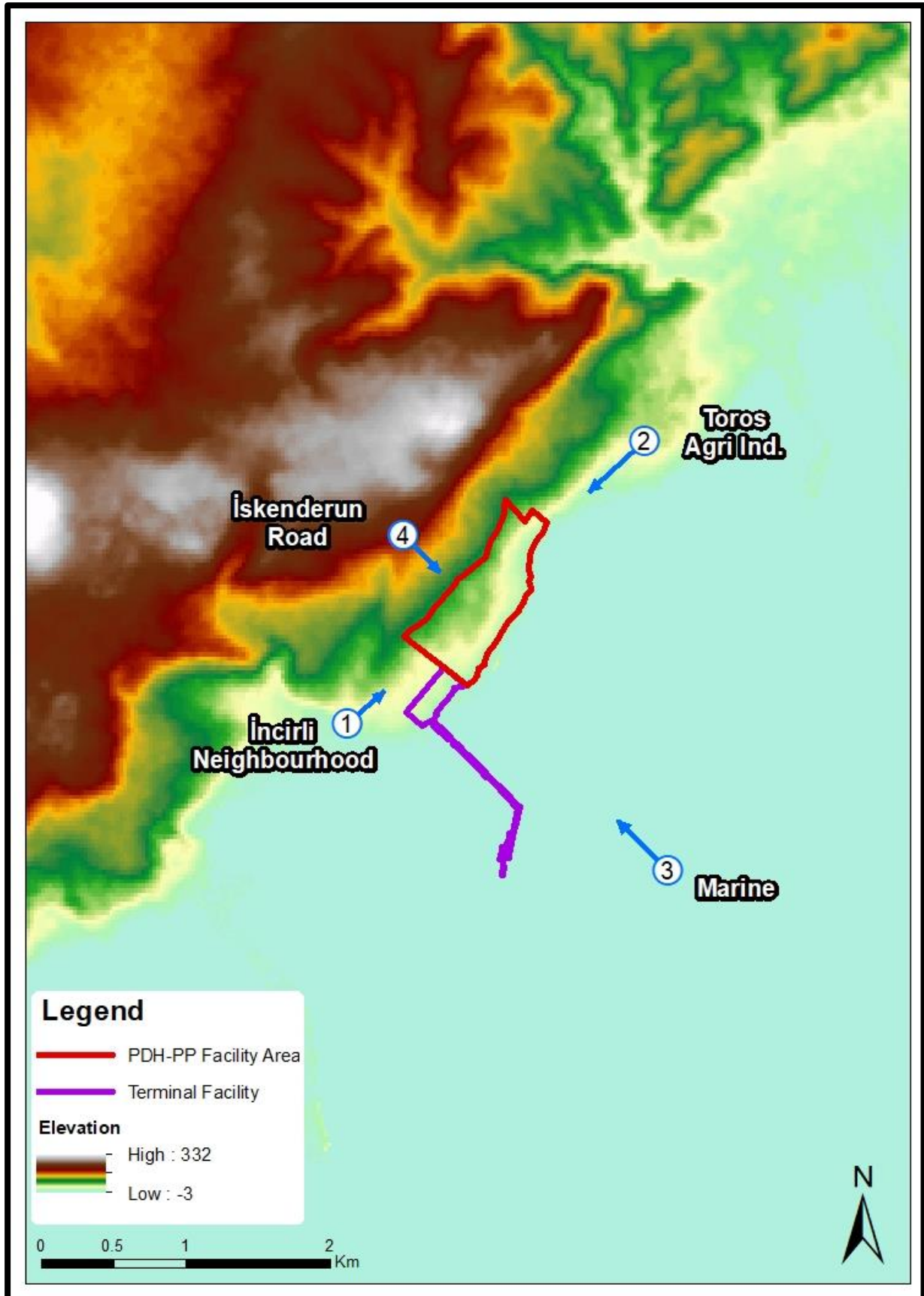


Figure 17-1. Viewshed Analyses Map

Chapter 17: Visual

During the operational phase, the Project components (i.e. primarily the flare) will be visible from Incirli. Other ancillary infrastructure will generally be partly obscured by a ridge located behind the settlement. The results of the viewshed analyses in Figure 17-2 and Figure 17-3 shows the potential visual exposure of the facility.



Figure 17-2. Photo from Incirli Quarter



Figure 17-3. View from Incirli Quarter

Chapter 17: Visual

This figure illustrates the core area (primary visual catchment) of potentially uninterrupted exposure of the facility as contained within a 4 km buffer zone. The majority of potentially uninterrupted exposure will occur with the 0 – 500 m zone which equates to a short distance view where the Project components (i.e. primarily the Flare) would dominate the frame of vision and constitute a medium visual prominence. Visibility beyond the 4 km mark equates to a long-distance exposure where the Project components (i.e. primarily the Flare) would still be visible, though not as easily recognisable, this zone would constitute a short visual prominence.

Receptors within a radius of 1 km of the Project (Figure 17-4 and Figure 17-5), observers will potentially be exposed to low visual impact. Within this radius lies one settlement adjacent to the Project area which will be exposed to medium visual impact. Beyond the 4 km radius, settlements such as Kurtpınar and Karadere are expected to be exposed to low visual impact.



Figure 17-4. Highway Photo from 1 km away from the Project



Figure 17-5. Highway View from 1 km away from the Project

The Flare would be visible from Toros Adana Yumurtalık Free Zone (Figure 17-6 and Figure 17-7), but these would be medium distance views and visual impact would be from low to very low. Observers on visual catchment area in close proximity to the facility (i.e. within 4 km) would be exposed to a very high potential visual impact. This includes a small section of highway connection road bypassing the Project area to the north. However, it is anticipated that road users will be affected by these impacts temporarily during their time of travel at the named section. Beyond 4 km away from the development the potential visual impacts along all the roads and built-up areas becomes low to very low or negligible (not visible).



Figure 17-6. Photo from the Toros Agri



Figure 17-7. View from the Toros Agri

Chapter 17: Visual

From approximately 500 m away the Flare will be fully visible in the short distance landscape. The other Project components may be discernible but will not be apparent. This view is representative of a short distance visual experience of the proposed Project.

From approximately 4 km away from the Project area, Flare will be visible. However, the visual impact will be absorbed somewhat, by the topographic elevations. It is not anticipated that the other Project components will be visible from this distance.

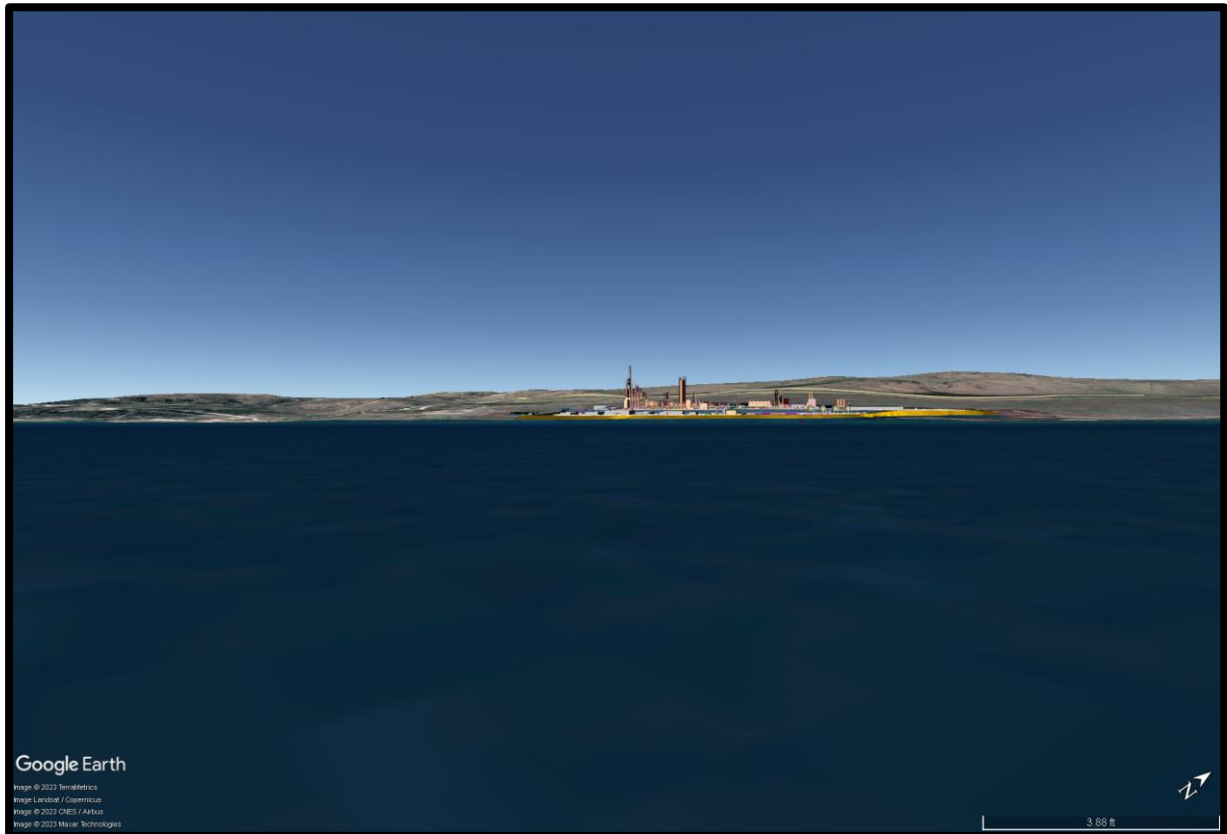


Figure 17-8. View of 4 km away from the Project from the Sea

Illumination impacts on sea turtles are assessed in Chapter 12 Terrestrial and Marine Ecology.

Table 17-1 shows the summary of the impact significances during construction phase. Impact significances are determined based on the methodology given in Chapter 4 of this ESIA Report.

Table 17-1. Construction Phase Impact Significances

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to changes in landscape structure	Negative Direct	Definition	The construction works will be in the Project site, the Zone of Visual Influence is considered local.	It is planned that the construction phase of the project will take 38 months. The duration of potential impacts is expected to be long.	It is likely to result in local tangible changes in the social components in scale and geographical extent as it is a medium sized Project and construction activities will be completed within limited area.	-	Considering the construction works and campsites, visual impacts can be expected.	Potential impacts related to visual impacts are expected to be finalized in 38 months
		Score	Local	Long	Medium	N/A	Likely	Mid-term
		Value	2	4	3	-	3	3
	Impact Magnitude (G+D+I+F (or L)) x R	36						

Table 17-2 shows the summary of the impact significances during the operation phase. Impact significances are determined based on the methodology given in Chapter 4 of this ESIA Report.

Table 17-2. Operation Phase Impact Significances

Potential Impact	Impact Type	Nature of Impacts (Magnitude designations)						
			Geographical Extent (G)	Duration (D)	Intensity (I)	Frequency (F)	Likelihood (L)	Reversibility (R)
Impacts related to changes in landscape structure	Negative Direct	Definition	During the operation phase, due to topography of the region, the Zone of Visual Influence is considered local.	The operational period will last for 49 years. During this period, visual impacts may occur.	It is likely to result in local tangible visual changes in the social components as it is a medium sized Project.	-	Considering the number height of the Project components, visual impacts can be expected.	Potential visual impacts are expected to be irreversible
		Score	Local	Very Long	Medium	N/A	Likely	Irreversible
		Value	2	5	3	-	3	5
	Impact Magnitude (G+D+I+F (or L)) x R	65						

Vulnerabilities and Receptor Sensitivity is presented in Table 17-3.

Table 17-3. Vulnerabilities and Receptor Sensitivity

Potential Receptor	Sensitivity		
	Sensitivity Score	Description of the Sensitivity	Sensitivity Value
Residential area in the close vicinity including Incirli	Medium (for changes in landscape structure)	Receptors in Incirli are located in close proximity to the Project Area (i.e. within 500 m) These areas are all where sensitive receptors are located with medium sensitivity to visual impact.	3
Residential areas in the vicinity including Kurtpinari neighbourhood, and Karatepe	Low (for changes in landscape structure)	Receptors in Kurtpinari neighbourhood, and Karatepe locality are located in close proximity to the Project Area (i.e. within 4 km) These areas are all where sensitive receptors are located with low sensitivity to visual impact.	1
Industrial Facilities in the surrounding area	Low (for changes in landscape structure)	Receptors in Industrial Facilities in the surrounding area are located in close proximity to the Project Area (i.e. within 4 km) These are commercial and industrial areas with low sensitivity to visual impact.	1

Table 17-4. Impact Significances

Potential Impact	Potential Receptor	Impact Magnitude	Sensitivity	Impact Significance		
				Value	Score	Description
Impacts of Construction Activities on Landscape Structure	Residential area in the close vicinity including Incirli locality	36	3	108	Medium	Views for people in Incirli Locality vary considerably depending on location and direction of view. From a part of Incirli which is close to the Project area, the construction works can be seen when looking to the direction of the Project area. People living in Incirli in close vicinity of the Project area and on the elevated locations with windows oriented towards the Project area are likely to gain clear views of the Project components. Further, they may also view tall construction equipment such as cranes. The majority of construction operations would be screened by landform.
	Residential areas in the	36	1	36	Low	People working on the agricultural lands and living in Kurtpinari neighbourhood and Karatepe locality would experience views of

Potential Impact	Potential Receptor	Impact Magnitude	Sensitivity	Impact Significance		
				Value	Score	Description
	vicinity including Kurtpinari neighbourhood, and Karatepe locality					construction work. The extent of their views would depend on whether they are on a ridge or in a valley and would also be greatly influenced by the proximity of the Project Area.
	Industrial Facilities in the surrounding area	36	1	36	Low	People working on industrial facilities near the Project area would experience views of construction work. The extent of their views would be greatly influenced by the proximity of the Project Area.
Impacts of Operation Activities on Landscape Structure	Residential area in close vicinity including Incirli locality	65	3	195	High	Views for people of Incirli Locality vary considerably depending on location and direction of view. Project components will be visible for the people living in Incirli in close vicinity of the Project area and on the elevated locations with windows oriented towards the Project area. Further, they may view tall the Project components such as stacks, and associated facilities such as Jetty and Propane Storage Tank. The majority of Project components would be screened by landform.
	Residential areas in the vicinity including Kurtpinari neighbourhood, and Karatepe locality	65	1	65	Low	People working on the agricultural lands and living in Kurtpinari neighbourhood and Karatepe locality would experience views of Project components. The extent of their views would depend on whether they are on a ridge or in a valley and would also be greatly influenced by the proximity of the Project Area. The majority of Project components would be screened by landform.
	Industrial Facilities in the surrounding area	65	1	65	Low	People working on industrial facilities near the Project area would experience views of construction work. The extent of their views would be greatly influenced by the proximity of the Project Area. Further, they may view tall Project components such as stacks. The majority of Project components would be screened by landform.

17.5 Mitigation Measures

The recommendations related to mitigation of the visual impact of the Project components (flare and jetty) are limited as no amount of vegetation screening or landscaping would be able to hide structures of these dimensions. However, the following mitigation measures will be implemented in order to ensure that visual impacts are minimised as much as possible:

- The natural and relatively unspoiled wide-open views surrounding the Project components should be transformed for the entire operational lifespan of the facility via planting in areas which do not have to remain open for operational reasons including appropriately selected vegetation;
- The placement of temporary construction camps should be carefully considered in order to not negatively influence the future perception of the facility;
- Secondary visual impacts associated with the construction phase, such as the sight of construction vehicles, dust and excavated materials should be managed to reduce visual impacts. The use of dust-suppression techniques on the access roads (where required) and the timely removal of wastes will assist in doing this;
- Proper planning and placement of light fixtures in order to reduce visual impacts associated with glare and light trespass is recommended.

17.6 Residual Impacts

The primary visual impact, namely the appearance and dimensions of the Flare is not possible to mitigate. The functional design of the approximately 154 m high structure cannot be changed to mitigate visual impacts.

The visual impact will not be applicable after decommissioning of the Project components.

17.7 Summary of Analysis Outcome

The results of assessing the visibility of the Project and associated facilities are illustrated with photographic panoramas in Figures. Most of the proposed structures will not be noticeable from the nearest residential areas, with the possible exception of flare unit, emergency lighting masts and jetty, which may be visible, both directly and in the form of an increase in the level of illumination of the near-ground atmosphere and coastal zone, beyond the Project areas.

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (CHAPTER-18)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Version	Revision	Date	Prepared By	Quality Management By	Checked By		Approved By
Draft	A.0	March 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Simon Taylor (RINA)	Elif Doğru (RINA)
	A.1	April 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Simon Taylor (RINA)	Elif Doğru (RINA)
	A.2	June 2021	Açelya Duman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Simon Taylor (RINA)	Elif Doğru (RINA)
	A.3	October 2021	Deniz Kozanlı (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Simon Taylor (RINA)	Elif Doğru (RINA)
	A.4	December 2021	Deniz Kozanlı (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		
	A.5	August 2022	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Simon Taylor (RINA)	Ilya Gulakov (RINA)
	A.6	October 2022	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Simon Taylor (RINA)	Ilya Gulakov (RINA)
Final Draft	B.0	February 2023	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)		Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003

FEBRUARY 2022

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
☎: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
18 ENVIRONMENTAL AND SOCIAL MANAGEMENT	3
18.1 Environmental, Health and Safety and Social Policy	5
18.2 ESMS Planning	5
18.2.1 Environmental Social Management Plan (ESMP).....	5
18.2.2 Environmental, Social Management System (ESMS)	7
18.2.3 Legal and Other Requirements.....	7
18.2.4 Targets, Objectives and Programs	7
18.3 Implementation of the ESMS.....	8
18.3.1 Overall Governance of the Project and Responsibilities	8
18.3.2 Management of Construction and Operation Works	16
18.3.3 Contractor Management.....	20
18.3.4 Management of Impacts of Associated Facilities	20
18.3.5 Management of Cumulative Impacts	21
18.3.6 Communication	21
18.3.7 Documentation and Document Control.....	22
18.3.8 Operational Control	22
18.3.9 Environmental and Social Emergency Preparedness and Response	25
18.4 ESMS Control	26
18.4.1 Monitoring, Measurement and Review	26
18.4.2 External Reporting.....	27
18.4.3 Internal Reporting.....	27
18.4.4 Non-conformities and Corrective, Preventive, and Improving Actions.....	27
18.4.5 Data Control.....	28
18.4.6 Management Review.....	28
18.5 Stakeholder Engagement.....	28
18.6 Grievance Management	30

LIST OF TABLES

	<u>Page</u>
Table 18-1. Key Project Parties and Summary of Responsibilities.....	8
Table 18-2. Key Personnel of ESMP Implementation Committee	17

LIST OF FIGURES

	<u>Page</u>
Figure 18-1. Organization Chart of Overall Project Governance for Construction Phase	9
Figure 18-2. Project EHSS Organization for Construction Phase	20

ABBREVIATIONS

Ceyhan PDH-PP Project / Project	Ceyhan Propane Dehydrogenation - Polypropylene Production Facility Project
Ceyhan PP A.Ş. or Project Company	Ceyhan Polipropilen Üretim A.Ş.
CCRA	Climate Change Risk Assessment
CLO	Community Liaison Officer
EBRD	European Bank for Reconstruction and Development
EHS	Environmental, Health and Safety
EHSS	Environmental, Health and Safety and Social
EIA	Environmental Impact Assessment
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU	European Union
HAZOP	Hazard and operability study
HR	Human Resources
HSE	Health, safety and environment
IFC	International Finance Corporation
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LDAR	Leak Detection and Repair
LPG	Liquefied Petroleum Gas
PR	Performance Requirements
PS	Performance Standards
SEP	Stakeholder Engagement Plan
Terminal Facility	Jetty and Propane Storage Tank

18 ENVIRONMENTAL AND SOCIAL MANAGEMENT

This chapter describes the arrangements for management of environmental, occupational and community health and safety, social and labour related (*altogether described as “environmental and social”*) risks and impacts during the construction, operation and decommissioning phases of the Project. A management system is proposed to be developed in order to manage these risks and also to meet applicable Turkish laws and regulations and European Union (EU) directives as well as the Lenders’ Requirements.

Project Company will establish an integrated management system (*referred to here as the Environmental and Social Management System - ESMS*) for the construction and operation phases of the Project together with the main construction work contractor and the product and service provider of the Project. The ESMS will enable management of the environmental and social risks and impacts by: (i) implementing, monitoring and reviewing identified mitigation measures, (ii) providing continuous control of the processes and (iii) improving environmental and social performance.

The ESMS will be developed and implemented separately for the construction and operation phases. Decommissioning activities will be covered by specific management plans to be developed during the Operational Phase. The ESMS will be prepared in line with the following international good practice and guidelines:

- International Organization for Standardization (ISO) 14001:2004 - Environmental Management System;
- ISO 45001: 2018¹ - Occupational Health and Safety Management System;
- International Finance Corporation (IFC) Performance Standard (PS) 1 - Assessment and Management of Environmental and Social Risks and Impacts;
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 1 - Assessment and Management of Environmental and Social Risks and Impacts;
- Equator Principles IV.

The following issues/documents will be taken into account during the establishment of the ESMS:

- Relevant Turkish laws and regulations;
- EU directives;
- Equator Principles IV;

¹ ISO 45001 builds on the success of earlier international standards in this area such as OHSAS 18001, the International Labour Organization’s ILO-OSH Guidelines, various national standards and the ILO’s international labour standards and conventions.

- IFC PSs;
- EBRD PRs;
- IFC Environmental, Health and Safety (EHS) General Guidelines;
- IFC and EBRD Guidance Note on Workers' Accommodation: Processes and Standards;
- IFC EHS Guidelines for Large Volume Petroleum-based Organic Chemicals Manufacturing and IFC EHS Guidelines for Petroleum-based Polymers Manufacturing;
- EBRD Sub-sectoral Environmental and Social Guidelines: Manufacture of Plastic and Synthetics;
- EBRD Sub-sectoral Environmental and Social Guidelines for Manufacture of Chemicals;
- EBRD's Access to Information Policy (2019);
- Environmental and Social Management Plan (ESMP) prepared within the scope of the Environmental and Social Impact Assessment (ESIA) study.

The ESMS will integrate planning, implementation, control and review of the processes in relation to environmental and social impacts. The scope of the ESMS will be clearly defined in an “*ESMS Manual*” to be developed. This chapter has been prepared to identify and describe the outline structure of the ESMS and the relevant documentation. The ESMS will cover the following issues:

- **18.1:** Environmental, Health and Safety and Social (EHSS) Policy;
- **18.2:** Planning of the ESMS;
- **18.3:** Implementation of the ESMS;
- **18.4:** Control of the ESMS (including monitoring and audit);
- **18.5:** Stakeholder Engagement;
- **18.6:** Grievance Management.

As described in Chapter 2 Project Description, propane, which will be used for production of the Polypropylene (PP), will be supplied through a Terminal Facility including jetty and propane storage tank. The Terminal Facility will be constructed and operated by a different investor. However, the Terminal Facility operates solely for the Project and will work as an integral part of the process.

Furthermore, construction of the Terminal Facility is planned in parallel to the Project construction and will be implemented by the same EPC contractor. In that respect, the Terminal Facility is considered as associated facility in accordance with the definition given in

IFC PS1 (see *Chapter 2 Project Description*). Consequently, potential environmental and social impacts related to the Terminal Facility are also considered as part of this ESIA. The ESIA Report also provides mitigation measures to avoid and minimize the potential impacts of the Terminal Facility.

18.1 Environmental, Health and Safety and Social Policy

The senior management (or the Project Board) of The Project Company will officially define a written “*EHSS Policy*”. The Policy will be relevant and compatible with the activities and environmental and social issues of the Project in order to provide a framework for the determination and review of environmental and social targets and objectives. In addition, a Project specific “*Human Resources (HR) Policy*” will be developed to set values and principles including active and competent participation of all employees in management and decision-making processes, and equal employment opportunity to all employees, as well as other issues defined by the IFC PS 2 and the EBRD PR 2.

A Common EHSS Policy and HR Policy will be developed by the Project Company for construction, operation and decommissioning phases of the Project. The EHSS and HR policies will apply to the Project Company, EPC Contractor and all (sub)contractors engaged in the Project. The Project Company will ensure that the EHSS Policy and HR Policy are applied by all the Project-related parties through agreements made between these parties.

The EHSS and HR policies will encompass the following:

- Compliance with environmental protection requirements and EHS legislative requirements;
- Occupational health and safety and human resources management requirements;
- Lender’s requirements;
- Commitment to engagement with affected communities and other stakeholders;
- Commitment to continuous development and improvement of service quality.

Both policies will be disclosed to the public on the Project website.

18.2 ESMS Planning

18.2.1 Environmental Social Management Plan (ESMP)

The ESIA process has identified key environmental and social impacts and risks associated with the Project and requiring implementation of mitigation and management measures.

The purpose of this ESMP is to establish how the mitigation commitments made through the ESIA process will be implemented, monitored and managed. The content of the ESMP is essential to bridge the findings of the ESIA with implementation of the mitigation measures

and to provide an early framework of management and monitoring that will ensure the implementation of these ESIA commitments.

As part of the ESIA Study, the Project Company performed different studies to support the environmental sustainability perspective of the Project. These include:

- **Life Cycle Assessment (LCA):** It is a methodology for identification and evaluation of the environmental impacts of a product, which analyzes the actual and potential environmental aspects throughout the product life-cycle covering impact categories such as raw materials consumption, energy consumption, waste generation, emissions to air, water and soil. It is aimed at identifying which phases of the life cycle are responsible of the most relevant environmental impacts and to identify actions to improve the overall sustainability of the process/product;
- **Climate Change Risk Assessment (CCRA):** it is a study aimed at comprehensively evaluating the impacts that climate change has on the project; it includes an analysis of baseline climate conditions at the project location and of expected changes under different scenarios, with the ultimate aim of identifying physical risks affecting the plant and of defining potential adaptation measures; moreover, for certain categories of projects, transition risks are also evaluated, which are those arising as a consequence of the transition to a low-carbon economy; a quantification of GHG emissions related to the Project is also included in the CCRA.

There are also mitigation suggestions and monitoring requirements as an outcome of these studies. These mitigations and monitoring requirements are also included in the ESMP.

The ESMP also provides information and instructions on how environmental and social commitments of the Project will be managed from design, pre-construction through the construction and operation phases. The ESMP is a living document which:

- Incorporates the environmental and social mitigation measures identified as a result of the ESIA process into a comprehensive framework to facilitate and ensure appropriate management throughout the Project life cycle;
- Provides a framework to incorporate commitments into the Project plans and procedures for construction and operation activities;
- Presents the division of responsibilities for achieving the ESMP requirements including the provision of training;
- Provides a framework for the implementation of specific management plans by the Contractor and Operator that will meet the requirements of the national legislation, as well as the requirements of the IFC Performance Standards;
- Provides the monitoring/verification and reporting program (including corrective actions).

This ESMP is applicable to the following stages of the Project's lifecycle:

- Design;
- Construction; and
- Operation.

This ESMP represents a commitment by the Project Company to environmental and social sustainability, and this commitment will also apply to the Project (sub)contractors. Relevant commitments are also made with regard to the Project supply chain.

18.2.2 Environmental, Social Management System (ESMS)

The identification of the EHSS aspects, significant risks and impacts of the Project is considered to be the principal stage of the planning of an effective ESMS. Significant impacts of the Project have been identified within the scope of the ESIA study and an ESMP has been developed for the Project in order to manage these significant impacts as set out in Annex C (and as explained in more detail in Section 17.3.4).

18.2.3 Legal and Other Requirements

A detailed "*EHSS Legislation Review*" has been prepared as part of the ESIA study (presented in Annex B) which can be used as a basis for the implementation of the Project. This will provide an understanding of the legal (i.e. permits) requirements as much as possible. The list will also involve the other requirements apart from the legal requirements (such as Lenders' requirements). The list will be the part of ESMS of the Project and be updated in case of any amendments in the legislation/other requirements or any change in the Project. Updates of this document will be reflected to the Project especially by means of the Environmental and Social Aspects and Risk Assessment, and accordingly additional plans and procedures will be developed as needed.

18.2.4 Targets, Objectives and Programs

EHSS objectives and targets will be set for the Project to comply with legal requirements and obligations for continuous improvement of the environmental and social quality targets and objectives of the Project. Targets and objectives will cover issues such as efficient use of raw materials, auxiliary materials/matters, natural resources/energy consumption and reduction, improvement of awareness of employees and reduction of health and safety incidents. Targets and objectives will be specific, measurable and feasible and supported by the programs. Deadlines and responsible party for each program established to achieve desired results will be assigned. Environmental and social targets and programs will be documented and monitored.

18.3 Implementation of the ESMS

18.3.1 Overall Governance of the Project and Responsibilities

There are three key parties related to the implementation of the Project. As the first key party, Project Company is responsible for financing, construction, and operation of the Project. Besides, investment, construction and operation of the Associated Terminal Unit that provide propane required for the Project, will be carried out by a different investor - the SPV for the Terminal Facility. CPIR Management Company, the final party, is responsible for provision of the necessary land for both the Project and Associated Terminal Facility; for constructing the necessary infrastructure; and for provision of resources such as natural gas, water and electricity for the Project and Associated Terminal Facility. In addition to these three key parties, there will be different subcontractors such as EPC Contractor (for construction phase) and Operation and Maintenance (O&M) contractors (for operation phase), in relation to responsibilities and activities to be carried out. Overall organization chart of the governance structure for construction phase is given in Figure 18-1. Organization Chart of Overall Project Governance and Responsibility areas of key Project parties is given in Table 18-1.

Table 18-1. Key Project Parties and Summary of Responsibilities

Employer	Terrestrial	Marine	Construction	Operation
Project Company	PDH Plant, PP Plant; and Utilities;	N/A	EPC Contractor	O&M* PDH-PP
SPV** of Terminal Facility	Propane Tank	Jetty		O&M Terminal Facility
CPIR Management Company	Providing infrastructure up to the battery limit	Backfilling of CPIR Port		To be defined by CPIR Management Company
	Providing electricity, raw water and natural gas to the Project and associated Terminal Facility.			

* O&M: Operation and Maintenance

** Special Purpose Vehicle Company

According to the construction planning, the facilities required for the construction works such as mobilization area, temporary excavated storage areas and access roads will be used for both projects. In that respect, single ESMS regarding construction works is planned to be used by the Project Company through EPC Contractor. However, depending on responsibility area of each party such as the Project Company, SPV of Terminal Facility and CPIR Port Management Company, specific management plans or procedures are required for construction and operational works. For the purpose of managing responsibilities between parties, the Project Company has formed a Governance structure for managing the Project and Terminal Facility. Management of impacts of associated facilities is discussed in Section 17.3.4 below. Responsibilities of the Project Company and of the SPV for the Terminal Facility are also discussed in this section below.

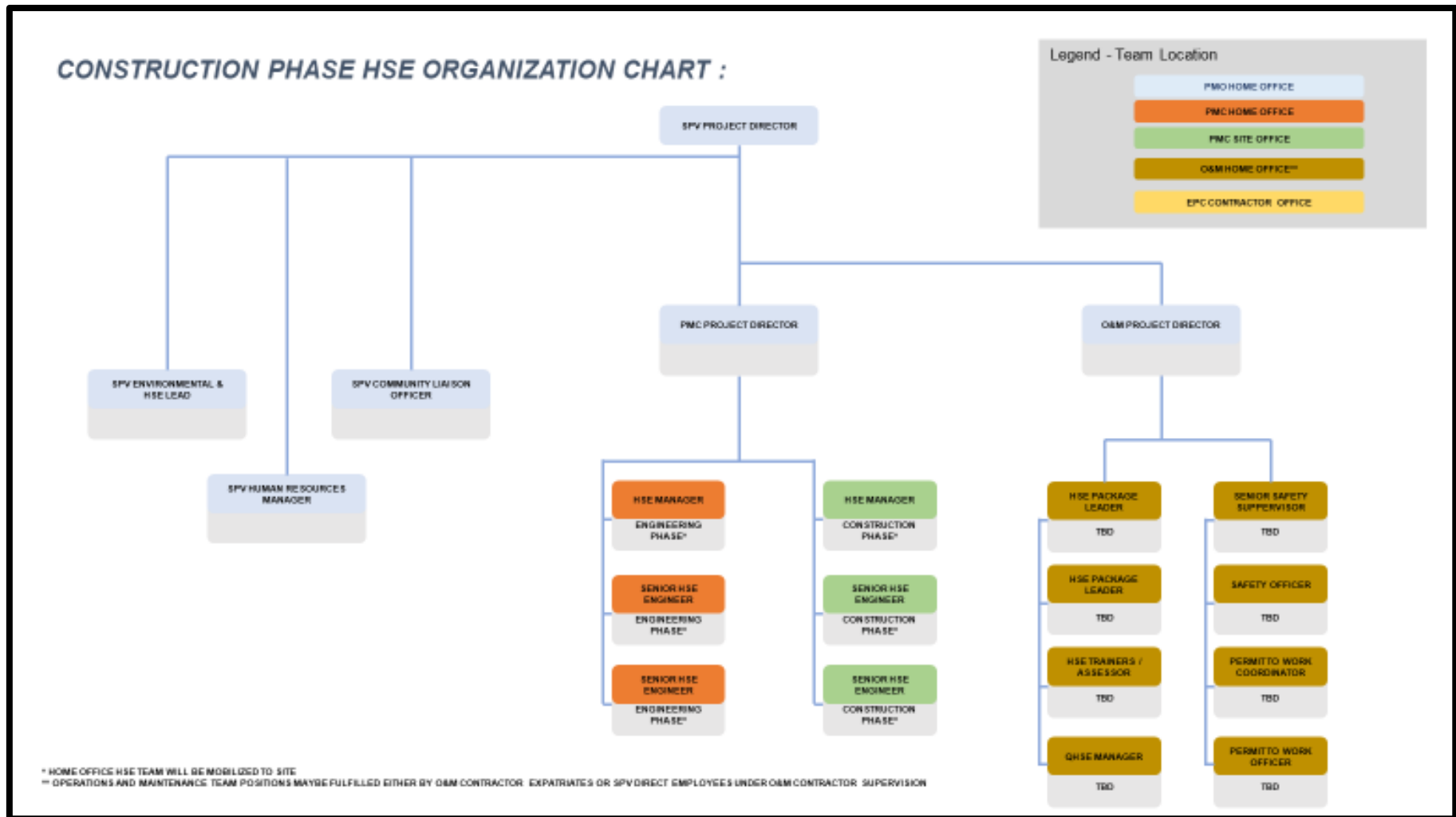


Figure 18-1. Organization Chart of Overall Project Governance for Construction Phase

The overall responsibility for the establishment, implementation, maintenance and effectiveness of ESMS will lie with the Management of the Project Company. For this purpose, necessary human and financial resources and technical infrastructure will be provided by the Project Board for all phases of the Project. On the other hand, each responsible party defined in Table 18-1 will have its own role and responsibility with regard to implementation of the ESMS during the Project implementation. These are based on Environmental and Social Governance Document (101CPP-00-00-40-EA-ENG-0001) issued by the Project Company and include:

Project Company has the following responsibilities:

- Develop and implement the EHSS Policy and HR Policy;
- Manage the Project in line with all relevant international and national environmental, health and safety legislation and commitments as detailed in the ESIA;
- Prepare policies, procedures and plans within the scope of national and international requirements and standards to which the Project is subject, to ensure their implementation, and to inform all relevant parties;
- Establish and maintain Environment and Social Management Team (ESMT);
- Ensure that the ESMT has appropriate mandate, capacity and Environmental and Social (E&S) assurance process;
- Comply with Environmental and Social Action Plan (ESAP) to be agreed with the Lenders; Employ Social Manger / Community Liaison Officer to maintain regular communication with affected communities and other stakeholders in line with the Project SEP, and manage, review and monitor social commitments within the Environmental and Social Management Plan (ESMP), and Stakeholder Engagement Plan (SEP);
- Ensure SEP is developed and implemented and that grievance redress mechanism is in place both for workers and external stakeholders (communities, etc.); Employ Environmental, Health, Safety and Security Manager to manage, review and monitor the environmental, occupational health and safety programs to meet Project requirements, including commitments within the ESMP;
- Report on significant incidents in line with Lender requirements for the Project;
- Establish a policy/procedure on internal reporting that includes incident reporting and investigation, system to record observations, non-conformance and actions that includes ESMP performance indicators;
- Perform environmental and social monitoring activities prescribed within the national EIA Study and the ESIA materials;
- Review the EPCs site-specific implementation plans to ensure they meet the requirements of and support the implementation of the ESMP;

- Conduct periodic review of the ESMP effectiveness in line with the provisions of this plan;
- Report on environmental and social performance to Lenders in line with agreed KPIs on regular basis in a commonly agreed format;
- Employ Human Resources Manager to manage, review and monitor the human resources programs to meet Project requirements, including commitment within the ESMP;
- The Project Company will assign a Project Management Company (PMC) EHS Management Team for the control of EPC Contractor's EHSS responsibilities and commitments during construction; and
- Project Company will organize all the key Project parties such as EPC Contractor, SPV of the Terminal Facility and CPR Management Company to form the ESMP Implementation Committee.

EPC Contractor: During the construction activities, all environmental and social requirements to which the Project is subject will be planned and implemented throughout all works/services to be conducted by the EPC Contractor and subcontractors and major suppliers within the supply chain. The EPC Contractor commitments to be fulfilled and continuously improved are as follows:

- Adopt and implement the Project's EHSS Policy and HR Policy;
- Comply with national EIA, ESIA ESMP and ESAP provisions;
- Take responsibility for conducting construction activities for the Project in line with applicable national requirements and international standards;
- Ensure the allocation of sufficient resources (personnel, materials and equipment) is consistent with achieving the objectives and requirements for the implementation of commitments within the ESMP;
- Assign clear responsibilities determine expectations with respect to implementing the EPC Contractor's responsibilities and commitments within the ESMP;
- Employ Social Manager/ Community Liaison Officer to manage, review and monitor the implementation of social commitments, including commitments within the ESMP;
- Employ Environmental Manager to manage, review and monitor the environmental program to meet Project requirements, including commitments within the ESMP;
- Employ Health and Safety Manager to manage, review and monitor the occupational health and safety program to meet Project requirements, including commitment within the ESMP;

- Employ Human Resources Manager to manage, review and monitor the human resources programs to meet Project requirements, including commitment within the ESMP;
- Prepare site specific implementation plans that meet the requirements of and support the implementation of this ESMP;
- Promote and implement the ESMP by incorporating the appropriate provisions into the EPC Contractor's policies, plans and procedures;
- Establish self-verification / self-assessment of its own compliance by maintaining a system to manage environment and social aspects and impacts in line with ESIA requirements;
- Perform environmental and social monitoring activities prescribed within the national EIA Study and ESIA materials;
- Establish an HSE programme of internal reporting that includes incident reporting and investigation, system to record observations, non-conformance and actions that includes ESMP performance indicators;
- Provide training to EPC Contractor's and subcontractors' staff with regard to their responsibilities related to compliance with the HSE programme;
- Report environmental and social performance to Company in line with agreed KPIs on regular basis in a commonly agreed format, including E&S obligations' breaches and material incidents;
- Ensure implementation of grievance redress mechanism;
- Participate in the ESMP Implementation Committee.

SPV Facility (Ceyhan Terminal A.Ş. – for Jetty and Propane Storage Area) has the following environmental and social responsibilities:

- Prepare and disclose EHSS Policy and HR Policy in parallel to the Project policies;
- Preparation of policies, procedures and plans within the scope of national and international requirements and standards to which the Project and the Terminal are subject to ensure their implementation and to inform all the relevant parties;
- Establish and maintain ESMT;
- Ensure that the ESMT has appropriate mandate, capacity and E&S assurance process;
- Comply with the Project ESAP provisions related to the Terminal Facility activities, in particular marine-related actions regarding jetty operation;
- Employ Social Manager / Community Liaison Officer to manage, review and monitor a social program to meet Project requirements, including commitment within the ESMP;
- Ensure implementation of grievance redress mechanism;

- Employ Environmental, Health and Safety Manager to manage, review and monitor the environmental, occupational health and safety programs to meet Project requirements, including commitment within the ESMP;
- Reporting of significant incidents in line with Project Lenders' requirements;
- Establish an HSE policy of internal reporting that includes incident reporting and investigation, system to record observations, non-conformance and actions that includes ESMP performance indicators;
- Perform environmental and social monitoring activities prescribed within the national EIA Study and ESIA materials;
- Review the EPCs site-specific implementation plans to ensure they meet the requirements and support the implementation of the ESMP;
- Report on environmental and social performance to the Company in line with agreed KPIs on periodical basis in a commonly agreed format;
- Employ Human resources Manager to manage, review and monitor the human resources programs to meet Project requirements, including commitment within the ESMP; and
- Participate in ESMP Implementation Committee.

CPIR Management Company: Roles and Responsibilities of the Management Company according to related regulation²:

- Provide electricity, drinking and utility water, natural gas, distribution networks, intra-regional roads for the region;
- Ensure that all grievances and/or objections the Project recorded and submitted to CPIR Management are conveyed to the Project Company;
- Coordinate with the Project Company team on environmental and social impacts and implementation of relevant mitigation and management measures.

O&M Company of the Project: During the operation activities, all environmental and social requirements to which the Project is subject will be planned and implemented in all works/services to be performed by the O&M Company's Project team, subcontractors and major suppliers within the supply chain. The followings are the O&M Company commitments to be fulfilled and continuously improved:

- Adopt and implement the Project's EHSS Policy and HR Policy;
- Prepare site specific implementation plans for the operation stage that meet the requirements of and support the implementation of this ESMP prior to the Project operation;

² Source: <https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=33710&MevzuatTur=7&MevzuatTertip=5> (Article 21).

- Promote and implement the ESMP by incorporating the appropriate provisions into Project policies, plans and procedure;
- Comply with ESAP provisions;
- Take overall responsibility for operation of the Project with respect to applicable national and international standards;
- Ensure the allocation of sufficient resources (personnel, materials and equipment) are consistent with achieving the objectives and requirements for the implementation of their commitments within the ESMP;
- Assign clear responsibilities and expectations with respect to implementing the O&M Company's responsibilities and commitments within the ESMP;
- Employ Social Manager / Community Liaison Officer to maintain regular communication with the affected communities and other stakeholders in line with the Project SEP and manage other social commitments as per the ESMP;
- Employ Environmental, Health and Safety Manager to manage, review and monitor the environmental, occupational health and safety program to meet Project requirements, including commitments within the ESMP;
- Employ Human Resources Manager to manage, review and monitor the human resources programs, prepare procedures to meet Project requirements, including commitments within the ESMP;
- Establish self-verification of its own compliance by maintaining a system to manage environment and social aspects and impacts in line with ESIA requirements;
- Perform environmental and social monitoring activities prescribed within the ESIA;
- Establish HSE programme of internal reporting that includes incident reporting and investigation, system to record observations, non-conformance and actions that includes ESMP performance indicators;
- Provide training to Project and subcontractors' staff related to their responsibilities with respect to compliance with the HSE programme;
- Report on environmental and social performance to Lenders of the Project in line with agreed KPIs on regular basis in a commonly agreed format including E&S obligations breaches and material incidents, report incidents for the whole Project;
- Ensure stakeholder engagement and grievance management related to operation activities are managed in line with the agreed Project SEP; Participate in the ESMP Implementation Committee.

O&M Company of the Terminal Facility (Terminal O&M Company): During the operation activities, environmental and social requirements to which the Terminal Facility is subject will be planned and implemented in all works/services to be performed by the Terminal O&M Company's project team, subcontractors and major suppliers within the supply chain. The

followings are the Terminal O&M Company commitments to be fulfilled and continuously improved:

- Prepare and disclose EHSS Policy and HR Policy in parallel to the Project policies;
- Comply with ESAP provisions stipulated for the Terminal Facility activities, in particular marine related actions regarding jetty operation;
- Take responsibility for operation of the Terminal Facility with respect to applicable national and international standards;
- Assign clear responsibilities and expectations with respect to implementing the Terminal O&M Company's responsibilities within the ESMP;
- Ensure allocation of sufficient resources (personnel, materials and equipment) to achieve objectives and requirements for the implementation of commitments regarding Terminal Facility operations within the ESMP;
- Social Manager / Community Liaison Officer to maintain regular communication with the affected communities and other stakeholders in line with the Project SEP and manage other social commitments as per the ESMP;
- Employ Environmental, Health and Safety Manager to manage, review and monitor the environmental, occupational health and safety program to meet Project requirements within the ESMP;
- Employ Human Resources Manager to manage, review and monitor the human resources programs, prepare procedures to meet Project requirements within the ESMP;
- Prepare site specific implementation plans for the operation stage that meet the requirements of and support the implementation of this ESMP prior to the operation stage;
- Promote and implement the ESMP by incorporating appropriate provisions into project policies, plans and procedures;
- Perform environmental and social monitoring activities.
- Establish an HSE programme of internal reporting that includes incident reporting and investigation, system to record observations, non-conformance and actions that includes ESMP performance indicators;
- Provide training to Project and subcontractor staff in their responsibilities with respect to compliance with the HSE programme;
- Report on environmental and social performance to the Company in line with agreed KPIs on periodical basis in a commonly agreed format;
- Ensure implementation of grievance redress mechanism;
- Participate in the ESMP Implementation Committee.

PMC Contractor: The role of the PMC Contractor is to achieve project goals and project objectives related to environmental and social aspects by leading, guiding, coordinating and synchronizing the professional inputs from various specialists / consultants. Its role is multi-disciplinary and it is responsible for coordination, integration and putting together all the aspects of the Project. These are the PMC Company commitments to be fulfilled and continuously improved:

- Act as the technical expert of the Project Company and team in front of the Project Company's contractor for the EPC Works ("EPC Contractor"), the Project Company's contractor for operation and maintenance services ("O&M Contractor") and any other contractors, suppliers, consultants or service providers of the SPV in connection with the Project;
- Continuously review, monitor, manage and check all aspects of the execution of the EPC Works and activities of the Project Contractors on behalf of the SPV;
- Review, check and advise the SPV regarding multidisciplinary engineering deliverables, including information and deliverables provided by the Project contractors, relevant calculations and specifications, covering such issues as:
 - compliance with the Project standards and specifications;
 - technical safety, operability, maintainability correctness, etc.;
- At all stages of the Project, the PMC Contractor will continuously review, monitor and inspect all aspects of implementation of the Project on behalf of the Project Company to ensure it is conducted with adequate quality, in line with schedule and budget;
- The PMC Contractor will, at all times, make reasonable effort to optimize utility consumption, optimize chemical consumption, optimize the effluents and emissions and to continuously improve relevant works;
- Participate in the ESMP Implementation Committee.

18.3.2 Management of Construction and Operation Works

As it is stated above, there are several key Project parties, which play important roles and hold responsibilities for execution of the Project during its construction and operation stages. The Project Company will establish an ESMP Implementation Committee in order to ensure effective collaboration between these parties and to meet environmental and social requirements of the Project.

This Committee will operate during construction and operation stages of the Project. The main purpose of the Committee is to ensure that the Project and related projects are carried out in compliance with the ESAP, ESIA and all related management plans and procedures prepared for the Project. The structure of the committee will differ for the periods of construction and operation. The experts to form the committee and their duties are described below in Table

18-2. Principal roles within the Project's organisational structure are also illustrated in Figure 18-2.

All personnel with direct responsibility for the Project's environmental and social performance will be adequately qualified, trained and experienced to perform their work. Competencies of these employees will meet with national legal requirements and Lenders' expectations. External experts and/or consultancy services, if legally or technically necessary, will also be engaged during different phases of the Project. Requirements for provision of appropriate training and increasing awareness of the Project employees, subcontractors and suppliers regarding:

- the EHSS Policy;
- relevant environmental and social risks and impacts;
- relevant plans/procedures;

will be defined by the "Training and Management Improvement Process Procedure" to be prepared.

Table 18-2. Key Personnel of ESMP Implementation Committee

Key Project	Personnel	Responsibility	Project Phase	
			C	O
Project Company	Project Director	<p>Ensure that adequate EHSS resources are available to effectively implement practices at the Project site. The Project Director will also be responsible for the Company's interaction on EHSS issues with management of associated facilities and third party facilities.</p> <p>At the same time, the Project Director will follow ESMP Committee meetings and coordinate issues that are not solved or require higher level of decision-making. If an issue requires a higher level of decision-making for its the resolution (i.e. Board decision of the Project Company and/or SPV of Terminal Facility), the Project Director will inform all relevant parties, and facilitate this resolution.</p>	X	X
	EHSS Manager	<p>Responsible for supervising implementation of all environmental and social measures as specified within ESAP, ESIA, ESMP and other relevant plans and procedures forming the ESMS of the Project, and regular reporting to Lenders regarding all environmental and social requirements during construction and operation.</p> <p>Responsible for managing projects regarding environmental, health and safety governance issues and member of the E&S Committee on behalf of the Project Company.</p>	X	X
	Human Resources Manager (HRM)	<p>Responsible for managing all matters relating to labour and working conditions' management for the Project Company. Responsible for relations with employees of the Project and other contractors. These include:</p> <ul style="list-style-type: none"> • Project Company personnel – construction and operation phases; • EPC Contractor for construction phase; • PMC Contractor for construction phase; • O&M Company for operation phase; 	X	X

Key Project	Personnel	Responsibility	Project Phase	
			C	O
		<ul style="list-style-type: none"> Subcontractors. <p>HRM will also have communication with workforce representatives / committees and will co-ordinate internal grievance mechanism together with the Human Resources Lead.</p>		
	Social Manager / Community Liaison Officer (CLO)	<p>Responsible for stakeholder engagement and grievance management and consultation on land acquisition, providing affected communities with information on the timing of key activities, and identifying and responding to grievances.</p> <p>The Social Manager / CLO will also be responsible for implementation of the SEP and relevant engagement activities and public grievance management system during operation phase. The Social Manager / CLO will also be responsible for managing social commitments of the ESMP.</p>	X	X
EPC Contractor	EPC Project Director	<p>Responsible for overseeing the construction of the Project, including planning and delivery. He/she will be competent and have a strong understanding of construction best practice. The EPC Project Director is accountable for overall EHSS performance and making the human and financial resources available to ensure compliance with EHSS requirements of the Contract. The EPC Project Director will also be responsible for appointing First Aid competent person(s) on site, as well as a team responsible for the site security.</p> <p>EPC Project Director's another important role is implementation of the commitments and requirements defined in ESIA and ESMP for the construction of the Project and associated Terminal Facility. In this respect, he/she will coordinate with the EPC Environmental Site Manager to implement all requirements and specific plans regarding the Project and associated facility.</p>	X	
	EPC Environmental and Social (E&S) Site Manager	<p>Project E&S Manager will be suitably competent and have a strong understanding of environmental best practice including the Project E&S requirements.</p> <p>He/she will be responsible for managing commitments, mitigation measures and other requirements defined in ESIA and other relevant plans and procedures forming the Project ESMS for construction of the Project and associated Terminal Facility.</p> <p>EPC E&S Site Manager will also be responsible for managing activities defined in the ESMP and relevant plans and procedures, as well as for reporting to the EPC Project Director.</p> <p>EPC E&S Site Manager will assist Environmental and Social Manager of the Project Company to prepare monitoring reports required for the Lenders.</p>	X	
	EPC HS Manager	<p>Responsible for the implementation of health and safety practices during construction. Project HS Manager will be suitably competent and have a strong understanding of health and safety best practice requirements, including the Project HS requirements. HS Manager will have the authority to suspend works when necessary, and allocate resources, personnel and equipment required to undertake any corrective actions.</p>	X	
	EPC Human Resources Manager / EPC Social Manager / CLO	<p>Responsible for managing all matters related to labour and working conditions management for the EPC Contractor. Responsible for employee relations, communication with workforce representatives / committees and coordination of the workforce grievance mechanism.</p> <p>Responsible for reporting and supervising social activities on site, consultation on land acquisition, providing affected communities</p>	X	

Key Project	Personnel	Responsibility	Project Phase	
			C	O
		with information on the timing of key activities, managing and addressing grievances, etc.		
	EPC Biologist/Ecologist	Provide support related to biodiversity issues in advance of, and throughout construction, including pre-construction surveys. This role will focus on ensuring required mitigation measures are appropriately undertaken, and measures are maintained throughout construction, in accordance with the ESMP and BAP. The specialist will be suitably competent and have relevant experience. The position may be outsourced.	X	
	EPC Archaeologist	Responsible for overseeing all matters related to archaeology during construction, including implementing the chance finds procedure. The position may be outsourced.	X	
PMC	PMC EHSS Manager	Responsible for control of EPC Contractor's EHSS responsibilities and commitments during construction. Member of the E&S Committee on behalf of the Company.	X	
Terminal SPV	EHSS Manager (Terminal SPV)	Responsible for managing infrastructure projects regarding environmental and social governance issues for the Terminal SPV. Member of the E&S Committee.	X	
	Human Resources Manager (Terminal SPV)	Responsible for managing all matters related to labour and working conditions management for the Terminal SPV. Responsible for employee relations, communication with the Company and EPC Contractor workforce representatives / committees and coordination of the workforce grievance mechanism.		X
	Terminal Social Manager / CLO (Terminal SPV)	Responsible for reporting and supervising EPC Contractor's Social Manager / CLO on social activities, consultation on land acquisition, providing affected communities with information on the timing of key activities, and identifying and responding to grievances.		X
O&M Company	EHS Manager (O&M Company):	Responsible for managing projects regarding environmental and social governance issues. Member of the E&S Committee on behalf of the O&M Company.		X
	Human Resources Manager (O&M Company)	Responsible for managing all matters to labour and working conditions management for the Company. Responsible for employee relations, communication contractors' workforce and grievance management.		X
	Social Manager / CLO (O&M Company)	Responsible for managing social commitments of the ESMP, stakeholder engagement and grievance management.		X

C: Construction

O: Operation

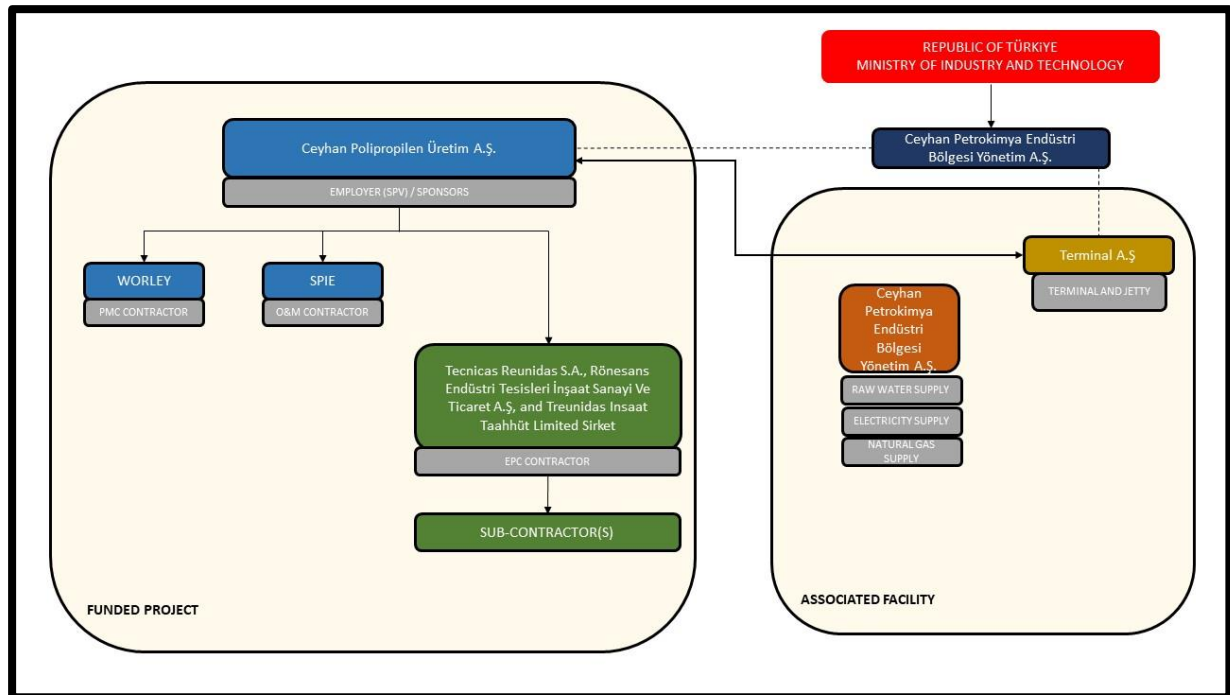


Figure 18-2. Project EHSS Organization for Construction Phase

18.3.3 Contractor Management

The Project Company will ensure that contractors working on the Project site meet the ESMS requirements by adopting and implementing an appropriate contractor management system. The contractor management shall include the following:

- i) assessment of environmental and social risks associated with contracted works and services and incorporating relevant ESMS conditions;
- ii) overseeing that contractors have the knowledge and skills to perform their tasks in accordance with contractual environmental and social conditions;
- iii) monitoring contractor compliance with contractual environmental and social conditions;
- iv) requiring contractors to have equivalent environmental and social arrangements with their subcontractors.

Subcontractor Management and Monitoring Plan will be developed and implemented to ensure contractors' management is in line with international standards. It will be reviewed on biannual basis (every six months) during construction and on annual basis during operation phases.

18.3.4 Management of Impacts of Associated Facilities

It is expected that the SPV managing the Terminal Facility will comply with international standards, and therefore will develop their own ESMPs. However, to ensure the Terminal Facility is compliant, the Company will:

- Make effort to obtain commitment of the SPV managing associated facilities to comply with international standards;
- Share results of the impact assessment with the SPV managing associated facilities;
- Share Project Company's approach to mitigation and management of impacts, as well as relevant management plans and procedures;
- Recommend implementation of relevant mitigation and management measures as necessary; and
- Cooperate on a regular basis during development and implementation of the Project and associated facilities on development of proper mitigation measures and coordinate on the status of their implementation. The Company's personnel will conduct meetings with personnel of the associated facilities' companies with regard to management of environmental and social issues on regular basis.

18.3.5 Management of Cumulative Impacts

The Project Company does not have direct influence over third party facilities. However, the Company will seek for cooperation with third party facilities with regard to managing cumulative impacts. It is expected that the Project Company will set a benchmark for other companies in the area with regard to managing environmental and social impacts, and will make reasonable effort to assist third party facilities in implementing their practices in line with international standards. The Company will:

- Share results of the impact assessment with third party companies;
- Share the Company's approach to mitigation and management of impacts, relevant management plans and procedures;
- Cooperate on a regular basis during development and implementation of the Project and third party facilities on development of proper mitigation measures and the status of their implementation. The Company's personnel will seek to conduct meetings with personnel of the third party companies with regard to management of cumulative impacts on regular basis (not less than biannually).

18.3.6 Communication

Project Company will develop procedures to establish and maintain an effective and strong internal and external communication within the scope of the Project.

A Stakeholder Engagement Plan (SEP) has been developed for the Project during Scoping phase of the ESIA studies that covers engagement activities during all phases of the Project and will be updated on regular basis (not less than annually). Communication methods/tools defined in the SEP will be considered in the establishment of this procedure and these methods/tools will be updated as necessary as the Project proceeds.

The Project will also establish internal grievance mechanism (for workers) and external grievance mechanism to ensure effective ongoing communication with stakeholders. Grievances, requests and suggestions coming from all parties (personnel, community and other stakeholders) will be received, recorded, evaluated and solved/responded.

18.3.7 Documentation and Document Control

A “*Document and Data Control Procedure*” will be established within the scope of construction and operation phases ESMS to control and approve any document before it is issued, to determine the writing format and numeration system to be used; to determine the approval system; to provide controlled distribution, review and update of documents; to provide relevant and updated documents; to abolish invalid documents and to manage external documents.

18.3.8 Operational Control

An *ESMP* has been developed for the Project in order to manage the adverse impacts on the environment. The ESMP is prepared based on the international standards and best practices as well as national laws and regulations. The ESMP of the Project is presented in Annex C of this ESIA report. The ESMP includes description of the mitigation measures to avoid, minimize or compensate adverse impacts during the construction and operation phases of the Project; responsible parties for the implementation of the mitigation measures; the timing of implementation; monitoring and audit requirements. The ESMP focuses on the avoidance of impacts, and where this is not possible, presents technically and financially feasible and cost-effective mitigation measures to minimize possible impacts to acceptable levels. The ESMP is based on the results of the ESIA study and is a framework document that specifies the necessary work to be conducted for the Project such as preparation of detailed management plans for each topic (e.g. air quality control and monitoring, noise control and monitoring, traffic management). The ESMP will be kept up to date with any required additional mitigation throughout the Project lifecycle and to reflect the requirements of new and/or amended laws and regulations.

The following plans and procedures are described in the ESMP. A number of plans and policies, including but not limited to the following, will be or already have been developed to achieve EHSS objectives for both construction and operation phases:

For All Phases of the Project (under the Responsibility of the Project Company):

- HR Policy;
 - Code of Conduct;
- EHSS Policy;
- Labour and Working Conditions Management Plan, including:
 - Personnel Selection and Employment Procedure;
 - Worker Grievance Mechanism;
- Procurement Procedure;
- Biodiversity Management Plan, including:

- Biodiversity Action Plan – Terrestrial;
- Biodiversity Action Plan – Marine;
- Community Health, Safety and Security Plan,
- Cultural Heritage Management Plan, including,
 - Chance Find Procedure;
- Management of Change Plan;
- Subcontractor Management and Monitoring Plan;
- Supply Chain Management Plan;
- Security Management Plan, including:
 - Purchasing and Supplier Evaluation Procedure;
- Social Investment Plan;
- Stakeholder Engagement Plan, including;
 - External Grievance Mechanism;
- Climate Change Risk Assessment (CCRA);
- Life Cycle Assessment (LCA).

For construction phase (Under the Responsibility of the Project Company and EPC Contractor):

- Construction Environmental and Social Management Plan;
- Hazardous Material Management Plan;
- Soil Management Plan;
- Waste Management Plan;
- Construction Air Quality Control and Monitoring Plan;
- Construction Noise Control and Monitoring Plan;
- Construction Surface Water and Wastewater Management Plan;
- Construction Traffic Management Plan;
- Disaster Management Plan including crisis management and unplanned events;
- Construction Emergency Preparedness and Response Plan including:
 - Fire Safety Procedure,
- Biodiversity Management Plan, including;
 - Biodiversity Action Plan – Terrestrial;
 - Biodiversity Action Plan – Marine;
- Subcontractor Management and Monitoring Plan;
- Accommodation Camp Management Plan;
- Community Health, Safety and Security Plan;
- Construction Occupational Health and Safety Management Plan, including:
 - Procedure for Control of Life Critical Activities;
 - OHSE Training Procedure;
 - Work Permit Procedure;
 - OHSE Leadership and Key Performance Indicators Procedure;
 - OHSE Incentives Procedure;
 - OHSE Discipline Procedure,

- OHSE Monitoring Verification and Evaluation Procedure;
- Hazard and Risk Management Procedure;
- Accident and Incident Management Procedure;
- Construction Machine and Equipment Procedure;
- Working at Height Procedure;
- Scaffold Safety Procedure;
- Personal Protective Equipment Procedure;
- Control of Dangerous Energy Procedure;
- Electrical Safety Procedure;
- Excavation Works Procedure;
- Housekeeping Procedure;
- Working with Dangerous Chemicals Procedure;
- Colour Coding Procedure;
- Storage and Stacking Procedure;
- Lifting Procedure;
- Confined Space Procedure;
- Blasting Management Plan;
- Management of Change Plan;
- Subcontractor Management and Monitoring Plan, including:
 - Subcontractor HSE Assessment Procedure.
- Supply Chain Management Plan, including:
 - Purchasing and Supplier Evaluation Procedure.

For operation phase of the Project (Under the Responsibility of the Project Company and O&M Company):

- Operation Environmental and Social Management Plan;
- Operation Hazardous Material Management Plan;
- Operation Soil Management Plan;
- Operation Waste Management Plan;
- Operation Air Quality Control and Monitoring Plan;
- Operation Noise Control and Monitoring Plan;
- Operation Surface Water and Wastewater Management Plan;
- Operation Traffic Management Plan;
- Operation Disaster Management Plan including Crisis Management and Unplanned Events;
- Operation Emergency Preparedness and Response Plan, including:
 - Life and Fire Safety Plan;
- Biodiversity Management Plan, including:
 - Biodiversity Action Plan – Terrestrial;
- Community Health, Safety and Security Plan;
- Occupational Health and Safety Management Plan including:
 - Procedure For Control of Life Critical Activities;
 - OHSE Training Procedure;

- Work Permit Procedure;
- OHSE Leadership and Key Performance Indicators Procedure;
- OHSE Incentives Procedure;
- OHSE Discipline Procedure;
- OHSE Monitoring Verification and Evaluation Procedure;
- Hazard and Risk Management Procedure;
- Accident and Incident Management Procedure;
- Working At Height Procedure;
- Scaffold Safety Procedure;
- Personal Protective Equipment Procedure;
- Control of Dangerous Energy Procedure;
- Electrical Safety Procedure;
- Housekeeping Procedure;
- Working With Dangerous Chemicals Procedure;
- Colour Coding Procedure;
- Storage and Stacking Procedure;
- Lifting procedure;
- Confined space procedure;
- Subcontractor Management and Monitoring Plan;
 - Subcontractor HSE Assessment Procedure.
- Supply Chain Management Plan, including:
 - Purchasing and Supplier Evaluation Procedure.

It is expected that similar plans will be developed and implemented by the SPV for managing associated facilities (Terminal). If agreed between the Project Company and the Terminal SPV, the same management plans might be used by the Project Company and the Terminal SPV for the construction stages of both projects (especially since the construction works are to be conducted by the same EPC Contractor). In addition, it is anticipated that the Terminal SPV will develop Marine Traffic Management Plan for both stages of the Terminal project. More information on management of impacts of associated facilities is provided in Section 17.3.4.

These plans will be supported by operational procedures and related instructions, as necessary, as part of the ESMS. The ESMS procedures and plans will be periodically (or when necessary) reviewed and revised. In addition, a Leak Detection and Repair (LDAR) programme will be established and implemented during operation phase as per the IFC requirements. Additional procedures and plans will be developed as the Project progresses, as necessary and included in the ESMS.

18.3.9 Environmental and Social Emergency Preparedness and Response

An “*Emergency Preparedness and Response Plan*” will be developed for emergency situations that consist of incidents such as accidents, explosions, fires, gas leakages, hazardous chemical/biological and liquid waste spills, disease outbreaks and similar events that occur unexpectedly due to equipment/infrastructure failures, employee errors, natural disasters

(flooding, landslides, earthquakes, storms), sabotage and similar, both for terrestrial and marine parts of the Project in line with national regulations and international standards. Emergency situations are incidents that cause the activities to cease, terminate and also cause serious damage on environment, occupational health and safety and assets.

The following needs to be detailed in the procedure:

- Emergency Response Team and first aiders (Name, Title, Responsibilities and Key Features);
- Emergency Response Plan, Emergency Drills, Internal Trainings (The drill scenarios should be conducted for different emergency cases);
- Maintenance and Control of Emergency Response Equipment (Fire Emergency Equipment, Pollution Prevention Materials, First Aid Cabinet, Safety Data Sheets, Personal Protective Equipment, Warning and Guiding Signs etc.);
- Measures to be taken in case of Emergencies/Natural Disasters (Communication in case of Emergency, Liquid Chemicals/Hazardous Liquid Wastes Spills, Gas Leakage (O₂, Natural Gas, Liquefied Petroleum Gas (LPG)), and Explosion, Flash/Fire, Earthquakes).

18.4 ESMS Control

18.4.1 Monitoring, Measurement and Review

For effective environmental and social management, the ESMS should be continuously monitored and periodically reviewed. The Project Company will monitor:

- The compliance of the ESMS with the environmental and social provisions of the legal and other requirements as well as the commitments given in the ESMP;
- Overall implementation of the ESMP and other plans and procedures;
- Improvements achieved as the Project progresses.

Tools employed for this purpose will include periodic internal and external audits, regular site inspections and measurements, impact monitoring, regular audits of the overall implementation of the ESMP and site inspections. Monitoring and review will be undertaken in accordance with requirements of ESMS and relevant legislation. Realization of environmental targets and objectives, environmental and social performance, equipment calibration, air emissions, energy, fuel and natural source consumption, noise, waste amounts, environmental and social complaints and similar issues will be monitored, measured and evaluated. Conformance with legal and other requirements will be periodically evaluated and recorded.

Internal audits will be conducted in line with an “*Internal Audit Process Procedure*” to be developed within the scope of the ESMS. The “*Legal and Other Requirements Follow-up List*” will be used to evaluate conformance with the legal and other requirements. Other relevant

and required procedures for the monitoring and measurement processes will be established for the Project as needed.

18.4.2 External Reporting

All external reporting will be managed by the Project Company within their obligations to the government entities under the national legislation and to the Lenders.

18.4.3 Internal Reporting

Internal reporting with regards to the commitments within the ESMP will be managed jointly by the Community Liason Officer, Environmental Officer and Occupational Health and Safety Officer. The Project will share, as appropriate, inspection and audit findings with their suggested measures regularly with the Project management, the ESMP Implementation Committee and employees. To maintain an open communication between the employees and management on occupational health, safety, environmental and social issues the following tools will be used:

- Team Briefings;
- On-site work group meetings;
- Work Specific Instructions.

18.4.4 Non-conformities and Corrective, Preventive, and Improving Actions

Non-conformities detected during inspections carried out by the Project Company, SPV of Associated Terminal Facility, EPC Contractor are subject to a process adapted to the severity of the situation. The non-conformities will be defined as deviations from the requirements of the contract, the ESMP and supporting EHSS documentation. Non-conformities are divided into 4 categories as follows:

Level 1 non-conformity: Non-conformities that do not represent a serious immediate EHSS risks. The non-conformity is the subject of a report addressed to the EPC Contractor (or O&M companies for the operation phase) and shall be resolved within 5 days. The EPC Contractor (or O&M companies for the operation phase) addresses to the Project Company or ESMP Implementation Committee a report explaining how the non-conformity has been corrected. Further to an inspection and a favorable evaluation of effectiveness of the corrective action, the Project Company or ESMP Implementation Committee signs a close-out report for the non-conformity. In all cases where a non-conformity of level 1 is not resolved within one (1) month, the severity of the non-conformity is raised to level 2;

Level 2 non-conformity: apply to all non-conformities that represent a risk with major consequences to health and/or the environment, social or safety. The same procedure as for level 1 non-conformities is applied. Corrective action shall be taken by the EPC Contractor (or O&M companies for the operation phase) within 3 days. The EPC Contractor (or O&M companies for the operation phase) issues a report explaining corrective actions implemented. All level 2 non-conformities, which are not resolved within 1 month, are raised to level 3.

Level 3 non-conformity: apply to all non-conformities that have resulted in damage to health or the environment, or which represent a high safety hazard or high social risk. The highest levels of the EPC Contractor's management (or O&M companies for the operation phase) and the Project Company's management present in Turkey are informed immediately and the EPC Contractor (or O&M companies for the operation phase) has 24 hours to address the issue. A level 3 non-conformity results in the staged reduction of interim payments until the non-conformity has been resolved. Following the resolution of the Level 3 non-conformity the reduction(s) will be included in the next Interim Payment Certificate for payment. No interest will be paid on any reductions or suspended payment amounts. If the situation requires, the Project Company can order the suspension of work until the resolution of the non-conformity.

Notification of observation of minor non-conformity: The non-conformity results in a notification to the EPC Contractor (or O&M companies for the operation phase), followed-up by a signed notification of the observation prepared by the Project Company, the PMC or ESMP Implementation Committee. The multiplication of notifications of observation, or absence of corrective actions by the EPC Contractor (or O&M companies for the operation phase), can result in the severity of the non-conformity being raised to that of level 1.

18.4.5 Data Control

Any information and data relevant to the ESMS will be recorded in line with a "*Document and Data Control Procedure*" to be developed for the Project, which will set out procedures and principles related to establishment, prevention, maintenance, and disposal of the data records.

18.4.6 Management Review

Management reviews will be conducted (at least once a year) to maintain effectiveness of the ESMS and to determine the modification requirements and improvement opportunities in line with a "*Management Review Procedure*". Internal and external audit results, conformance of the Project with legal and other requirements, external notifications including grievances, ESMS performance (e.g. achievement level to targets and objectives), corrective and preventive actions taken, decisions/actions coming from previous meetings, improvement recommendations will be subject of management reviews. Based on the results generated from the reviews, senior management will take the necessary and appropriate actions to ensure that the provisions of environmental and social policy are met, and procedures and plans are effectively updated.

18.5 Stakeholder Engagement

Stakeholder engagement has started during the ESIA study. Consultation activities will continue during the construction and operation phases of the Project aiming to maintain constructive relationships with the local communities and other stakeholders. The following principal activities will be undertaken during the construction and operation phases of the Project:

Construction Phase

- Project information will be disclosed at the Project website and in the Project leaflets distributed to headmen which will be updated as deemed necessary;
- A noticeboard will be kept present at the entrance of the Project site in order to share the Project information with the local people and to provide the name of site manager or Community Liaison Officer where complaints can be submitted in person, not only in writing;
- The EPC Contractor will liaise with Toros Tarım Primary School officials and students to raise awareness in relation to road safety;
- The EPC Contractor will engage in a dialogue with local authorities and implement physical road safety measures in close-by neighbourhoods;
- Meetings, as deemed necessary, with national and local authorities will continue during construction phase related to permitting and other issues;
- The stakeholder list will be regularly updated and any new stakeholder identified will be included in the list;
- Any activities likely to cause particular disturbance (such as noisy activities etc.) to the nearby neighbourhoods will be announced through handouts to be distributed to local people via headmen offices. This information will also be provided on the Project website;
- All comments and grievances will be managed in accordance with the Grievance Mechanism;
- The security staff at the construction site will be informed about the Grievance Mechanism and in case a local person wants to submit a comment or grievance, the security personnel will be able to convey this person to the responsible staff;
- In order to ensure maintenance of the grievance mechanism, there will be clear and visible information on the Project website and phone numbers for people to submit their grievances. In addition, phone numbers and website information will be posted on the construction site signs.

Operation Phase

- The Project website will be updated to include information on operation activities and any changes in environmental policy, plans and procedures that are followed;
- The Project Company will liaise with nearby neighbourhoods, and particularly with school students as necessary, to raise awareness in relation to road safety;
- Ongoing meetings, as deemed necessary, will be conducted with the national and local communities to inform them of any changes in project activities and related to permitting;

- The stakeholder list will be regularly updated and any new stakeholder identified will be included in the list;
- All comments and grievances will be managed in accordance with the Grievance Mechanism;
- The security staff at the facility will be informed about the Grievance Mechanism and in case a local person wants to submit a comment or grievance, the security personnel will be able to convey this person to the responsible staff;
- In order to inform people widely about the grievance mechanism, there will be clear and visible information on the Project website.

More detailed information on stakeholder engagement at each stage of the Project will be provided in SEP to be updated on annual basis.

18.6 Grievance Management

A Workers' Grievance Mechanism (as part of Labour and Working Conditions Management Plan) and Public Grievance Mechanism (as part of the SEP) will be established in order to ensure that all comments, suggestions and objections received from the Project stakeholders, especially from nearby surrounding communities and facilities, are dealt with appropriately and in a timely manner. The Project Company will be responsible for the overall management of grievances.

Local communities will be informed about the grievance mechanism during the consultation and disclosure activities. All grievances will be recorded, responded to and resolved within a defined timeframe. The grievance mechanism is currently at the planning stage. It is expected that comments and grievances will be sent to The Project Company via mail, e-mail or fax during the construction and operation stages as well as through the Project website and telephone numbers. The anticipated procedure to handle grievances during construction and operation phases is described below:

1. All verbal and written grievances submitted by the stakeholders will be considered. Verbal grievances will be recorded on grievance forms by the responsible person (i.e. Community Liaison Officer for the external grievances);
2. All grievances will be reflected in a grievance log(s) to ensure that each grievance is assigned an individual number and that consistent tracking and corrective actions are carried out. The grievance log will contain:
 - Date of submission of the grievance;
 - Reference number;
 - Contact details of the complainant (unless it is anonymous);
 - Content of the grievance;
 - Identification of parties responsible for the resolution;
 - Dates when the investigation was initiated and completed;

- Findings of the investigation;
 - Proposed corrective action;
 - Status of implementation of corrective action;
 - Date of response sent to the complainant (unless it is anonymous);
 - Statement of satisfaction of the complainant;
 - Date of closing out the grievance;
 - Any outstanding actions for non-closed grievances.
3. The grievance will be formally acknowledged within a week after submission. If the grievance is not well understood or if additional information is required, the complainant will be contacted for clarification;
 4. The grievance will first be evaluated by the responsible person (Community Liaison Officer, etc.) and then conveyed to the relevant staff and management, if necessary, to identify what actions need to be taken, and an appropriate response will be developed. The complaint action form will be filled in;
 5. The complainant will be informed about the proposed corrective action in writing three weeks after the grievance is acknowledged and the date of response to the complainant will be recorded in the grievance log;
 6. The complainant will be contacted through telephone or face-to-face meeting, if needed, to confirm that the proposed corrective action taken is satisfactory, and the complainant's response will be recorded in the grievance log;
 7. The grievance will be closed out and the close-out date will be recorded, if the complainant is satisfied with the action taken. If not, further assessment is needed and re-evaluation of the grievance is required;
 8. It is envisaged that the grievances will be resolved within one month after receipt. If this is not possible, the complainant will be informed about the progress on a regular basis;
 9. Any grievances related to subcontractors' activities will be managed in line with the mechanism described here. Furthermore, an interface will be established between the individual grievance mechanisms of the various subcontractors in order to effectively collate all Project-related grievances, including those from subcontractor employees.

More detailed information on the grievance mechanism is to be provided in A Workers' Grievance Mechanism document and the SEP (for the Public Grievance Mechanism).

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

DECOMISSIONING (CHAPTER-19)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

DECOMISSIONING (CHAPTER-19)

Version	Revision	Date	Prepared By	Quality Management By	Checked By	Approved By
Final Draft	B.0	February 2023	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	Emre Kaya (2U1K)	Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003

FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
📠: +90 (312) 442 58 16

TABLE OF CONTENTS

Page

1 DECOMISSIONING..... 2

19. DECOMMISSIONING

The operational life of the Project and related facilities has been determined as 49 years. The necessity to extend the operation period of the facilities will be determined during implementation of the Project. At this stage it is not possible to specify the exact timing of decommissioning of the Project and related facilities (apart from the 49 years estimated above).

There are no special provisions within the Turkish environmental legislation regarding the dismantling or demolition of existing facilities at the end of the operation period. However, in accordance with the Regulation on Control of Soil Pollution and Point Source Contaminated Sites, the sites used for the Project facilities must be controlled and restored against contamination.

In case of dismantling of the Project and related facilities, it is necessary to develop a decommissioning project based on a detailed baseline study and engineering solutions. Decommissioning activities should cover an assessment of existing environmental changes during the operational phase, including existing soil and water contamination, as well as assessment of relevant social impacts. Proposed reinstatement methods and mitigation measures should also be included in the study. Therefore, the main data source for the baseline study will be the results of operational environmental monitoring during the entire period of operation. Reviewing the monitoring results for the operational period will ensure the identification of reinstated/rehabilitated areas, as well as the efficient planning of the decommissioning and further reinstatement/rehabilitation works.

Similar to commissioning activities of the Project and associated facilities, decommissioning activities will be conducted in stages.

Specific decommissioning activities for the Project and associated facilities cannot currently be determined due to:

- Lack of existing regulations and potential changes of legal framework in the future that may require measures for decommissioning of the facilities;
- Potential developments within the Project throughout the operation phase; *and*
- Development of new techniques and methods for the preservation and restoration of structures and process units prior to the planned decommissioning date of the Project facilities.

Implementation of best international industry-specific practice should ensure mitigation and reduction of potential impacts to acceptable levels at the decommissioning stage. In particular, the post-operation phase or decommissioning phase will include the following key activities:

- Employee retrenchment – A gradual retrenchment will occur as the Project facilities and infrastructure enters the post-operation phase/decommissioning. The

retrenchment will be undertaken based on the prevailing laws and regulations and in line with the terms and conditions of the employment contract. Following this, the employees will be demobilized from the Project site;

- Decommissioning and demolition – The Project facilities and infrastructure will be gradually decommissioned and demolished or handed over to other operations.

Actual conservation and decommissioning procedures for the Project and associated facilities can be defined and implemented in the form of a conceptual plan for Project decommissioning and closure developed in the context of relevant Turkish Legislation and international standards.

The latter is currently described, in particular, in the IFC Performance Standards. According to the principles of the IFC Standards, in the general case, the process of decommissioning and closure (conservation) of project facilities will include the following stages:

- Performing a risk assessment study prior to demolishing works. Scope of risk assessment will cover potential risks of demolishing activities in terms of:
 - environmental pollution such as air pollution, soil pollution, water pollution noise etc.,
 - community health and safety; and
 - worker health and safety;
- Assessment of social risks such as retrenchment of workers;
- Assessment of potential re-use of equipment's, superstructure, Project buildings and infrastructure as sustainability targets;
- Performing site assessments in order to understand potential contamination occurred as a result of operational activities and development of reinstatement plans in accordance with best international industry-specific practice;
- Development of shutdown strategy for production processes based on the result of risk assessment studies;
- Development and implementation of cleanup strategy before start of demolishing works. Cleanup strategy will cover:
 - Removal, reuse, recycle and disposal of remaining product in the project units, pipelines, tanks etc.,
 - Cleaning of the Project units, pipes and tanks etc.; and
 - Treatment and disposal of wastes such as treatment of cleaning chemicals, disposal of solid and hazardous wastes;
- dismantling and removing decommissioned structures.

Particular decisions related to the choice of methods for decommissioning and dismantling of Project and associated facilities will be determined on the basis of applicable national and international requirements with account for environmental and social aspects. For this purpose, the Project Company will prepare a Decommissioning and Closure Plan prior to decommissioning. Basic principles underlying the Project Decommissioning and Closure Plan should consider:

- Working with experienced subcontractors that has knowledge and experience of working on similar projects;
- Using the latest technologies incorporating best engineering practices;
- Performing risk assessment studies regarding all decommissioning stages before start of work;
- Meeting all national and international occupational health and safety standards;
- Ensuring that potential environmental and social risks are considered, assessed and corresponding mitigation measures and performance indicators are in place; and
- Monitoring plan is included.

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (CHAPTER-20)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION AND JETTY PROJECT

CUMULATIVE IMPACT ASSESSMENT

Version	Revision	Date	Prepared By	Quality Management By	Checked By	Approved By
Draft	A.0	April 2021	Kübra Ağrıman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.1	May 2021	Kübra Ağrıman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.2	October 2021	Kübra Ağrıman (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Elif Doğru (RINA)
	A.3	December 2021	Tilbe Nazlı (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K) / Simon Taylor (RINA)	Ilya Gulakov (RINA)
	A.3	August 2022	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K) / Simon Taylor (RINA)	Ilya Gulakov (RINA)
	A.4	October 2022	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K) / Simon Taylor (RINA)	Ilya Gulakov (RINA)
Final Draft	B.0	February 2023	Leyla Demirçin (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003

FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
☎: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
20 CUMULATIVE IMPACT ASSESSMENT	4
20.1 Introduction.....	4
20.2 International Guidance and Requirements.....	4
20.3 Methodology.....	5
20.4 Identification of Boundaries and VECs.....	8
20.5 Developments in the Vicinity of the Project Site.....	21
20.5.1 Existing Facilities.....	23
20.5.2 Ongoing and Planned Developments.....	26
20.6 Cumulative Impact Analysis of the Developments.....	37
20.6.1 Air Quality.....	40
20.6.2 Environmental Noise.....	43
20.6.3 Traffic.....	45
20.6.4 Water Use and Surface Water/Sea Water Quality.....	47
20.6.5 Waste.....	49
20.6.6 Biodiversity.....	52
20.6.7 Community Health and Safety and Socio-economics.....	53
20.7 Mitigations for Cumulative Impacts of the Developments.....	55
20.8 Conclusion.....	57

LIST OF TABLES

	<u>Page</u>
Table 20-1. Combined and cumulative effects' significance.....	8
Table 20-2. Specific VECs for the Project.....	10
Table 20-3. Summary of residual impacts based on the relevant chapters of ESIA report ...	12
Table 20-5. Summary of CIA for the existing/ ongoing/planned developments	35
Table 20-6. Cumulative Impact Assessment of the VECs.....	39
Table 20-7. Construction phase maximum APCV determined from the modelling studies for controlled conditions for Scenario 2.....	41
Table 20-8. Physical Properties of Industrial Tanks that can Contribute to VOC Emissions in CPIR Port facility	41
Table 20-9. VOC Emission Values to be Resulting from Tanks of CPIR Port Facility that may Contribute to VOC Emission.....	42
Table 20-10. Mitigations for Cumulative Impacts of the Developments.....	56

LIST OF FIGURES

Figure 20-1. Steps of CIA.....	7
Figure 20-2. Spatial Boundaries	9
Figure 20-3. Existing Facilities in the close vicinity of the Project site	22
Figure 20-4. Planned Developments and Existing Facilities in the close vicinity of the Project site	22
Figure 20-5. Location of Key Projects, Facilities and Activities	30

Abbreviations

Adana ASKI	Adana Water and Sewerage Administration
BTC	Baku-Tbilisi-Ceyhan
BIL	BOTAŞ International
BOTAŞ	Turkish Petroleum Pipeline Company
BTEX	Benzene, toluene, ethylbenzene and xylene
Ceyhan PDH-PP Project / Project	Ceyhan Propane Dehydrogenation - Poly-propylene Production Facility
Ceyhan Petrokimya A.Ş. or Management Company	Ceyhan Petrokimya Endüstri Bölgesi Yönetim A.Ş.
CIA	Cumulative Impact Assessment
CPIR	Ceyhan Petrochemical Industrial Region
CPIR Port	Raw Material Supply, Storage and Port Facility Project
DAP	Diammonium Phosphate
DSI	State Hydraulic Works
DWT	Dead Weight Tones
EBRD	European Bank for Reconstruction and Development
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
IFC	International Financial Corporation
LPG	Liquified Petroleum Gas
LVOC	Large Volume Petroleum-based Organic Chemicals Manufacturing
MAP	Monoammonium Phosphate
MEG	Mono Ethylene Glycol
OIZ	Organised Industrial Zone
PID	Project Introduction Document
PR	Performance Requirement
PS	Performance Standard
PTA	Pure Teraphthalic Acid
PVC	Polyvinyl Chloride
SAP	Super Absorbent Polymer
SASA	Sasa Polyester Sanayi A.Ş.
SEP	Stakeholder Engagement Plan
TAYSEB	Toros Adana Yumurtalık Free Zone Founder and Operator Co.
VECs	Valued Environmental and Social Components

20 CUMULATIVE IMPACT ASSESSMENT

20.1 Introduction

Cumulative impacts are defined as the impacts that occur together with other impacts resulting from concurrent or planned future third-party activities to affect the same receptors as the proposed Ceyhan Propane Dehydrogenation - Poly-propylene Production Facility Project (Ceyhan PDH-PP Project or Project). This Chapter presents the Cumulative Impact Assessment (CIA) for the Project including applicable CIA guidance, CIA methodology, CIA scoping and impact assessment. The CIA herein takes into account the existing and proposed projects and their further operational considerations in the vicinity of the Project site.

20.2 International Guidance and Requirements

International Financial Corporation (IFC) Performance Standard (PS) 1: Assessment and Management of Environmental and Social Impacts and Risks defines the cumulative impacts¹ as the “impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted”.

European Bank for Reconstruction and Development (EBRD) Performance Requirement PR 1 (para. 10) references the need for the Environmental and Social Impact Assessment (ESIA) process to identify and characterize, to the extent appropriate, the cumulative risks and impacts of the project in combination with risks and impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location.

In addition to the IFC PSs, EBRD PRs and Equator Principles IV; the IFC’s guidance document “*Good Practice Handbook: Cumulative Impact Assessment and Management*”, published in 2013 is also taken into consideration during the CIA. The IFC good practice handbook highlights the importance of a defined scope for CIA by introducing the concept of Valued Environmental and Social Components (VEC²s). According to the Guideline, the VECs are considered as environmental and social attributes that are considered to be important in assessing risks listed below among others:

- Physical features, habitats and wildlife populations;
- Ecosystem services;
- Natural processes (e.g. water and nutrient cycles, microclimate);
- Social conditions (health, economics); and
- Cultural aspects (e.g. traditional spiritual ceremonies).

¹ The examples are also stated in the IFC PS1 as incremental contribution of gaseous emissions to an airshed; reduction of water flows in a watershed due to multiple withdrawals; increases in sediment loads to a watershed; interference with migratory routes or wildlife movement; or more traffic congestion and accidents due to increases in vehicular traffic on community roadways.

² Originally described by Beanlands and Duinker as “Valued Ecosystem Components” in 1983.

The SEVESO III Directive 2012/18/EEC was adopted at the EU Council of Ministers on 26 June 2012. Updated directive as of 1 January 2016 was adopted covering the following:

- Designation of a competent authority to carry out the tasks detailed in the Directive;
- Domino effects of accidents;
- Land Use Planning, environmental effects;
- Risk Assessment Methodology and Accident Scenarios, exercises;
- Public Information;
- Preparation, review, testing and revision of internal and external Emergency Plans to be implemented during Major Industrial Accidents;
- Investigation, reporting and inspection of major industrial accidents;
- Classification, packaging and labeling of chemicals.

Regulations on risk reduction of industrial accidents in Turkey were prepared under the title of Reducing the Risks of Major Industrial Accidents (BEKRA). The “Regulation on the Control of Major Industrial Accidents” was adopted after being published in the Official Gazette dated 18 August 2010 and numbered 27676.

The latest version of the legislation was published in the Official Gazette with the repetitive number of 30702 on March 2, 2019, and with this version, it was aimed to harmonize the legislation with the Seveso III Directive.

According to the provisions of legislation below action and documentation should be developed/implemented:

- Major Accident Prevention Policy Document (MAPP);
- Security Report;
- Performing Quantitative Risk Assessment (QRA);
- Highest Possible Level of Prevention;
- Establishment of Security Management System;
- Internal Emergency Plan;
- External Emergency Plan;
- Controls.

20.3 Methodology

Assessment of cumulative impacts considers the effects of other past, present and planned projects with similar impacts on the project area of influence. The key point in determining the need for cumulative impact assessment is to identify one or more impact topics which are affected by different developments.

Cumulative effects can occur as interactions between actions and the environment, and between components of the environment. These “pathways” between a source and an effect

are often the focus of an assessment of indirect or cumulative impacts. The magnitude of combined effects along a pathway can be equal to the sum of the individual effects (additive effect) or can be an increased effect (synergetic effect).

The objective of the assessment of cumulative impacts is to identify and focus on significant impacts, and to ensure that these impacts are taken into consideration in the decision-making process. In order to make the assessment effective, at first, these main impacts should be analyzed. They can be generally defined as follows.

Cumulative Impacts: These impacts are incremental effects of past, present or future activities together with the proposed project.

Indirect Impacts (Secondary Impacts): These impacts are not directly caused by project. Indirect impacts occur in complex pathways or away from the project.

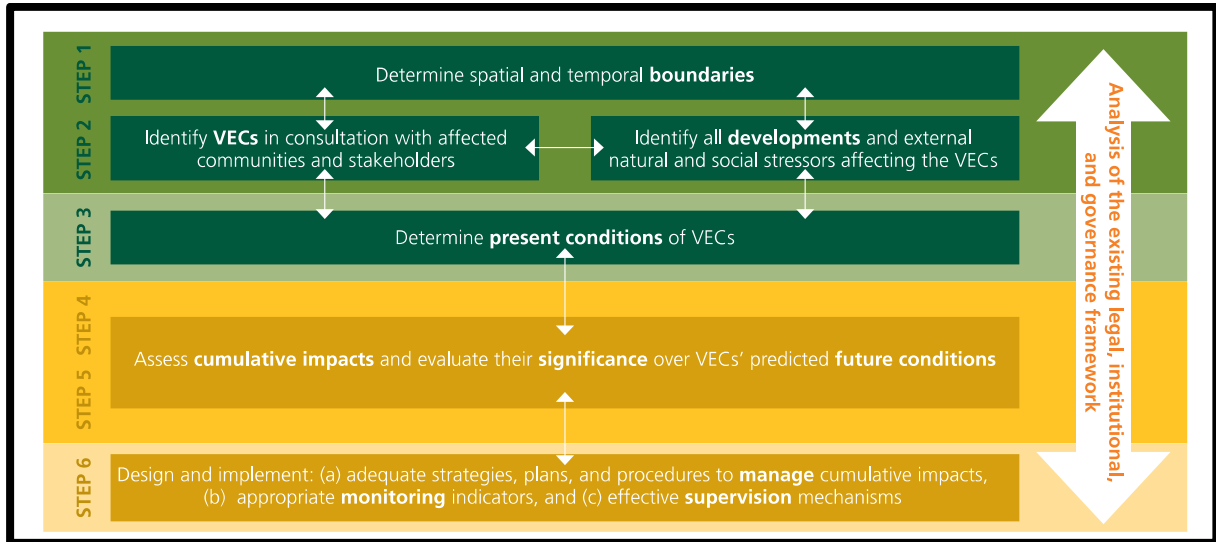
Impact Interactions: These impacts (e.g. reaction of emissions of proposed project and an existing plant) are the results of reactions between impacts of proposed project or other actions.

The approach to this CIA has been undertaken in line with the IFC Good Practice Handbook, Cumulative Impact Assessment and Management Guidance for the Private Sector in Emerging Markets. CIA can be considered when the challenges are due to:

- Lack of baseline data related to the other project developments;
- Uncertainties associated with anticipated developments; and
- Limited and emergent, strategic regional, sectoral, or integrated resource planning schemes.

In line with IFC PS 1 guidance notes (GN41) the assessment should be “commensurate with the incremental contribution, source, extent, and severity of cumulative impacts anticipated”. The assessment also focuses only on potentially significant cumulative impacts, and on cumulative impacts where the Project’s contribution to cumulative impact is considered to be significant.

The CIA methodology follows the steps indicated in Figure 20-1.



(Source: IFC Good Practice Handbook: Cumulative Impact Assessment and Management)

Figure 20-1. Steps of CIA

The CIA process predicts cumulative impacts to which the Project may contribute. The assessment is based on consideration of the status of the activities/developments in the vicinity of the Project site and the nature of the information available in order to predict the magnitude of the impact arising from the other activities/developments. The focus is the condition of the VECs and the scope of the expanded spatial and temporal boundaries for the analysis.

The CIA methodology comprises the following:

- Scoping phase, which is to: (i) determine spatial and temporal boundaries, ii) identify VECs and identify all other activities/ developments affecting VECs;
- Baseline condition of VECs;
- Assessment of cumulative impacts and evaluation of the significance over VECs' predicted future conditions;
- Mitigation measures and management strategies.

It is important to note that since the impacts and mitigation measures are detailed in the ESIA Report, the assessment given in this section is focused on the residual impacts from the Project after taking necessary mitigation measures.

It is only possible to define the impacts resulting from other activities/developments through the readily available and published documents using the impact assessment methodology described in *Chapter 4: Scope and Methodology of ESIA and Stakeholder Engagement*.

Significance criteria

The significance of potential cumulative effects has been determined in accordance with the criteria set out in Table 20-1.

Table 20-1. Combined and cumulative effects' significance

Significance category	Typical Description of Effect
Very High (typically adverse only)	Where the cumulative impacts of the Project in association with other developments upon a single of a number of environmental and/or social receptors would be very very high and/or effects would be permanent for receptors of very high value.
High (adverse or beneficial)	Where the cumulative impacts of the Project in association with other developments upon a single of a number of environmental and/or social receptors would be (positive or negative): <ul style="list-style-type: none"> widespread/large scale for a receptor of high value; permanent for a receptor or receptors of high value; localised for a receptor or receptors of very high value; or temporary for a receptor or receptors of very high value.
Medium (adverse or beneficial)	Where the cumulative impacts of the Project in association with other developments upon a single of a number of environmental and/or social receptors would be (positive or negative): <ul style="list-style-type: none"> permanent for a receptor or receptors of medium value; localised for a receptor or receptors of high value; or temporary for a receptor or receptors of high value.
Low (adverse or beneficial)	Where the cumulative impacts of the Project in association with other developments upon a single of a number of environmental and/or social receptors would be noteworthy but not significant (positive or negative). Effects would be: <ul style="list-style-type: none"> permanent for receptors of low value; localised for a receptor or receptors of medium value; or temporary for a receptor or receptors of medium value.
Negligible	Where the cumulative impacts of the Project in association with other developments upon a single of a number of environmental and/or social receptors would be not significant (positive or negative).

20.4 Identification of Boundaries and VECs

The scope of the cumulative impact assessment comprises construction and operation phases of the Project. Planning of the construction works of the Project was finalized in June 2022, and early works regarding site preparation, geotechnical studies and excavation works started in July 2022. Pre-Commissioning will take place between March 2023 and April 2025, and the facility will operate for the next 49 years. As the degree of uncertainty increases further into the future, cumulative impacts during the decommissioning phase have been scoped out of the assessment. On the other hand, the spatial boundary of the CIA has been taking into account the Project characteristics and the assessment is made based on the study areas defined in the relevant chapters (i.e. *Chapter 4: Scope and Methodology of ESIA and Stakeholder Engagement* and *Chapter 5: Land Use and Zoning*) of this ESIA report. The spatial boundaries may be flexible and may vary from the space occupied by a small VEC

feature (e.g. air quality) to a large geographical region (e.g. the entire Yumurtalık bay and its habitats) depending on the characteristics of the VEC. The figure below shows the spatial boundaries of the VECs.

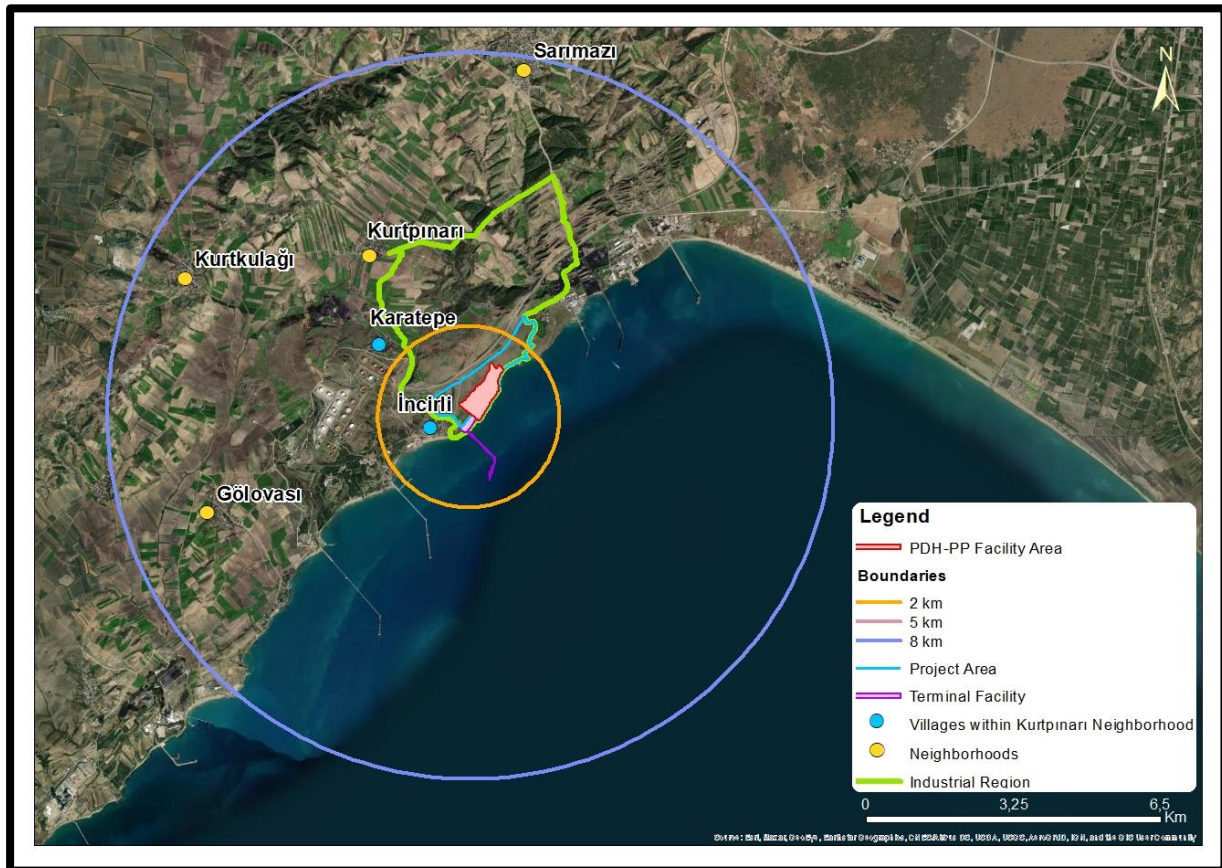


Figure 20-2. Spatial Boundaries

In this ESIA report, VECs that may be potentially affected by the Project are considered. The VECs have been identified based on the available information obtained for the activities/developments in the vicinity of the Project site and considering the environmental and social conditions of the study area. Since the stakeholder engagement activities are integral part of the ESIA study and play an important role for the identification of the environmental and social resources, the results of the stakeholder engagement activities are also assessed and considered in the cumulative impact assessment. The details of the stakeholder engagement activities are summarized in *Chapter 4: Scope and Methodology of ESIA and Stakeholder Engagement* and presented in Stakeholder Engagement Plan (SEP). The Environmental and social aspects which affect the VECs are identified as follows:

- Air Quality;
- Environmental Noise;
- Water resources/bodies and water/sea water quality for fishing/recreation;
- Soil quality for agriculture;
- Marine environment and biodiversity;

- Community health and safety;
- Socio-economics (economic impacts, labor conditions etc.);
- Cultural Heritage.

Table 20-2 represents the VECs that have been identified for this Project.

Ceyhan Integrated Coastal Plan and Environmental Master Plan were used as the basis for the assessment, which are the key development documents for the region. In addition, other sources such as MoEUCC database, EIA Reports of ongoing and planned projects, Landscaping Plan are used for baseline data gathering. Additionally, information provided during stakeholder engagement is used as the data source. All the available information has been considered as part of the assessment.

The assessment for the VECs only considers the residual impacts (i.e. impacts following the application of mitigation measures) arising from the Project. The summary of impact assessment made in the relevant chapters of the ESIA report and identified residual impacts on the selected VECs considering the construction and operation phase of the Project are presented in Table 20-3. As such, the *negligible* residual impacts are scoped out of the CIA, residual impacts having *low* significance have been reviewed for potential cumulative impacts; and residual impacts with *medium*, *high* and *very high* significance are evaluated as part of the CIA.

Table 20-2. Specific VECs for the Project

Environmental/Social Aspects	Topics / VECs	Specific VECs
Air Emissions	Air quality in local settlements	Kurtpınarı Village Incirli Quarter
Noise	Background noise levels at local settlements	Kurtpınarı Village Incirli Quarter
Biodiversity	Key Biodiversity Area	Sugözü Akkum (2.5 km southwest) Burnaz Dunes (2.5 km east)
	Priority Habitats	Dry Mediterranean Lands with unpalatable non-verbal herbaceous vegetation (EUNIS:E1.C) Maquis (EUNIS:F5.2)
	Other Habitats	Evergreen orchards and groves (EUNIS:G2.9) Arable Land with unmixed crops grown by low-intensity agricultural methods (EUNIS:I1.3)).
	Important Flora Species	Cyclamen persicum
	Important Fauna Species	Testudo graeca Neophron percnopterus Anguilla anguilla Aetomylaeus bovinus Epinephelus marginatus Gymnura altavela Raja radula Rhinobatos rhinobatos Caretta caretta Chelonia mydas Monachus monachus

Environmental/Social Aspects	Topics / VECs	Specific VECs
	Migratory and Breeding Bird Species	The Project site is not directly located on the main migration route of the avifauna species. The Project site is not considered as gathering area for migratory birds and shelter or a breeding ground for endangered bird species.
Cultural Heritage	Impacts on Tangible Cultural Heritage Assets	Chance finds during the construction activities.
		Ancient Waterway.
Socioeconomics	Land Use	Local residents and land owners in Incirli/ Kurtpınarı.
	Socioeconomic activities	Residents of local communities, local businesses (including restaurants), farmers and fishermen.
	Regional socioeconomic sphere	Neighbourhoods within a radius of approximately 15 km to the Project site Districts: Ceyhan, Yumurtalık, Erzin.
	Community Health, Safety and Security	Local residents and other population of districts (road traffic, workers influx). Fishermen (marine traffic).

Table 20-3. Summary of residual impacts based on the relevant chapters of ESIA report

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
Soils, Groundwater and Sediments (Chapter 6: Geology, Soils and Contaminated Land)	Seismic Risk	<p>Project's construction phase is planned to continue for around 4 years period. Hence, considering the seismic hazard in the region (i.e., PGA value of 0.303 g with 10% exceedance probability in 50 years period, 475 years recurrence period) for the construction phase seismic risk is considered to be low.</p> <p>Project's operation phase is planned to continue near 50 years period. Hence, considering the seismic hazard in the region (i.e., PGA value of 0.303 g with 10% exceedance probability in 50 years period, 475 years recurrence period) for the operation phase seismic risk is considered to be significantly higher than the construction phase. According to the Earthquake Hazard Map of Turkey, the Project site has a PGA value of 0.303 g, and it lies close to areas classified as low to medium hazard area. Impacts on the integrity of structures and functionality of the Project (e.g., collapse of the buildings/structures) from earthquake loads might occur following an earthquake event of large magnitude if the designs did not consider the potential earthquake loads. This might result in a large impact magnitude on the environment as well as on the community and workers' health and safety due to any accident, spill, fire, etc. related to the seismic incident that might occur during operation.</p>	Negligible	Negligible
	Soil	<p>Poor environmental management during the construction phase may create adverse impacts on soil quality particularly due to events such as accidental spills of liquid cement and other chemicals, and compaction of topsoil. Spills of hazardous material such as oil, fuel, or similar materials (e.g., during fuel loading for machinery operating at the site) create risks of contamination of land, particularly during the construction activities and storage of construction equipment and materials directly on soil ground. Any such events that may cause contamination of the soil in the Project site and/or its associated facilities would cause an exceedance of the maximum admissible concentrations defined by Turkish Regulation on Soil Pollution Control and Point Source Contaminated Sites-RSPC (Soil Pollution Control Regulations).</p> <p>During operation, soil may be contaminated from spills of hazardous materials, poor management of hazardous wastes generated at the site and leakage from underground pipes used for chemical / raw material / product flows or wastewater discharges as well as leakage from the storage tanks. The Project site mainly comprises low permeability</p>	Negligible	Negligible

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
		soil that is classified as compact soil/clay unit or soft rock. Hence, the vulnerability of soil matrix can be taken as low.		
	Sediment	<p>The Project's Associated Facility Jetty site will be constructed and operated by the CPIR Port Project Company. The Jetty will be used for material delivery to the Project during the Project's operation phase. Operation activities at the Jetty site, if not effectively managed, may lead to impacts on sediment quality due to unexpected adverse events such as accidental spills of hazardous materials such as oils, fuel, or similar. The magnitude of these impacts can vary between small to large depending on the magnitude and duration of the events.</p> <p>During the operation of this associated facility, it is expected that CIPR Port Company will take all necessary precautions and mitigation measures such that spills and potential impacts to marine environment and sediment are avoided.</p>	Negligible	Negligible
Water resources (Chapter 7: Hydrology and Hydrogeology)	Surface Water	<p>Several construction activities may adversely impact surface water resources. These activities include soil movement due to excavations and the presence of stockpiles of exposed soil which may lead to suspended sediment in runoff from work sites. Exposed soils that are dampened to reduce dust emissions as well as water used to wash the wheels of the construction vehicles may also produce surface runoff from the site. Runoff during construction will likely be prominent during rainfall events. Without appropriate management, these activities have the potential to impact the quality of nearby surface waters through increased suspended solids and bottom siltation.</p> <p>Impacts may also occur as a result of accidental spills from the use of hazardous materials (fuel oil and/or lubricants) as well as construction materials during construction which may contaminate the surface water drainage and cause degradation in water quality. Spills may also occur from the refuelling of equipment during construction.</p> <p>During the operation phase, there will be water demand related to general domestic use (food processing, toilets, etc.) which will be limited with the operational workforce. Raw water will be supplied from outside the Project site; therefore, the Project Company is currently consulting with relevant authorities (i.e., DSI, and Adana ASKI) and</p>	Negligible	Negligible

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
		<p>Management Company, who is responsible for providing all required infrastructure for the projects to be developed within the scope and boundaries of the CPIR.</p> <p>Impacts on surface water quality may occur as a result of accidental spills from the use of hazardous materials (fuel oil and/or lubricants) as well as materials used during operation which may contaminate the surface water drainage and cause degradation in water quality.</p>		
	Ground Water	<p>According to the Geotechnical Investigation Report, groundwater was not observed at any of the borehole locations drilled up to 9 m. However, impacts may still occur as a result of accidental spills from the use of hazardous materials (fuel oil and/or lubricants) as well as construction materials during construction which may migrate off and also infiltrate into the groundwater table causing degradation of the water quality. Spills may also occur from the refuelling of equipment during construction.</p> <p>As mentioned above, there will be no extraction of groundwater during construction and operation phases of the Project. Hence, no impact is expected on the groundwater resources regarding the quantity or yield. Impacts on groundwater quality may occur as a result of accidental spills from the use of hazardous materials during the operation phase of the Project.</p>	Negligible	Negligible
	Seawater	<p>The daily domestic wastewater generation on site is expected to be 1,500 m³/day during construction phase. Currently, there is no sewerage infrastructure extending to the proximity of the Project site. Domestic wastewater generated during the construction phase, if not managed properly, may affect the environment adversely. Furthermore, during the construction of the Jetty site of the associated Terminal Facility of the Project impacts may be observed in the case of inadequate environmental management .</p> <p>Domestic wastewater and wastes (i.e., sewer, packaging wastes, special wastes); hazardous wastes; wastewater other than domestic wastewater; and medical wastes in small quantities</p>	Low	Low

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
		<p>will be generated during operation phase of the Project. Poor management of such wastes (e.g., illegal discharges or dumping) particularly in the Jetty site in the associated Terminal Facility may create impacts on seawater. Furthermore, special waste such as waste mineral oils, waste vegetable oils, battery and accumulators can also give rise to adverse impacts to human and environmental health. These wastes must be managed appropriately during operation in line with the regulations and disposed in licensed facilities.</p> <p>In addition, to the several sources of effluents that will be generated during operation of the Project, there will be liquid effluents from ships/vessels including sewage, ballast water (from oil tankers), bilge water and vessel cleaning wastewater which may create pollution of seawater unless managed properly.</p> <p>Other potential indirect sources of seawater pollution due to Project might be contaminated land, groundwater or surface runoff that may be discharged/disposed or transferred to the marine environment due to various contaminant transport mechanisms.</p>		
<i>Material Resources and Waste (Chapter 8: Material Resources and Waste Management)</i>	Supply of Materials	<p>Several resources will be supplied from local resources during the construction. These include:</p> <ul style="list-style-type: none"> - The ready-mixed concrete will be supplied from local suppliers; - Part of the material for construction will be supplied from a local licensed borrow pit; - Sanko Port will be used for the delivery of the heavy equipment and process units; - Utility requirements such as potable water will be supplied from the existing water line through tanker trucks; - Other materials, various types of vehicles and machinery will be sourced locally to the extent possible from existing suppliers. <p>Other resources such as water supply during the operation phase, etc. will be sourced from regional resources.</p>	Negligible	Negligible

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
	Waste Generation and Management	<p>Excavated soil has the potential to cause local nuisance due to dust generation during the construction phase. Furthermore, transport of sediments and debris might be an issue if not managed properly. The Project Company is planning to reuse the excavated materials on-site for landscaping purposes and as backfill material.</p> <p>Domestic solid waste, especially the organic waste from food preparation or residues attract vermin and other disease vectors. This may create risks on workers' and community health. Also, if not managed properly, the solid wastes may generate irritant odour in and around the Project site. If not managed properly, waste mineral oils, battery and accumulators can also give rise to adverse impacts to human and environmental health. Medical waste will be generated at trace amounts during construction phase due to medical care for minor cuts and first aid activities. Generation of medical waste is expected to be in small volumes.</p> <p>The domestic waste that will be generated in the Project is expected to be 372.4 kg/day which is a negligible increase in comparison to the average of 2,000 tons/day waste collected and disposed of in Adana.</p>	Negligible	Negligible
	Wastewater Generation and Management	<p>Domestic wastewater generated during construction phase, if not managed properly, may affect the environment adversely. The daily domestic wastewater discharge is expected to be 1,260 m³/day. Currently there is no sewerage infrastructure extending to the proximity of the Project site.</p> <p>The domestic wastewater to be generated during the construction phase of the Project will be collected in underground impermeable septic tanks and necessary agreements will be made with the Municipality for periodic collection via vacuum trucks for disposal to the municipality sewer system.</p>	Negligible	Low
Air Quality (Chapter 9: Air Quality)	Community Health and Safety and Marine Environment	<p>During the construction of the Project, dust emissions will arise from earth movements, loading, unloading and transport of excavation materials both inside and outside the Project site.</p>	Negligible to Low	Negligible to Low

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
		The impacts on the air quality due to the operations of facility will be mainly related with air emissions resulting from production of commodities, storage of commodities and chemicals as well as emissions from increased road traffic.		
Environmental Noise (Chapter 10: Noise)	Noise Impacts	Increased noise levels during construction phase, due to activities including use of construction machinery and equipment during earthworks and other construction activities, construction traffic related to the transportation of excavated soils and construction materials as well as pile driving activities, have the potential to result in negative impacts to the background noise levels including health risks at nearest sensitive receptors. During operation phase, main noise sources include the operation of the machine and equipment in the petrochemical facility (e.g. PDH and PP plant, flares, cooler, gas scrubber, heater etc.) and the increase in road traffic from the operation of the facility.	Negligible to Low	Negligible to Low
	Vibration Impacts	Vibration calculations for the construction phase reveal that the safe distance before vibration levels reach the 1 mm/s level is 65 meters for construction activities. Thus no impact is expected from constructional vibration activities as long as necessary precautions are taken and proper warnings are delivered, since there are no identified receptors closer than 65 meters from the Project site. Similarly, vibration calculations reveal that the safe distance before vibration levels reach 0.14 mm/s level is 11 meters for operational activities. Thus no impact is expected from operational vibration activities since there are no receptors closer than 11 meters from the Project site. Since the formation of the construction area ground is basalt, blasting activity is inevitable for excavation during construction.	Negligible to Low	Negligible to Low
Biodiversity (Chapter 12: Ecology)	Impacts on terrestrial flora and fauna	The construction activities, in particular site preparation works, have the potential to result in loss / disturbance of habitat due to vegetation clearance during excavation and filling. Similarly, the construction activities may result in mortality, injury and disturbance of faunal species such as reptiles, amphibians, mammals and avifauna.	Negligible to Low	Negligible to Low

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
	Impacts on marine ecosystem	Construction activities in the marine section for Associated Facility have the potential to result in habitat loss for macro and micro algae, planktonic organisms, benthic fauna and fish species. Once the construction activities are finalized, the habitat is expected to be restored within a short period of time.	Negligible to Low	Negligible to Low
	Impacts on marine turtles	A number of nests were identified in Incirli beach; which necessitates application of a number of mitigation measures during development of the Project. Both Incirli beach and Holland beach (i.e. one of the nesting beaches for marine turtles as defined in Communique on Protection of Marine Turtles (2009/10)) are in the area that is potentially to be affected by the Project activities.	Negligible to Low	Negligible to Low
	Impacts on Mediterranean Monk Seal	The region around the Project site, which includes important nesting and breeding areas for Mediterranean Monk Seal (<i>Monachus monachus</i>) is currently being under the pressure of several industrial developments having similar potential impacts as the Ceyhan PDH-PP Project. On the other hand, the Project site at its current state, if not entirely, can be regarded as remote and isolated area that is favoured by the monk seal species. Therefore, the potential impacts to occur due to Project activities should carefully be mitigated during both construction and operation phases.	Negligible to Low	Negligible to Low
Cultural Heritage (Chapter 13: <i>Cultural Heritage</i>)	Impacts on Intangible Cultural Heritage	Implementation of the Labour and Working Conditions Management Plan and implementation of the necessary workforce training on Code of Conduct regarding cultural assets can decrease the impact to a low residual level in term of impact significance. The number of Project personnel during construction phase will be approximately 320 people. Though some communities are located in proximity of the Project site (especially Incirli), no significant impact on intangible cultural heritage is anticipated.	Negligible	Negligible
	Impacts on Tangible	Blasting design and mitigations defined in the ESIA should be implemented strictly and vibration level at ancient waterway should be lower than 25 mm/s.	Low to Medium	Medium

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
	Cultural Heritage Assets	<p>Regular visual monitoring and instrumental vibration monitoring at ancient waterway are essential during blasting.</p> <p>Archaeological expert should perform walkover survey. Training of the personnel another with regard to the Chance Find Procedure and Code of Conduct will be conducted to mitigate impacts on cultural heritage.</p> <p>Design, construction, and monitoring of overcrossings on the ancient waterway are critical. Design and construction should be in line with the local authorities' approval.</p> <p>Monitoring by an archaeological expert during soil stripping and implementation CMP and Chance Find Procedure will decrease the potential impact during excavation works. On the other hand, there always be a chance to find unknown archaeological asset at deeper levels (especially soil accumulated locations); due to that reason, archaeological expert should work until completion of excavation works.</p> <p>Design, construction, and monitoring of overcrossings on the ancient waterway are critical. Design and construction should be in line with the local authority's approval.</p> <p>Effective implementation of the Cultural Heritage Management Plan and Chance Find Procedure is essential to minimize the impact.</p> <p>As determined in Chapter 18, the Company will share its approach to mitigation and management of impacts, relevant management plans and procedures with third parties and cooperate on their implementation on regular basis.</p> <p><i>* Cumulative effects can occur during construction where areas of archaeology or contiguous or contemporaneous archaeology assets are affected by more than one development footprint. For such effects to occur, development footprints need to overlap or be adjacent, and where this is not the case, any cumulative impact is scoped out of assessment for this aspect.</i></p>		
Socio-Economy (Chapter 14: Socio economy and Chapter 15: Community, Health)	Positive impacts-Employment Creation	It is envisaged that the Project will have a positive impact on the employment which can be direct (i.e. on-site employment), indirect (i.e. suppliers or support services) and induced employment (i.e. created due to the expenditures of new employees). It is the intention of The Project Company that the workforce will be sourced locally to the extent possible.	Not applicable (positive impact)	Not applicable (positive impact)

Aspects (defined in relevant chapters of the ESIA Report)	Impact		Residual Impact – Construction Phase	Residual Impact – Operation Phase
and Safety, Chapter 16: Labor and Working Conditions)	Economic related impacts	It is envisaged that the Project will have an impact on the economic conditions of the nearby land users as well as households around the Project site. Impact will be also associated with workers' influx.	Low to Medium	Low
	Labor Conditions (workers' accommodation, health and safety conditions)	<p>There will be on-site worker accommodations. The camp site will be equipped with the necessary utilities and infrastructure. Risks related to provision of accommodation services to the Project personnel are of importance.</p> <p>The construction activities will pose certain health and safety risks for the employees involved. These risks will include physical hazards (i.e. use of machinery and vehicles, working with moving machinery and vehicles, working at height), trip and fall hazards, chemical hazards (i.e. direct contact with fuels, chemicals or contaminated soil), dust emissions resulted by excavation and noise emissions (vehicular traffic and machinery operation). Similarly, the operation activities will pose specific health and safety risks for the employees involved in certain Project facilities, including but not limited to, use of equipment, machinery and vehicles, chemical risks from exposure to hazardous materials, specific risks related to marine works.</p> <p>Risks related to labour and working conditions (concluding contracts with workers, overtime payment, etc.) are also relevant.</p>	Negligible to Low	Low
	Community health and safety including traffic	<p>The Project will have the potential to result in an increase in traffic load on local roads. Transportation of equipment and materials to the construction site will result in increase in traffic load which may pose risks to road users and communities related to accidents, road safety and congestions that may occur.</p> <p>Propane will be imported through sea shipment to the Project site; therefore, there will be marine traffic during the operation phase of the Project.</p> <p>Fire safety risks may occur during the construction and operation phases of the Project, which may affect particularly the construction workers, facility personnel and the nearby residents depending on the area over which the fire is spread.</p>	Low to Medium	Low

20.5 Developments in the Vicinity of the Project Site

The study area might experience cumulative impacts resulting from the existing activities and proposed future developments. In addition to the Ceyhan PDH-PP Project, the study area may experience cumulative impacts as a result of the following existing major facilities and ongoing/planned developments:

- Existing Facilities:
 - BOTAŞ Ceyhan Marine Oil Terminal;
 - Toros Agri Industry;
 - Yumurtalık Free Trade Zone (Sönmez Cement Facility and Coal Processing Facilities);
 - Sanko Petrochemical Port Facility;
 - Erzin Natural Gas Combined Cycle Power Plant;
 - İsken Sugözü Thermal Power Plant.
- Ongoing and Planned Developments:
 - CPIR and CPIR Port Project, facilities including:
 - Water Transmission Line;
 - Power Supply;
 - Natural Gas Supply;
 - Quarries, Borrow Pits and Concrete Batching Plants;
 - Cukurova Region and Iskenderun Bay Railway Connection Project;
 - BOTAŞ Rehabilitation of Tugboat Port (including dredging) Project;
 - A Capacity Increase and Rehabilitation of Toros Agri Industry Terminal Project;
 - A Coal Washing Plant Development Proposed Within the Premises of Süper Enerji Coal Storage Facility;
 - A Waste Reception Facility in Yumurtalık District to be developed by Gizem Denizcilik Akaryakıt Pazarlama Nakliyat Ticaret Ltd. Şti. (Gizem Denizcilik);
 - A rehabilitation project by Akdeniz Gemi İnşa San. Tic. A.Ş.;
 - Development of Shipyard by TERSAN Tersanecilik Taşımacılık San. ve Tic. A.Ş.;
 - A Platform and Pipeline Project by Alkaport Ceyhan Liman İşletmeleri A.Ş.
 - Ceyhan Organised Industrial Zone (OIZ) and Erzin OIZ;
 - Thermal Power Plants to be developed towards the west of the Project site;

The locations of the developments are shown in Figure 20-3. The overviews of the developments are provided below. Information on the existing/proposed developments were gathered through publicly available information and stakeholder engagement/consultation which have been undertaken within the scope of the ESIA study.

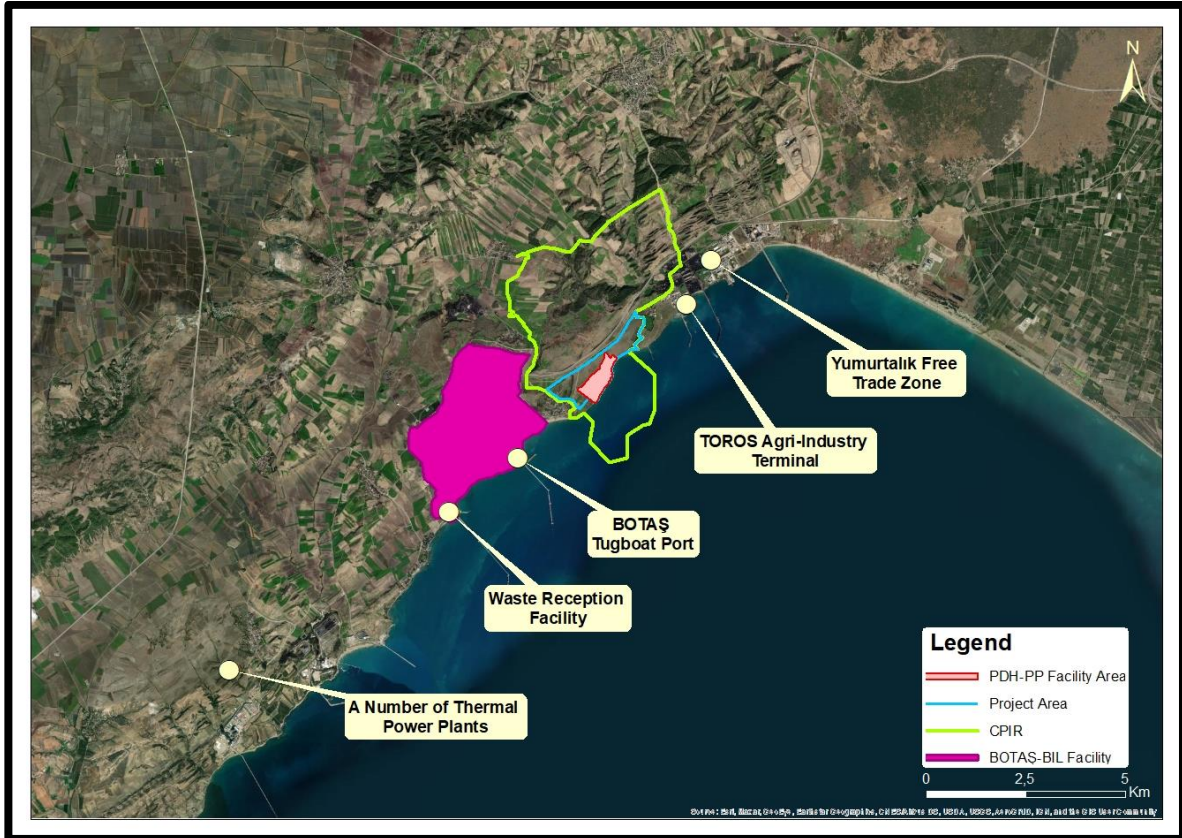


Figure 20-3. Existing Facilities in the close vicinity of the Project site

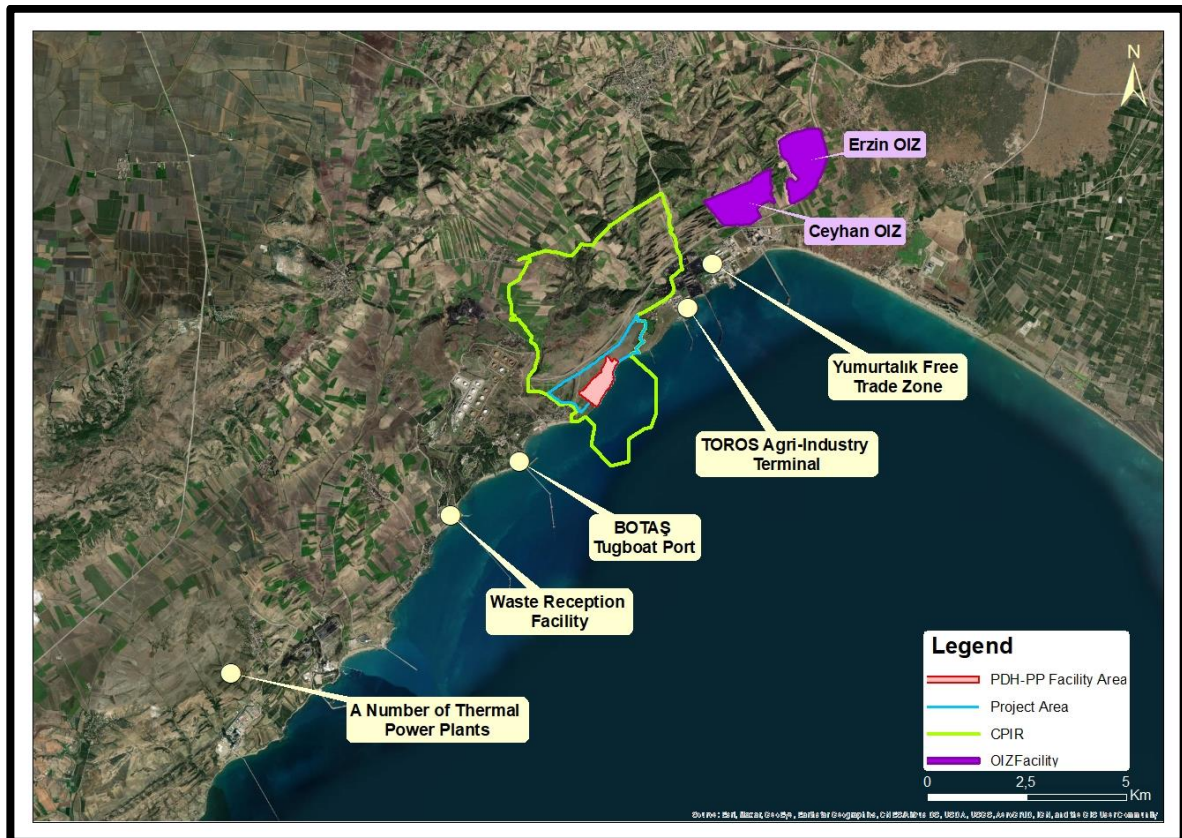


Figure 20-4. Planned Developments and Existing Facilities in the close vicinity of the Project site

20.5.1 Existing Facilities

BOTAŞ Ceyhan Marine Oil Terminal

BOTAŞ Ceyhan Marine Oil Terminal is the terminus for Baku-Tbilisi-Ceyhan Crude Oil Pipeline (“BTC Project”). According to the Environmental Impact Assessment (EIA) Report of the BTC Project, the main function of the marine terminal is storage of the crude oil transported along the pipeline before loading onto the tankers and export to markets. The terminal includes tank farms with associated facilities, export jetty and associated oil loading facilities, as well as housing and general facilities for permanent staff. In BOTAŞ Facility/Campus, there are seven storage tanks having a total capacity of 1 million drums located at approximately 1.5 km distance to the west end of the Ceyhan PDH-PP and Jetty Project site boundaries. There are also two helipads within the Facility premises (approximately 3.8 km distance to the Project site). Additionally, there are two jetties (1,950 m and 2,600 m) belonging to BOTAŞ and BOTAŞ International (BIL) located approximately 1.3 km and 3.2 km distance to the Ceyhan PDH-PP Jetty (associated facility) at its closest point, respectively. Reportedly, the beach located within the BOTAŞ Campus (to the west of the Project site at approximately 2.5 km) is used by BOTAŞ and BIL personnel and their families residing in public housings. Moreover, Turkish Coast Guard Command is positioned within the BOTAŞ Campus having a ship permanently anchored in the jetty and an observation tower. A package wastewater treatment plant is installed in the Facility to treat the domestic wastewater.

BOTAŞ has approximately 1,000 personnel; whereas, BIL has approximately 700 personnel including subcontractors. As it was understood during the social survey conducted within the scope of the stakeholder engagement activities conducted between 10-12 February 2020, there are public housing facilities (approx. 1000 residents), a kindergarten and a primary school with 140 students within the Facility premises of BOTAŞ and BIL (to the west of the Project site at approximately 1.8 km).

As reported by the environmental expert of BOTAS during the social survey conducted between 10-12 February 2020, the Facility is undertaking the following monitoring studies:

- marine and terrestrial biota, green turtles and sediment quality;
- ambient air quality measurements (i.e. SO_x, BTEX, NO_x) described in Chapter 9;
- erosion monitoring study is being conducted in order to monitor the coastal degradation.

Reportedly, the fishing activities are prohibited in the secured zone along the Facility shoreline. Therefore, fish population is quite high around the jetty since it has been used as nursery ground by the fish. They claimed that the salt level of the sea water has increased significantly and almost reached to 40%.

There are two entrance to the Facility; one is from the west (through the Gölovası Neighborhood) and the other one is from İncirli. Reportedly, heavy traffic due to industrial

activity is an important issue in the region. Especially, the road passing through Narlı Neighborhood is mainly used by heavy vehicles.

Toros Agri Industry

Toros Agri Industry and Terminal is located to the east at approximately 2 km distance to the Project site boundaries. Toros Agri Industry and Terminal has two separate jetties serving for liquids and cargo and bulk solids. It serves unloading, loading and storage services for a range of products i.e. fuel and petroleum products, bulk solids. Toros Agri-Industry produces fertilizers but also provides port services to facilities/ships, especially for coal importers. Toros Agri-Industry provides waste reception services to ships. Fuel is also stored at the site to refuel the ships. There are two composite fertilizer units in Toros Agri-Industry Facility.

Toros Agri Industry has two jetties (named as Toros Agri Industry West and East Jetties) which serve for import and export run by national and foreign vessels and located approximately 2.0 and 2.8 km distance to the Project site boundaries, respectively. The dry products are mainly conveyed through the east jetty; there are four closed conveyor systems equipped in the east jetty which are directly connected to the cereal silos (with a capacity of 60,000 tons) and two storage tanks (total of 48,000 tons). There are 26 tanks located in the tank farm established in Toros Agri Industry having a total capacity of 219,679 m³. In addition to the storage tanks located within the tank farm, there are also two ammonia tanks (22,000 m³) and six phosphoric acid tanks (18,870 m³). The liquid products are mainly conveyed through the west jetty¹.

Toros Agri Industry has housings located to the east of the Project site at 0.7 km distance. Approximately 120 people (in 35 houses) stays in the housings. Additionally, there is a guest house with a capacity of 30 rooms. Toros Agri Industry has separate biological and chemical wastewater treatment plants. Housings have an additional domestic wastewater treatment plant.

According to the information obtained during the social survey conducted between 10-12th February 2020, Toros Tarım works with Süreko for transport and disposal of hazardous waste (except waste fuels). The waste fuels (slop etc.) is taken by Söke Çimento which is located at a distant location (İzmir). Toros Tarım is currently negotiating with Çimsa Cement Facility in Mersin for the transportation and incineration of waste fuels.

Toros Tarım monitors only treated water effluent and air emissions in accordance with the relevant regulations. No additional monitoring activities (e.g. ecological surveys) are being conducted. Seveso scenarios of Toros Tarım presents a potential to affect the Ceyhan PDH-PP and Jetty Project. After understanding the impact radius of PDH PP site, hazard scenarios should be evaluated between two sites.

Yumurtalık Free Trade Zone

Yumurtalık Free Trade Zone has been operated by Toros Adana Yumurtalık Free Zone Founder and Operator Co. (TAYSEB), a Tekfen Group company, with “Build, Operate, Transfer” model for 30 years. It provides port services by the neighbouring Toros Agri Industry and Terminal. The Port is owned by Toros Agri Industry and Trade Co., Inc., a Tekfen Group company, and it is one of the Turkey’s largest bulk and general cargo ports. The Free Trade Zone is composed of manufacturing plants including chemicals, petrochemicals, iron and steel, food and animal feed, shipyards and cement factories (Sönmez Cement Facility, coal processing facilities i.e. Super Enerji, Bamak Kömür, Interkarbon İthal Kömür). Yumurtalık Free Trade Zone is located at approximately 3.5 km to the east of the Project site.

SANKO Petrochemical Port Facility

Sanko Petrochemical Port Facility is located approximately 7.5 km to the southwest of the Project site and adjacent to İsken Sugözü Thermal Power Plant. Dry cargo and general cargo bulks are handled at the SANKO Petrochemical Port Facility. There is a waste reception facility established in the facility. Additionally, there are open and closed storage service, temporary bonded area and warehouse service, terminal, weighbridge service in the facility. The length of the berth of the pier at the port facility is 687 m. The minimum water depth is 9.40 m and the maximum water depth is 16.35 m. The port facility is served to a maximum of 70,000 Dead Weight Tones (DWT) dry cargo ships.

Erzin Natural Gas Combined Cycle Power Plant

Erzin Natural Gas Combined Cycle Power Plant is located at approximately 8.5 km to the east of the Project site. The 904 MW capacity plant has been operational since third quarter of 2014. The power plant is one of the Turkey’s most important power plants with its production capacity of 7.4 Twh. With that, the power plant supplies 2.6% of national electrical energy demand.

İsken Sugözü Thermal Power Plant

A coal fired thermal power plant is located which is approximately 9 km to the southwest of the Project site. İsken Sugözü Thermal Power Plant, which is operated by private sector, has an installed capacity of 1,210 MW. The power plant is jointly owned by Staeg (51%) and Oyak (49%). The plant was taken into operation in 2003. There are currently around 250 employees working in the facility. In accordance with the information obtained from the power plant website, the plant generates 9 billion kWh electrical energy annually.³

According to the information obtained during the social survey conducted between 10-12th February 2020, their current marine traffic movements involve approximately 20-22

³ Official website of İsken Sugözü Thermal Power Plant, 2013, <http://www.isken.com.tr/en/id-card.aspx>, (Access date: 18.06.2019).

vessels/year. The associated jetty is 900 m long; however, the facility makes use of a floating platform to convey the raw materials from the vessels. The facility extracts water from sea, purifies it to cooling water quality and discharges the used water back to the sea through a deep-sea discharge pipeline at around 1,400 m. The power plant has a Port (Waste) Reception Facility, which is operating at its full capacity.

Reportedly, regular environmental monitoring activities are undertaken. Recently, they detected petroleum and ammonia contamination in the sea water. Moreover, they have been conducting marine ecology monitoring study for over 15 years in coordination with Çukurova University. The stack height is reported as 150 m. Continuous monitoring of CO, NO_x, SO₂ and PM₁₀ are conducted at the stack. In addition, ambient air quality at nearby receptors (around 8 locations) is also monitored. The facility also collects soil and vegetation samples at 26 different locations to investigate their quality.

Reportedly, the heavy vehicle traffic is quite high around the facility mainly due to industrial facilities located to the southwest of Isken Thermal Power Plant.

20.5.2 Ongoing and Planned Developments

CPIR and CPIR Port Project

Ceyhan Petrochemical Industrial Region (CPIR or also referred to as Ceyhan Energy Specialized Industrial Zone) will be established in Ceyhan district of Adana province. The Ceyhan PDH-PP Project will be developed as part of the CPIR which will become “a petrochemical production hub”. The CPIR will comprise of two main parts: terrestrial and marine development sections. As reported by the Project Company, the second phase investments following the PDH-PP facility at the terrestrial section are planned to be completed until the end of 2030. Currently, feasibility, cost and planning studies are ongoing. In order to provide infrastructure needs and raw material for the petrochemical facilities to be established in the CPIR, CPIR Port is carried out by the CPIR Management Company. The total surface area preserved for the liquid bulk storage area in the terrestrial part and port area is 44.1 ha and 199 ha, respectively. As per the design characteristics, the jetty and back storage facilities, which serve for propane supply of the Project, are a part of the Port Project. Therefore, jetty will be operated under the responsibility of the CPIR Management Company. The main components of the CPIR Port include:

- Terminal Facility including jetty and propane storage tank;
- Jetty for liquid cargo;
- Docks for dry cargo and general cargo;
- Container area;
- Wave breaker pier which is also used for unloading.

There will be a storage area with a capacity of 1,010,000 m³ for ethane, ethylene, LNG, LPG and naphtha in the facility; this storage capacity includes the LPG storage tank within the scope of Terminal Facility, but excludes the storage of propane (i.e. 91,500 m³). Raw materials, that will be brought to the CPIR through sea shipment, will be conveyed to landside of the port facility through loading and unloading arms and pipelines; and afterwards stored in dedicated storage tanks. The annual handling capacity of the proposed CPIR Port is 50 million tons/year. There will be auxiliary facilities such as workshops, maintenance buildings, substation, administrative building, transfer station, parking lots etc. The proposed CPIR Port project is designed to handle 2,000,000 twenty-foot equivalent unit (TEU) container, 15,900,000 tons liquid bulk, 11,000,000 tons dry bulk and 1,000,000 bulk cargo. Total workforce to be employed during construction phase is proposed as 5,000; whereas 250 employees are expected to be employed during operation phase of the CPIR Port Project.

National EIA of the CPIR Port Project indicates that high amount of backfilling material required for the port construction. In that respect, CPIR Management aims to use excavated material produced from the basement construction of the PDH-PP Project. For this reason, CPIR Port Management contacted with PDH-PP SPV to use of excavated material.

As the best practice implementation of source protection and reuse, excavated material will be provided to CPIR Port Management. All construction activities, as well as required permits related to construction and backfilling of the port will be performed and secured by the CPIR Port Management.

It is noteworthy to mention that the construction activities have not started yet. No infrastructure and upper structure related to CPIR Port are present. According to the information provided by the Project Company regarding the CPIR Port Management, the construction activities are envisaged to start on October 2023 and will consist of 4 phases. The entire construction activities for all four phases are planned to last for 18 years.

It is expected that there will be 750 m³/day and 37,5 m³/day of domestic wastewater generated during construction and operation phase of the proposed CPIR Port Project, respectively. A package wastewater treatment unit will be established in the facility. Domestic and packaging waste generation during construction phase of the project are estimated as 4,900 kg/day and 1,470 kg/day, respectively. On the other hand, domestic and packaging waste generation during operation phase of the project is expected to be 245 kg/day and 73,5 kg/day, respectively.

Excavation materials will be reused in the project site to the extent possible; however, excess excavation material to be generated in the project site, if any, will be sent to appropriate excavation disposal sites operated by Adana Metropolitan Municipality. Dredging materials will be analysed and disposed in accordance with the Regulation on the Environmental Management of the Dredging Material. If the dredging material will not meet the requirements as stated in the relevant regulation, these materials will then be sent to the licensed facilities

for ultimate disposal. A Dredging Material Environmental Management Plan will be prepared by the project developers and submitted to the Ministry of Environment, Urbanization and Climate Change (MoEUCC). Apart from the abovementioned wastes, medical waste, waste batteries and accumulators, end of life tires, other hazardous and non-hazardous wastes, waste vegetable oils, waste oils, hazardous wastes will be generated during the operation phase of the project.

The CPIR Project will require power and water utilities. Process water will be needed in significant quantities during operation of the project. Power supply (large scale mobile generation units or grid supply) will be required for the initial stages of the CPIR Project development. To meet these needs, the following facilities which map of these are presented in Figure 20-5 will be realized within the scope of CPIR and CPIR Port Project:

- **Water Transmission Line:** Water sourced from Aslantaş Dam and transferred via approximately 60 km water transmission line. Annual water demand of the CPIR is about 12.6 hm³. PDH-PP Project has no direct influence on the Water Transmission Line project, which is developed by the State Hydraulic Works company (DSI). The CPIR Management Company supports DSI to accelerate implementation (design and construction) of the water supply project. Investment and construction of the Water Transmission Line will be conducted by the State Hydraulic Works, and delivered to Adana Metropolitan Municipality (Adana Water and Sewage Works - ASKİ). ASKİ will operate the Water Transmission Line, and cost recovery will be done through water pricing.

Water transmission line will be developed by DSI to supply water demand of the Industrial zones established in the Region. These zones are:

- CPIR;
 - Erzin OIZ/Erzin OIZ 2. Stage;
 - Ceyhan OIZ/Ceyhan OSB 2. Stage;
 - SASA Polyester Petrochemical Integrated Production Facility;
 - Adana Chemical OIZ; and
 - EMBA Electricity Production Company etc.
- **Power Supply:** CPIR Management have a connection agreement with TEİAŞ (Governmental authority) operating the national grid. According to the agreement, CPIR electricity network will be connected to the national grid via existing 154kV high voltage power line crossing the CPIR. Therefore, there will be no additional high voltage power line required outside of the CPIR. The Project will be connected to the CPIR electricity network through a medium voltage (34.5 kV) power line constructed in the CPIR. The line will be constructed along the existing road located inside the CPIR.

- **Natural Gas Supply:** CPIR Management is planning to supply natural gas from the existing natural gas line used by neighbouring facility Toros Gübre. CPIR natural gas network will be fed from this line. There will be no additional line outside of the CPIR;
- **Quarries, Borrow Pits and Concrete Batching Plants:** No Quarry, Borrow Area or Concrete Batching Plant will be constructed or operated for the construction and operation works. Existing facilities, which are in operation and have relevant permits will be used as supplier. These facilities are considered as third-party supplier for the Project.

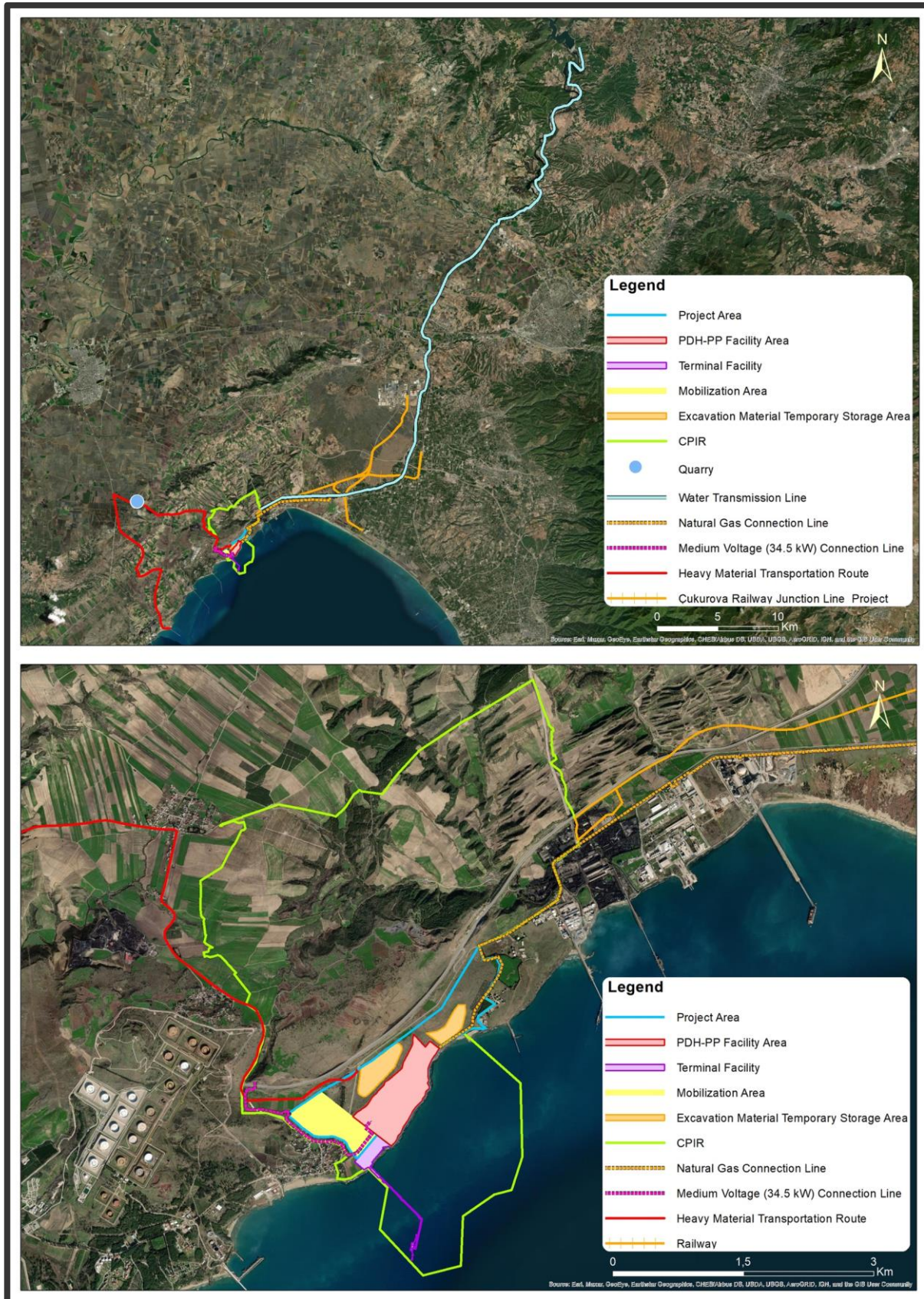


Figure 20-5. Location of Key Projects, Facilities and Activities

BOTAŞ Rehabilitation of Tugboat Port (including dredging) Project

A “Rehabilitation of Tugboat Port (including dredging) Project” is planned to be undertaken within the BOTAŞ Facility premises in Kurtpınarı neighbourhood, Ceyhan District located 1 km to the Project site. The Project Introduction Document (PID) was prepared in line with the provisions of Turkish EIA Legislation, in March 2020. As reported in the PID, depth of the existing jetty of BOTAŞ Facility reached to a critical level due to geographical factors and increased vessel traffic (manoeuvring). There are total of 9 tugboats, 13 mooring boats and 2 assault boats in the BOTAŞ premises. The rehabilitation of existing jetty through dredging activity is proposed to provide easy access and manoeuvring for the tugboats. The construction phase of the rehabilitation project will include establishment of piling system, dredging and filling area. As reported in the PID, the filling material will be sourced from the closest licensed area which have already obtained EIA positive/EIA not required decision. It is planned that dredging will be applied on an area of 200,000 m³ and filling will be applied on an area of 9,900 m². It is assumed that the vessels with 1,350 DWT and below will be able to berth with the rehabilitation of the existing port.

It is anticipated that 25 workers during construction phase and 60 employees during the operation phase of the project will be employed. As reported in the PID, the project is planned to be finalized in one year (including EIA process, obtaining approvals, construction phases); construction phase of the project was commenced in May 2022 and completed in six months.

Capacity Increase and Rehabilitation of Toros Agri Industry Terminal Project

“Capacity Increase and Rehabilitation of Toros Agri Industry Terminal Project” is proposed by Toros Agri Industry in Sarımazı District, Ceyhan (approximately 2 km distance to the east of the Project site boundaries). An EIA Application File for the Project has been prepared in September 2019 in line with the provisions of Turkish EIA Legislation. Toros Agri Industry currently has two jetties (named as Toros Agri Industry West and East Jetties) which serve for import and export run by national and foreign vessels and located approximately 2 km and 2.8 km distance to the Project site boundaries. The proposed capacity increase and rehabilitation project will be applied for the existing jetties of Toros Agri Industry. Piling system will be applied during the construction and rehabilitation of the existing jetty structures. No filling area will be required within the scope of the capacity increase and rehabilitation project.

It is anticipated that 63 workers during construction phase and 15 more employees during the operation phase of the project will be employed.

A coal washing plant development proposed within the premises of Süper Enerji Coal Storage Facility

There is a coal washing plant development proposed within the premises of Süper Enerji Coal Storage Facility which is located approximately 3 km east of the Project site. The PID of this Project has been published in December 2019. According to the PID, the total surface area for

the proposed coal washing plant development is 1,200 m². Coal, which will be brought to the facility through sea shipment, will be subject to the washing process to increase the quality of the coal. A coal washing unit and a sedimentation tank will be established within the scope of the project which is proposed to be constructed within 10 days. No additional workforce is anticipated for the operation of the project. The capacity of the existing coal storage, screening and packaging facility is 163,200 tons/year. There will be no capacity increase anticipated with the additional unit on the operations of the existing facility. The capacity of the coal washing plant will be 48,000 tons/year.

Waste reception facility to be established in Yumurtalık District by Gizem Denizcilik Akaryakıt Pazarlama Nakliyat Ticaret Ltd. Şti. (Gizem Denizcilik)

Denizcilik Akaryakıt Pazarlama Nakliyat Ticaret Ltd. Şti. (Gizem Denizcilik) will establish a waste reception facility covering a surface area of 5,000 m² (located approximately 6 km to the west of the Project site). A PID for the proposed waste reception facility has been prepared in line with the provisions of Turkish EIA Legislation and published in April 2019. Accordingly, waste reception facility will be receiving the following wastes within the scope of the MARPOL 73/78; bilge water, sludge, waste oil (within scope of Annex I of MARPOL), sewage (within scope of Annex IV of MARPOL), and garbage (within scope of Annex V of MARPOL). The facility will comprise of sludge tank, wastewater tank, waste oil tank, bilge water tank, dewatered bilge water tank, slop tank, waste storage area, hazardous waste storage area, package chemical and biological wastewater treatment unit, power unit (heating purposes), platform (having 48 m² and max. 500 GRT).

Rehabilitation project by Akdeniz Gemi İnşa San. Tic. A.Ş.

A rehabilitation project will be undertaken for Akdeniz Shipyard by Akdeniz Gemi İnşa San. Tic. A.Ş. in Yumurtalık Free Zone, Sarımaçı, Ceyhan (approximately 3.5 km distance to the east of the Project site boundaries). An EIA Application File was prepared for the project in June 2019 in line with the provisions of Turkish EIA Legislation. According to the EIA Application File, the construction activities are expected to start in the beginning of 2023 and continue for 1 year. Within the scope of the proposed project, the existing jetties will be rehabilitated, and a breakwater will be established. It is expected that 30 workers will be employed during the construction phase of the project. No additional workforce is foreseen during the operation phase of the project. The investment period for the project is expected to be completed in five years. It is assumed that there will be 95.23 kg/day domestic solid waste generated during construction phase of the project. Solid wastes will be managed by TAYSEB.

Development of shipyard by TERSAN Tersanecilik Taşımacılık San. ve Tic. A.Ş.

A shipyard will be established by TERSAN Tersanecilik Taşımacılık San. ve Tic. A.Ş. in Yumurtalık Free Zone, Sarımaçı, Ceyhan (approximately 3.5 km distance to the east of the Project site boundaries). An EIA Report was prepared for the project in 2016 in line with the provisions of Turkish EIA Legislation. Tersan Adana Yumurtalık Free Zone Shipyard has

125,000 m² back space in the terrestrial section. Since this area is not sufficient for the proposed development, the shipyard will require an additional filling area in marine section. The project will have a 2,045 m long breakwater. The exact timing of the investment is not clear at this stage. The maximum maintenance capacity of the shipyard and capacity to manufacture new ship/vessel will be 12,000,000 DWT/year (100-120 vessels/year) and 720,000 DWT/year (4 vessels/year). Three dry ponds will be installed within the scope of the project. The construction phase of the project will comprise of four stages. The shipyard will be operational at the end of three years of construction phase. Each stage is planned to be completed in two years and there will be one year interval between the stages. Therefore, the shipyard is anticipated to become fully operational after ten years. Piling system will be applied during the construction stage. It is anticipated that 150 workers during construction phase and 1,500 employees during the operation phase of the Project will be employed.

Platform and Pipeline Construction Project by Alkaport Ceyhan Liman İşletmeleri A.Ş.

“Platform and Pipeline Construction Project” will be conducted by Alkaport Ceyhan Liman İşletmeleri A.Ş. in Sarımaçı District, Ceyhan (approximately 3.5 km distance to the east of the Project site boundaries). An EIA Report for the Platform and Pipeline Project has been prepared in April 2020 in line with the provisions of Turkish EIA Legislation. Within the scope of the Project, 2,045 m long pipeline in the marine part and 1,040 m long pipeline in the terrestrial part will be established. The platform will be established at 2,045 m distance from the shoreline. The platform and pipeline will serve for the facilities that are operational in Yumurtalık Free Trade Zone namely Aschem Petrokimya, Ak-Taş Dış Ticaret, Likit Kimya and Koruma Klor Alkali Sanayi. The total surface area of the project in the marine part will comprise of 13,960 m². The configuration of the platform was made based on 63,000 DWT and will be constructed with piling system. Filling and dredging will not be applied during the construction of the project.

It is anticipated that 40 workers during construction phase and 10 employees during the operation phase of the Project will be employed. According to the national EIA of the Alkaport Project, the site preparation works was assumed to commence in November 2020 and take one month. The construction phase of the project was planned to be completed in one year until November 2021. There is also commissioning phase, which will take seven months, before the operation phase. However, the construction works have not started yet, and there is no information about the exact start of construction date.

Ceyhan Organised Industrial Zone (OIZ) and Erzin OIZ

According to the information obtained from “Investigation and Explanation Report” of the Adana Ceyhan Energy Specialized Industrial Zone 1/5,000 scaled zoning plan and 1/1,000 implementation zoning plan, there are also planned OIZs in the vicinity of the Project site; namely Ceyhan OIZ and Erzin OIZ. Ceyhan OIZ is planned to be developed on a surface area of 132.37 ha which is located approximately 4.5 km distance to the northeast of the Project

site boundaries. The zoning plan related to the development of the planned Ceyhan OIZ was approved on 16.10.2018. Currently, 30% of the land has been allocated to industrial facilities. Moreover, Erzin OIZ is planned to be developed on a surface area of 148.38 ha and located approximately 6 km distance to the northeast of the Project site boundaries. The revision of the zoning plan related to the development of the planned Erzin OIZ was approved on 04.12.2018.

The construction and infrastructural developments related to both Ceyhan OIZ and Erzin OIZ have not been commenced yet.

Thermal Power Plants

There are a number of thermal power plants proposed to be developed approximately 5 km to the west of the Project site at varying locations between Gölovası and Yumurtalık centers. Currently, there are no detailed information on the schedules, capacities and related impacts of these power plants.

Çukurova Region and İskenderun Bay Railway Connection Project

There is a planned railway crossing which passes through CPIR from east to the north end at a distance of approximately 2 km which will provide connection to Industrial Facilities – Yumurtalık Free Trade Zone Industrial centre and terminals in the Çukurova Region and İskenderun Bay to be developed under the responsibility of Directorate of Infrastructure Investments, Ministry of Transport and Infrastructure. An ESIA study had been conducted for the project and the ESIA report has been issued in April 2020. According to the National EIA of the railway project, the construction activities were expected to start within 2021 and last for 24 months. On the other hand, construction of the railway project has not started yet, and there is no information about the anticipated time of the construction.

The interactions of existing and ongoing / planned developments around the Project site with the construction and operation activities of Ceyhan PDH-PP and Jetty Project as well as scope in/out decisions are summarized in Table 20-4. Individual discussions regarding the cumulative impacts for the VECs are discussed below in Section 18.6. The Cumulative Impact Analysis has been undertaken based on the limited information on the abovementioned developments (programs, project components/units, project activities etc.). It is noteworthy to mention that the scoping out decisions of the identified developments were solely made, i) based on the area of influence of the Ceyhan PDH-PP and Jetty Project as defined in *Chapter 4: Scope and Methodology*; ii) if there is very limited information on the existing/proposed development where it is unlikely to make a proper assessment; iii) if the existing /proposed development will not result in significant cumulative impacts considering the Project activities.

Table 20-4. Summary of CIA for the existing/ ongoing/planned developments

Development	Interaction with the Project	Scoped in/out Decision
Existing Facilities		
BOTAŞ Ceyhan Marine Oil Terminal	All of these facilities are currently operational. This means, the operation activities of these facilities will be in parallel with both construction and operation activities of Ceyhan PDH-PP and Jetty facility. Therefore, relevant impacts on VECs should be considered accordingly. As these facilities are operational, it should also be taken into consideration that, all the baseline measurements conducted within the scope of this assessment (e.g. air quality, noise, traffic, sea water/sediment/soil quality etc.) reflect the existing impacts on these facilities on relevant VECs.	Scoped in
Toros Agri Industry and Terminal		
Yumurtalık Free Trade Zone		
SANKO Petrochemical Port Facility		
İsken Sugözü Thermal Power Plant		
Ongoing and Planned Developments		
CPIR	Ceyhan PDH-PP Project is planned to be developed in the premises of Ceyhan Petrochemical Industrial Region (CPIR including Port). CPIR is planned to be developed with the primary aim of attracting potential investors within the petrochemical sector. Ceyhan PDH-PP Project will be one of the first investments to be realized within the CPIR. As the CPIR region is currently at its planning stage where discussions with the potential investors are ongoing, the impacts to result from the activities of CPIR (both during construction and operation) are not certain.	Scoped in
CPIR Port	Both construction and operation phases of CPIR Port and Ceyhan PDH-PP Project will continue simultaneously. In fact, jetties within the scope of CPIR Port include the jetty subjected to the Ceyhan PDH-PP Project for unloading the raw materials, liquid and solid bulk storage areas as well as container port area. Moreover, as reported by the Project Company, although no dredging activity will be conducted for the Jetty construction (i.e. dredging activities are not part of the Ceyhan PDH-PP Project), the impact area of the dredging activities to be conducted as part of CPIR Port covers the Terminal Facility Project site.	Scoped in
BOTAŞ Rehabilitation of Tugboat Port (including dredging) Project	As it is stated in the PID of the proposed development, the development is planned to be finalized in one year (including EIA process, obtaining approvals, construction phases); construction phase of the project commenced in March 2022 and is planned to be completed in six months. Therefore, the construction activities are expected to be concluded prior to commencement of construction of the Project. As such, it is not anticipated that there will be significant cumulative impacts during construction phase of the projects. Considering the operational activities of the proposed development will be limited, significant cumulative impacts are not anticipated for the operation phase of the proposed development.	Scoped out
Capacity Increase and Rehabilitation of Toros Agri Industry and Terminal Project	It is known from publicly available sources that Toros Agri Industry will invest in capacity increase; on the other hand, these sources do not provide detailed information on the timing and potential environmental and social impacts of the project. Therefore, the Project is scoped out of the CIA.	Scoped out

Development	Interaction with the Project	Scoped in/out Decision
A coal washing plant development proposed within the premises of Süper Enerji Coal Storage Facility	Since the coal washing unit and sedimentation tank will be established within 10 days and there will be no capacity increase anticipated with the additional unit on the operations of the existing facility; it is not anticipated that there will be significant cumulative impacts during construction and operation phase of the projects.	Scoped out
Waste reception facility to be established in Yumurtalık District by Gizem Denizcilik Akaryakıt Pazarlama Nakliyat Ticaret Ltd. Şti. (Gizem Denizcilik)	The publicly available sources do not provide detailed information on the timing and potential environmental and social impacts of the project. On the other hand, as reported by the Project Company, the waste reception facility was became operational by the end of 2020 and planned to be used for the purposes of the Ceyhan PDH-PP and Jetty Project. On the other hand, there is no information about construction and operation schedule of waste reception facility. The project is included in the CIA.	Scoped in
Rehabilitation project by Akdeniz Gemi İnşa San. Tic. A.Ş.	According to the EIA Application File, the construction activities are expected to start in the beginning of 2023 and continue for 1 year. Although, the construction phases of two projects will coincide, the available sources do not provide detailed information on the timing and potential environmental and social impacts of the project. Therefore, the Project is scoped out of the CIA.	Scoped out
Development of shipyard by TERSAN Tersanecilik Taşımacılık San. ve Tic. A.Ş.	The exact timing of the investment is not clear at this stage. As stated in the EIA report, the shipyard is anticipated to become fully operational after ten years of commencement of construction. The publicly available sources do not provide detailed information on the timing of the project. Therefore, the Project is scoped out of the CIA.	Scoped out
Platform and Pipeline Construction Project by Alkaport Ceyhan Liman İşletmeleri A.Ş.	The site preparation works was assumed to commence in November 2021 and will take one month. The construction phase of the project was planned to be completed in one year until November 2021. There will also be commissioning phase, which will take seven months, before the operation phase. On the other hand, project has not started yet and there is no information about the project timing. The platform and pipeline will serve for the facilities that are operational in Yumurtalık Free Trade Zone The construction schedules of the development and the Ceyhan PDH-PP and Jetty Project will be in parallel; on the other hand the operation of the platform and pipeline are not expected to result in major deviation from the existing operations of Yumurtalık Free Trade Zone in terms of environmental and social impacts (i.e. The facilities to use Alkaport are currently utilizing other existing ports in the vicinity to supply their raw materials and chemicals). Therefore, the development has been scoped in for CIA limited to its construction impacts.	Scoped in
Ceyhan Organised Industrial Zone (OIZ) and Erzin OIZ	The construction and infrastructural developments related to Ceyhan OIZ have not been commenced yet; on the other hand, as reported by traffic consultants of the Project Company, who consulted with the officials of Erzin OIZ to get an understanding of traffic generation to occur due to the OIZ operations, the site preparation activities for Erzin OIZ has been initiated. Although, detailed information on the construction and operation activities and related environmental and social impacts of both OIZs are	Scoped in

Development	Interaction with the Project	Scoped in/out Decision
	not available at this stage, CIA limited to traffic impact is included in this assessment.	
Thermal power plants	Currently, publicly available sources do not provide detailed information on the timing and environmental and social impacts related with development of thermal power plants in the region. Therefore, the Project is scoped out of the CIA.	Scoped out
Cukurova Region and Iskenderun Bay Railway Connection Project	There is a planned railway crossing which passes through CPIR from east to the north end at a distance of approximately 2 km which will provide connection to Industrial Facilities in Ceyhan region. The construction activities of the railway were expected to start within 2021 and last for 24 months. On the other hand, there is no information about the project timing.	Scoped in

20.6 Cumulative Impact Analysis of the Developments

Cumulative impacts are defined as the impacts that occur together with other impacts resulting from concurrent or planned future third-party activities to affect the same receptors (specific VECs) as the proposed Project. Cumulative impacts and associated risks related to business activities are one of the biggest challenges the project developers/lenders and competent authorities face. Potentially, all the above-mentioned developments will result in cumulative environmental and social impacts. However, as stated above, certain factors such as having limited information regarding the schedule or impacts of the projects, if the project activities will not be in parallel with the Ceyhan PDH-PP activities or the area of influence for the two projects do not coincide; then the projects are not assessed within the scope of this CIA.

At this stage of the assessment, the spatial boundary of the cumulative impact assessment includes primarily the existing and planned/ongoing facilities located in close surrounding of the Project site as stated in Table 20-4 above, including an oil terminal, agri-industry, a free trade zone, CPIR Port and a waste reception facility.

According to the *Good Practice Handbook: Cumulative Impact Assessment and Management - Guidance for the Private Sector in Emerging Markets*, the VECs are defined as the environmental attributes considered to be important in assessing risks. Based on the information obtained from literature, Project background information and 1/1,000 scaled implementation zoning plan, and after assessing the residual impacts resulting from activities of Ceyhan PDH-PP Project; the following Environmental and Social Aspects which affect the VECs were highlighted and were considered of importance to be evaluated during future cumulative impact assessment purposes:

- Air quality (see Chapter 9);
- Environmental noise (see Chapter 10);
- Biodiversity (see Chapter 12);

- Socio-economics (see Chapter 14);
- Terrestrial and marine traffic (see Chapter 11);
- Community health and safety (see Chapter 15).

Cumulative impacts may be expected due to:

- Incremental contribution of gaseous emissions to the air shed. Historically, NO_x, SO_x, CO, CO₂, CH₄, Cl₂, HCl and dust emissions have been identified as important gaseous emissions as a result of industrial facilities such as petrochemical facilities, thermal power plants and oil terminals;
- Increase on environmental noise levels due to the developments in the region;
- Traffic congestion and accidents due to increases in vehicular traffic on community roadways;
- Impacts of noise and air quality (e.g., dust) on sensitive receptors along traffic routes;
- Increase in marine traffic and impacts on safe navigation;
- Impacts on biodiversity;
- Impacts on fishing community due to loss of coastal fishing areas;
- Impacts on community health and safety due to potential accidents and incidents and associated risks.

Regarding the ongoing and proposed operations of the abovementioned facilities in the close vicinity of the Project, only an indicative cumulative impact assessment could be undertaken due to the lack of information (i.e. information on and findings of the ongoing environmental and social studies). Therefore, CIA is limited with the background information obtained within the scope of the ESIA and EIA study (surface water, sea and sediment quality, background information on air quality and environmental noise etc.). Table 20-5 summarises the cumulative impact assessments of the VECs. However, as The Project Company will monitor air quality, environmental noise emissions within the scope of the construction and operation phases of the Project, it is anticipated that the potential contribution of construction and operation activities of the nearby facilities on air quality and environmental noise will be taken into account and evaluated accordingly.

Table 20-5. Cumulative Impact Assessment of the VECs

Environmental/Social Aspect	Specific VECs	Project Under Assessment	Existing / Operational Projects					Foreseeable Projects (under construction, under planning, Generation License Exists)					Cumulative Impact Predicted	Cumulative Impact Significance#
			BOTAŞ Ceyhan Marine Oil Terminal	Toros Agri Industry and Terminal	Yumurtalık Free Trade Zone	SANKO Petrochemical Port Facility	İsken Sugözü Thermal Power Plant	CPIR and CPIR Port	Waste reception facility to be established in Yumurtalık District by Gizem Denizcilik Akaryakıt Pazarlama Nakliyat Ticaret Ltd. Şti. (Gizem Denizcilik)	Platform and Pipeline Construction Project by Alkaport Ceyhan Liman İşletmeleri A.Ş.	Ceyhan Organised Industrial Zone (OIZ) and Erzin OIZ	Planned railway crossing		
Impacts on Air Quality	Kurtpınarı Vilage İncirli Quarter	□*						□			□		Yes	High
Impact on Noise	Kurtpınarı Vilage İncirli Quarter	□*						□				□	Yes	Medium
Biodiversity	Key Biodiversity Area		□			□	□			□			Yes	Low
	Priority Habitats	□	□			□	□			□			Yes	Medium to High
	Evergreen orchards and groves (EUNIS:G2.9) Arable Land with unmixed crops grown by low-intensity agricultural methods (EUNIS:I1.3)).	□	□			□	□			□			Yes	Low
	Important Flora Species	□	□			□	□			□			Yes	Medium to High
	Important Fauna Species	□	□	□	□	□	□	□	□	□	□	□	Yes	Medium to High
	Migratory and Breeding Bird Species												No	Negligible
Land Use	Kurtpınarı, Karatepe, Kurtkulağı, Sarımazi, Gölovası, İncirli Neighbourhoods	□											No	Negligible
Socio-economic Conditions and Community Health and Safety	Socio-economic Activities	□	□	□	□	□	□	□	□	□	□	□	Yes	Low to Medium
	Socio-economic Conditions in the Region	□	□	□	□	□	□	□	□	□	□	□	Yes	Low to Medium
	İncirli	□	□	□	□			□				□	No	Low to Medium
	Karatepe	□	□									□	No	Negligible
	Kurtpınarı	□										□	No	Negligible
	Kurtkulağı											□	No	Negligible
	Gölovası	□										□	No	Negligible
Sarımazi											□	No	Negligible	

According to IFC Good Practice Handbook on Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets (2013), The significance of a cumulative impact is evaluated in terms of the potential resulting impact to the vulnerability and/or risk to the sustainability of the VECs assessed.

* Impacts caused by the Project also includes the impacts of existing/operational facilities given in the table.

20.6.1 Air Quality

The emissions to result from the construction and operation phases of the Project, and their impacts on the nearby sensitive receptors are summarized in *Chapter 9: Air Quality* of this ESIA Report. Accordingly, significant pollutant of the construction phase will be dust generated from excavation, load on trucks and transportation and the release of engine emissions from construction equipment and vehicles at the construction site. Similarly, for the operation phase, main emission sources will be stacks and storage tanks; dust, SO₂ and NO₂ emissions will occur from the stacks and VOC emissions will occur from the storage tanks.

Impacts from air emissions during the construction phase can be effectively mitigated through good management practices and implementation of mitigation measures. The impact of construction is assumed to be reduced to negligible to low significance for long-term periods (i.e., yearly) and low to moderate significance at worst for short-term periods (i.e., hourly, daily) with the implementation of the mitigation measures.

Based on the results of the dispersion modelling studies, the residual impacts from emissions generated by the operation of the proposed Project are predicted to vary between **low to medium** considering long-term (i.e., annual) periods provided that necessary mitigation measures (i.e., establishment of emission reduction system with the minimum required efficiency) are undertaken.

As previously mentioned, for the facilities which are already operational (i.e. BOTAŞ Ceyhan Marine Oil Terminal, Toros Agri Industry and Terminal, Yumurtalık Free Trade Zone, SANKO Petrochemical Port Facility and İsken Sugözü Thermal Power Plant), the air quality baseline assessment and modelling results which reflect total pollution values (TPV), take into account the existing emissions resulting from these facilities. As such, the air quality modelling conducted within the scope of this ESIA presents a cumulative assessment of the impacts to result from construction and operation activities of the Project and the operation activities of the existing facilities.

On the other hand, when the schedules are considered, it is understood that both construction and operation phases of CPIR Port and Ceyhan PDH-PP and Jetty Project will continue simultaneously; therefore, it is crucial to assess the impacts in a cumulative perspective. As such, within the scope of the air quality modelling study, two (2) different scenarios have been studied for the dust emissions during the construction phase; (i) dust emission resulting from earthwork activities of the PHD-PP facility and (ii) dust emissions resulting from earthwork activities of the PHD-PP facility together with offshore filling activities within the scope of CPIR Port. Similarly for the operation phase two (2) different scenarios have been studied for VOC emission to be caused by the storage tanks; (i) VOC emission distribution caused by tanks in the Ceyhan PDH-PP facility, and (ii) VOC emission distribution caused by tanks in the Ceyhan PDH-PP facility together with the tanks belonging to CPIR Port facility. The results of the first scenarios are discussed in *Chapter 9: Air Quality*.

Dust emissions due to offshore filling activities result from transportation and unloading activities and calculated as 50 kg/h. The resulting construction phase dust generation for Scenario 2 is summarized below in Table 20-6. Accordingly, PM₁₀ daily APCV's are exceeding the limit values 365 times in one year. Yearly PM₁₀ maximum APCV's are above the national, EU and IFC limit values for all phases. Therefore, the daily and yearly APCV of PM₁₀ during construction phase do not comply with the national and international limit values.

Table 20-6. Construction phase maximum APCV determined from the modelling studies for controlled conditions for Scenario 2

Stage	Parameter	Period	Maximum APCV and Coordinates ($\mu\text{g}/\text{m}^3$ for PM ₁₀) ($\text{mg}/\text{m}^2\cdot\text{day}$ for PM Deposition) – Scenario 2	National Limit Value (2020) ($\mu\text{g}/\text{m}^3$)	EU Limit Values ($\mu\text{g}/\text{m}^3$)	IFC Limit Values ($\mu\text{g}/\text{m}^3$)
Construction	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	Daily	7,357 (762863,4087350)	50	50	50
		Exceedance	365	35 times in a year		
		Yearly	3,489 (763147,4087418)	40	40	20

For the operation phase, the amount of pollutants arising from the emissions from Ethane and Naphtha tanks belonging to CPIR Port facility (as shown in Table 20-7) was found with the EPA Tanks program and is shown in Table 20-8.

Table 20-7. Physical Properties of Industrial Tanks that can Contribute to VOC Emissions in CPIR Port facility

Tank No-Name	Number of Tank	Tank Type	Volume(m^3)	Diameter (mm)	Height or Weight (mm)	Max. Liquid Height (mm)
LNG	2	Vertical Fixed Roof Tank	40,000	58,300	15,000	14,500
LPG	20	Vertical Fixed Roof Tank	2,500	21,200	10,600	10,300
Ethane	2	Vertical Fixed Roof Tank	120,000	66,100	35,000	34,500
Ethylene	1	Vertical Fixed Roof Tank	20,000	45,100	12,500	12,000
Naphtha	15	Vertical Fixed Roof Tank	15,200	44,700	12,500	12,000

Emissions that may contribute to VOC emissions are not expected due to the interior of tanks where LNG is stored. It is concluded that both CO and VOC emission values (for both scenarios) are in compliance with national and international emission standards.

In addition, Ethylene was evaluated as a cryogenic liquid. Cryogenic liquid is defined as a liquid with a normal boiling point below -130°F (-90°C). These fluids are stored at high pressures up to 350 psi. In the EPA AP42 Chapter 7 - Liquid Storage Tanks document at 7.1.1.2.6 Pressure Tanks section, high pressure tanks are stated as tanks operating at pressures higher than 15 psig. With reference to this statement, ethylene storage has been evaluated

accordingly. Ethylene tank is not included in the emission calculations within the framework of the statement that emission is not expected from high pressure tanks in the mentioned section.

Table 20-8. VOC Emission Values to be Resulting from Tanks of CPIR Port Facility that may Contribute to VOC Emission

Tank Name	Number of Tank	EPA TANKS Model Result (lbs/year)	EPA TANKS Model Result (kg/hour)
Ethane	2	705.68*2	0.073
Naphtha	15	225.89*15	0.175
Total		3,389.76	0.248

Air quality emission are calculated for the construction phase of the Platform and Pipeline Construction Project by Alkaport. Due to the fact that dust emissions for controlled and uncontrolled conditions remained below 1 kg/hour, air quality modelling was not performed for dust emissions. Moreover, gaseous emissions were also assessed, and it was found that no adverse impact is expected on the ambient air quality during the construction phase of the proposed project.

For the waste reception facility to be established in Yumurtalık District by Gizem Denizcilik as well as the Ceyhan and Erzin OIZs, the air emissions are not defined in publicly available sources at this stage; therefore, the cumulative impacts in terms of air quality cannot be evaluated due to limited information / data.

For the railway project, it is stated in the ESIA report that the potential impacts on ambient air quality during the construction phase of the Project will be due to the dust emissions that would result from the excavation and cut and fill works, material storage, unloading and transportation processes to be carried out through the construction works of the Project. During the construction phase of the Project, the significance of the impact resulting from the decrease in air quality is minor and after the proposed mitigation measures, the residual impact significance is negligible at nearby receptors. Since the railways will be electrified in terms of the traction system during the operational phase of the Project, the potential impacts on air quality are considered negligible.

Although the Projects are scoped out of the CIA, below are some remarks for the air quality impacts for nearby developments collected from publicly available documentation such as EIA reports and project introduction files:

- As reported in the PID for BOTAŞ Rehabilitation of Tugboat Port (including dredging) Project air emissions to be generated during the course of the Project will only be exhaust emissions;
- As reported in the PID for Capacity Increase and Rehabilitation of Toros Agri Industry and Terminal Project, air emissions to be generated during the course of the project will only be exhaust emissions;

- Air quality modelling was conducted for the dust emissions/settled dust considering the construction phase of the Development of shipyard by TERSAN. As reported in the EIA report, the modelling results indicated that short-term limit values will be met for the particulate matter (PM) and settled dust emissions.

As the mitigation measures, presented in the relevant chapters of the ESIA report (*Chapter 9: Air Quality* and *Air Quality Control and Monitoring Plan* to be prepared) are undertaken and through the implementation of good management practices, the resulting cumulative impacts are considered to be **low to medium** significance.

20.6.2 Environmental Noise

Main noise sources during construction activities may include use of construction machinery and equipment during earthworks and structural works, and construction traffic related to the transportation of excavated soils and construction materials. Similarly, main noise sources during operation phase include the operation of the machine and equipment in the petrochemical facility (e.g., PDH and PP plant, flares, cooler, gas scrubber, heater etc.), pile driving activities and the increase in road traffic from the operation of the facility. Increased noise levels both during construction and operation phases may have the potential to result in negative impacts to the background noise levels including health risks at nearest sensitive receptors. Moreover, vibration might be caused by piling, traffic movements and use of construction machinery at the Project site. Increase in vibration may result in disturbance to the occupiers of dwellings and other noise sensitive buildings that are close to the Project site boundaries.

As previously mentioned, for the facilities which are already operational (i.e. BOTAŞ Ceyhan Marine Oil Terminal, Toros Agri Industry and Terminal, Yumurtalık Free Trade Zone, SANKO Petrochemical Port Facility and İsken Sugözü Thermal Power Plant), the environmental noise baseline assessment and modelling results take into account the existing noise levels which the existing facilities contribute to. As such, the noise modelling conducted within the scope of this ESIA presents a cumulative assessment of the impacts to result from construction and operation activities of the Project and the operation activities of the existing facilities.

As the construction and operation phases of CPIR Port and Ceyhan PDH-PP Project will continue simultaneously, it is important to assess the impacts in a cumulative perspective. As indicated in the EIA Report of CPIR Port Project, the noise generated by the construction activities during daytime will be below the national limit values for the nearby receptors (i.e., Incirli neighbourhood). On the other hand, it is expected that the residual noise impacts from the Ceyhan PDH-PP construction activities would be minimized to minor to moderate significance at locations where major impacts are expected with the proposed mitigation measures defined in *Chapter 10: Noise*. The Project Company will follow the noise impacts with the implementation of a Noise Control and Monitoring Plan during construction phase; with that need for additional mitigation measures will be determined. The operation phase

noise modelling study conducted for CPIR Port also reveals that the generated noise levels are below the national standards at the nearest sensitive receptors. Furthermore, no residual impact is expected on nearest receptors by the operation of the Ceyhan PDH-PP facility after implementation of the mitigation measures (i.e., 30 dBA flare silencer and operational precautions for Jetty near receiver 3).

Considering the environmental noise, an acoustic report was prepared including terrestrial and marine parts of the Platform and Pipeline Construction Project by Alkaport, the noise level in the terrestrial and marine section at 50 m distance is below the limits.

For the waste reception facility to be established in Yumurtalık District by Gizem Denizcilik as well as the Ceyhan and Erzin OIZs, the noise generation is not defined in publicly available sources at this stage; therefore, the cumulative impacts in terms of environmental noise cannot be evaluated due to limited information / data.

Within the scope of ESIA study conducted for the railway a noise assessment was undertaken. Accordingly, during the construction phase of the Project, the significance of the impact resulting from the increase in noise levels is assessed to be minor and after the proposed mitigation measures, the residual impact significance will be negligible. On the other hand, during the operation phase, the significance of the impact resulting from the increase in noise levels is assessed to be major and after the proposed mitigation measures, the residual impact significance is expected to be medium.

Considering the projects, the cumulative noise impact is expected to be **high** in the short term if no mitigation measure is implemented.

Although the projects are scoped out of the CIA, below are some remarks for the noise impacts for nearby developments collected from publicly available documentation such as EIA reports and project introduction files:

- It was noted for BOTAŞ Rehabilitation of Tugboat Port (including dredging) Project that total noise level will be 116 dBA in the construction site; however, it is assumed that noise generation during the construction activities will be below the limit values at a distance of 200 m from the noise sources;
- Noise level of the machineries and vehicles planned to be used during the construction phase are taken into consideration in the PID of the Capacity Increase and Rehabilitation of Toros Agri Industry and Terminal Project. According to the worst-case scenario (all the machineries/vehicles working at the same time), it was found that noise levels do not exceed the limit value (70 dBA) at a distance of 250 m from the facility premises.
- According to the EIA Application File for Rehabilitation project by Akdeniz Gemi Project, potential noise sources and noise levels were assessed considering the construction and operation phase of the project. It was reported that the noise levels

are found below the daytime limit values at 3,600 m distance during the construction phase of the project.

- Potential noise sources and noise levels were assessed for the construction and operation phase of the Development of shipyard by TERSAN. It was reported that the cumulative noise levels are below the daytime limit values as set by the relevant regulation during the construction phase of the Project. Similarly, the operational noise was modelled by considering the worst-case scenario (i.e. the scenario where all the equipment are working at the same time) and the noise levels were found to be below the national limits.

20.6.3 Traffic

Baseline information on the existing facilities and planned developments was obtained through consultations that were held with representatives of the surrounding industrial facilities within the scope of the traffic impact assessment study. Reportedly:

- There are currently 1,200 employees working in Yumurtalık Free Trade Zone, and 75-85% of the employees are from Ceyhan District. Approximately 500-600 heavy vehicles travel to Yumurtalık Free Trade Zone on a daily basis while daily 550 cars enter the zone;
- Approximately 450-500 employees are currently working in Toros Agri Industry and Terminal. The existing public housings and social facilities of Toros Agri Industry and Terminal do not have the capacity to host all the employees. Reportedly, 80% of the employees come from Ceyhan District and approximately 50 cars travel to Toros Agri Industry and Terminal daily. The facility provides shuttle services for the employees (4 buses, 4 midi-buses and 4 mini-buses).

It is assumed that approximately 35,000 workers will be employed provided that the existing facilities continue their operation and planned developments in the region will become operational. Once the planned railway is completed and capacity of the existing public transportation network (i.e. buses) is increased, it is assumed that 35-40% of the employees will be using public transportation. The rest of the transportation is expected to be provided through shuttle services (45%) and private cars (10-15%). In summary, it is anticipated that daily 2,900 heavy vehicles, 900 shuttle services and 2,820 private cars (including visitors, guests, local residential use and seasonal use for the beaches) will contribute to the existing traffic load. These calculated numbers are based on considering completed new establishments and assuming the 25% capacity increase. Apart from the assessment of the existing and planned facilities considering their current capacities/personnel and traffic volume that will be created during their operations, the existing and planned road developments were identified and included in the assessment.

The existing road network which has already 2 x 2 width and is paved, has sufficient capacity to carry the current traffic volume. Although the carrying capacity of one lane during dense

traffic condition decrease to 600 vehicle, 800 to 900 vehicle/lane of capacity can be carried out when the average speed is increased. Therefore, it is reported in the Traffic Study that there will be no issues with the road network capacity issues due to the increased traffic.

The planned roads (as described in *Chapter 11: Traffic Impact*) are designed as 40 m x 25 m which can be established to have 2 x 3 lanes. It is assumed that the capacity of one direction will be designed to carry 2,000 vehicles. Therefore, it is concluded that the planned roads will provide qualified and safe access to the region. Moreover, it is assumed in the simulation study that almost half of the total number of employees use public transportation (buses and train). For this reason, if the planned road development/investment is subject to delay, the service performances will be decreased accordingly.

Reportedly, in case the construction phases of the Project and planned OIZs will be undertaken simultaneously, the capacity of the existing transportation network is found sufficient. However, it is reported that Project Company should undertake necessary mitigation measures in terms of community health and safety considering the proximity of İncirli.

It is concluded in the Traffic Study conducted for the Project that the capacity of the transportation network is sufficient to carry traffic load caused by the construction activities of the Project during peak hours. It is reported by the Project Company that the construction activities of the Project and CPIR Port will be parallel. As a result of the assessment made by traffic consultants, the road network around the Project site, which has adequate capacity to carry current traffic load, will also be sufficient for future traffic load to be generated by the Project. With that, it is important to take necessary measures in coordination with public authorities in order to maintain safety of residents of the nearby communities, especially İncirli neighbourhood.

Total number of workforce to be employed during operation phase of the Project is 321. This number includes personnel to be employed by The Project Company and their subcontractors. The total of 321 personnel will be travelling to the Project site by private cars and personnel shuttles; reportedly, 66% of the personnel are expected to use shuttle buses where the remaining personnel will be using their private vehicles. The traffic increase in the vicinity of the Project site will be in the range of 24 to 138 % for future forecast and 95 to 138 % when the current conditions are considered. The access road is planned to be a 15 m wide road with 2 lanes as indicated in the zoning plan. According to the assessment report of the traffic consultants, one lane can sufficiently carry a traffic load of 600 vehicles per hour. In that sense, the capacity of the road is found adequate both for current and future conditions, hence the cumulative impact is assessed as **low**.

A vessel manoeuvring risk modelling study was performed for “CPIR Port” Project by Maritime Faculty, Dokuz Eylül University (“Adana Ceyhan Port Modelling Report” 10 August 2020). The Jetty, subject to assessment in this ESIA study (as an associated facility), is a part of CPIR Port; therefore, the assessment and the results of the vessel manoeuvring risk modelling study

have been evaluated in *Chapter 11: Traffic Impact*. The study was performed in order to identify the manoeuvring risks. In the modelling study, vessel manoeuvring trials were performed by means of "Bridge Simulator system". A total of 21 different manoeuvring trials were applied for CPIR Port Project (including jetties).

The following risks were identified regarding approaching manoeuvres of vessels i) disruption of manoeuvres in case of a simultaneous manoeuvring of vessels coincide with the vessels approaching to BOTAŞ Facility; ii) disturbance to manoeuvres that may occur due to damages on the ropes of tug boats caused by strong waves; iii) risks associated with insufficient pulling power of tug boats for the vessels (if LOA>300 m). Additionally, risks were also identified for departing manoeuvres of vessels which are i) risks associated with insufficient pulling power of tug boats for the vessels (if LOA>300 m) and ii) risks that may occur during departing the tanker terminals without support in case of an unexpected meteorological condition.

It is concluded in the modelling study that the approaching points/berths do not possess unacceptable risks for the designed vessels. Additionally, the existing neighbouring facilities as well as planned developments in the close surrounding of the CPIR Port Project were also included in the assessment. The interaction of the CPIR Port Project and planned development to be proposed by Toros Agri Industry were studied and it was found that the distance between the two facilities is sufficient for vessels' manoeuvring. Additionally, it was also found that the safety distances between jetties # 2 and 3, and the design in terms of manoeuvring was suitably arranged considering the neighbouring BOTAŞ-BIL Facilities.

In terms of safe navigation of vessels and marine safety of life and property, the mitigation measures proposed in the Adana Ceyhan Port Modelling Report prepared by Maritime Faculty, Dokuz Eylül University should be undertaken by the CPIR Management Company during construction and operation phase. It is noteworthy to mention that, the design of the marine section of the CPIR Port (including jetties) shall be made in accordance with the findings driven from the simulation study and recommendations that have been already stated in the Adana Ceyhan Port Modelling Report. Cumulative impacts on fishermen are considered in Section 18.6.7 below.

20.6.4 Water Use and Surface Water/Sea Water Quality

Adana is relatively rich in terms of surface water potential. A number of surface water sources are present in the region. The water sources are more populated to the east, west and south of the province as compared to the northern part. There are six important river/creeks in Adana namely Seyhan River, Ceyhan River, Çakıt Stream, Eğlence Creek, Körkün Stream and Üçürge Creek. There are several creeks around the Project site; however, none of these creeks are flowing within or in the close vicinity of the Project site.

The establishment of industrial facilities in the region has potential to interrupt run-off channels and result in cumulative negative impacts due to the intensive water use. The existing water sources are under increased pressure not only for water abstraction but also potential

contamination of these sources, if not mitigated properly (through spillages, improper management of waste/wastewater, site run-off, drainage etc.). As it was stated by the representatives of General Directorate of DSI during the social survey conducted on 10-12th February 2020, since there are existing and planned industrial developments in the region, it is important to assess the capacities of water sources. Therefore, DSI is undertaking a study to assess the capacities of current surface and groundwater sources to provide secure and reliable water both for communal and industrial use. Burnaz groundwater sources is an important water source for the region. It was reported that there are a number of wells abstracting groundwater from Burnaz sources (i.e. located in the east of the Project site); however, considering the amount of water to be consumed during the operation phase of the Project and for the purposes of future industrial developments in the region, it will not be possible to meet the demand through Burnaz groundwater sources.

Raw water will be supplied from outside the Project site; therefore, the Project Company is currently consulting with relevant authorities (i.e. DSI and Adana Water and Sewerage Administration (Adana ASKI)) and Ceyhan Petrokimya Endüstri Bölgesi Yönetim A.Ş. (Ceyhan Petrokimya A.Ş. or Management Company), who is responsible for providing all required infrastructure for the projects to be developed within the scope and boundaries of CPIR. In that respect, the Management Company has issued an official letter dated 12.08.2020 stating that the required 106 MW electricity, 14,400 m³/day raw water and 11,085 Nm³/hour natural gas will be supplied by the Management Company.

Groundwater will not be extracted for the purposes of the Project during construction and operation phases; on the other hand, as reported by the Project Company, currently the potential of using groundwater from existing groundwater wells around the Project site during construction phase of the Project is being consulted with the Management Company, DSI and Adana ASKİ.

As it was also stated by the representatives of Adana Provincial Directorate of Environment, Urbanization and Climate Change (Adana PDoEUCC) during the social survey conducted on 10-12th February 2020, industrial facilities are required to treat or discharge (to the collectors) their industrial and domestic wastewater. In case discharge to sea water environment is considered, the temperature is one of the most important parameters to be monitored. Previously fish kill events were observed in Ceyhan and Seyhan Rivers but until now no significant fish kills were observed in Yumurtalık Bay. On the other hand, from time to time, foaming incidents happen in the bay. An Action Plan for Sea Garbage has been prepared by Adana PDoEUCC for the time period between 2020 and 2024. As stated in the Action Plan for Sea Garbage, sea is polluted through the disposal of the wastes (i.e. generated by agricultural activities, domestic use, greenhouses, recreational areas, public beaches, marine activities, fisheries, terminals, ports) which have been carried through Seyhan and Ceyhan rivers, drainage channels. Reportedly, the industrial facilities in the region, which have already ports/jetties and have also potential to generate sea garbage and microplastics; and mitigation measures to be undertaken by those industrial facilities are presented.

Assuming that mitigation measures mentioned in relevant chapters (i.e., *Chapter 6: Geology, Soils and Contaminated Land*, *Chapter 7: Hydrology and Hydrogeology* and *Chapter 8: Material Resources and Waste Management*) are implemented and good site practices are adopted, the residual impacts on the surface water and groundwater is estimated to be negligible.

Project developers operating in the region and relative authorities shall collaborate together with key stakeholders to discuss and assess cumulative impacts on the surface/sea water and mitigate the impacts through applying good industry practices and engineering.

20.6.5 Waste

As the abovementioned existing and planned projects will manage wastes generated during construction phase in line with the provisions of dedicated waste management plans and legislative requirements; also considering that waste disposal facilities and licensed waste handling companies have sufficient capacity in Adana province, significant impacts are not expected to occur related with waste generation during construction phases.

The most important cumulative impacts associated with the waste generation during construction phases of the abovementioned projects is expected to be related with cumulative production of dredging and excavation materials.

The waste generation and management review indicate that the Turkish regulatory framework is in place for assigning specific waste codes to each of the waste stream to be generated in the construction and operation phases. All hazardous waste will be separately collected, labeled and stored in dedicated areas on-site then will be sent with licensed transporters to the licensed recycling and/or disposal facilities. Furthermore, the waste disposal infrastructure for domestic, hazardous, non-hazardous and medical waste are available and operational in Adana province. The impacts of the generated wastes can be considered negligible if the Project complies with the applicable regulations during construction and operation including disposal of the waste stream in licensed facilities.

It is important to take into consideration that the wastes to be generated from the vessels need to be managed in an appropriate way and disposed of at a waste reception facility. In that respect, the Project Company plans to utilize the waste reception facility to be developed by Gizem denizcilik in Gölovası, Yumurtalık. As reported by the representatives of Adana Metropolitan Municipality, the waste reception facility, which is under construction, will be established in Gölovası, Yumurtalık by Gizem Denizcilik Akaryakıt Pazarlama Nakliyat Ticaret Ltd. Şti. (Gizem Denizcilik). The facility is located approximately 6 km to the west of the Project site. A Project Introduction File for the proposed waste reception facility has been prepared and published in April 2019. As it is stated in the Project Introduction File, there are six ports/marine terminals having waste reception facilities within the administration zone of BOTAŞ and Karataş Port Authorities (namely İskenderun Enerji, Sanko Petrokimya, BOTAŞ Ceyhan Terminal, BOTAŞ Gölovası Port, TOROS Agri Industry and Terminal, Akdeniz Gemi

İnşa San ve Tic A.Ş.). Waste reception facility will be receiving the following wastes within the scope of the Marpol 73/78; bilge water, sludge, waste oil (within scope of Annex I), sewage (within scope of Annex IV), and garbage (within scope of Annex V). The design capacities of the units are as follows; bilge water (82.4 m³/day); sludge (100 m³/day); waste oil (41.6 m³/day); slop (1,800 m³/day); sewage (51.5 m³/day); solid waste (6.18 m³/day). The Facility has been designed based on 29 years mechanical lifetime. It is stated in the Project Introduction File of the proposed waste reception facility that the Facility might be upgraded and rehabilitated considering the recent technological developments; thus, lifetime of the Facility might be extended, if deemed necessary.

Total of 9,5 ton/day water will be required during the operation of the waste reception facility and it was reported that the water demand will be sourced from existing water network. Industrial wastewater generation will be 1 ton/day and it was reported that the wastewater to be generated from the facility will be sent to the closest wastewater treatment plant under responsibility of municipality. Solid wastes to be generated during construction and operation phase of the project are classified as domestic, recyclable (packaging waste etc.) and hazardous wastes. Hazardous wastes to be generated during operation phase of the facility will be waste oils, vegetable waste oils, waste fluorescent, waste toner, contaminated wastes, waste accumulators and batteries, medical wastes, sludges.

It is important that the Project Company makes necessary agreements with Gizem Denizcilik for the operation phase of the Project.

Domestic, packaging waste, hazardous and non-hazardous wastes will be generated during construction and operation phase of the Platform and Pipeline Construction Project by Alkaport. Reportedly, wastes will be collected, separated and disposed in line with the provisions of the national regulations. Domestic wastewater to be generated during the operation phase of the Project will be treated in the wastewater treatment plant established for TAYSEB. It is assumed that wastewater, which will be generated during the pipeline cleaning works, will be stored and reused in the facility for dilution purposes. However, it is expected that small amount of wastewater may be generated during the operation phase of the project; and this amount will be sent either to TAYSEB wastewater treatment plant (if the discharge limits are met) or sent to ultimate disposal with the licensed facilities (if the discharge limits are not met).

During the construction phase of the railway project, there will be no water use other than the drinking and utility water use of 140-180 Project personnel and water to be used for minimizing uncontrolled dust emissions. Since there is no wastewater (sewage) system in the field of activity and its immediate surroundings, wastewater generated due to the construction activities will be collected in an impervious septic tank. The septic tank will be emptied by sewage trucks, and the wastewater will be disposed to the municipal wastewater infrastructure. Drinking and utility water will be needed at the stations for the staff and visitors during the operation phase. Any surface water and groundwater resources will not be used during the

operation phase. The domestic wastewater to be generated during the operation phase will be collected in septic tanks to be built at the stations and will be transmitted to the nearest wastewater treatment plant with the sewage trucks of the relevant municipality. In addition to the domestic wastewater to be generated during the operation phase, there will be industrial effluents due to rail car maintenance and refurbishment activities.

Although the Projects are scoped out of the CIA, below are some remarks for the noise impacts for nearby developments collected from publicly available documentation such as EIA reports and project introduction files:

- There is a licensed waste reception facility in the BOTAŞ Facility premises. It is anticipated that there will be wastewater generation during construction and operation phases of the BOTAŞ Rehabilitation of Tugboat Port (including dredging) Project and the generated wastewater will be treated in the wastewater treatment plant which has been already in operation within the BOTAŞ Facility premises.
- Toros Agri Industry and Terminal Facility already has a wastewater treatment plant and a waste reception facility. Domestic wastewater to be generated during Capacity Increase and Rehabilitation of Toros Agri Industry and Terminal Project by the construction workers will be treated in the wastewater treatment plant. Domestic solid waste, packaging waste, hazardous waste (cable, paint, contaminated wastes), waste accumulators and batteries, medical wastes, end of life tires, waste oil, vegetable waste oils might be generated during the construction phase of the project.
- As reported in the PID of the coal washing plant to be developed within the premises of Süper Enerji Coal Storage Facility, the coal washing facility will be operated as closed-circuit system. The effluent wastewater will be sent to thickener and then to sedimentation tank. The effluent resulting from sedimentation tank will be reused in the coal washing facility. Therefore, there will be no wastewater generation during operation of the project. Settled coal particles in the sedimentation tanks has the potential for use in the industries.
- For the Rehabilitation project by Akdeniz Gemi, hazardous and non-hazardous wastes to be generated during the vessel maintenance and repair works and waste reception facilities will be stored in temporary waste storage area and sent to licensed disposal facilities in accordance with national legislative requirements.
- It is anticipated that 3,375,000 m³ filling material will be used for Development of shipyard by TERSAN. It is assumed that there will be 172,5 kg/day and 1,725 kg/day domestic solid waste generated during construction and operation phase of the project, respectively. It is assumed that, 4 tons/year of wastes (wood, plastic, metal etc.) will be generated during the maintenance and repair works to be undertaken for the vessels/ships. Since there will be 142,000 ton/year steel processed in the facility, it is expected that 21,300 tons/year steel sheet wastes will be generated. Additionally, waste electrodes, steel grids, packaging wastes, end of life tires will be generated

during the operation phase of the facility. There will be a waste reception facility to be established within the project site. Domestic wastewater to be generated during the operation phase of the Project will be treated in the wastewater treatment plant established for TAYSEB.

20.6.6 Biodiversity

The development of the Project together with the other developments in the region (both existing and planned/ongoing) have the potential to cumulatively impact the habitat characteristics and species of the region. Establishment of existing and planned/ongoing developments in the region would create for further potential contamination and potential cumulative impacts on habitats and associated ecology of the region.

The Project site is surrounded by industrial facilities, rural residential areas, scattered vacant lands, forest and forestation areas located in the CPIR area. The Project site has mainly natural vegetation; however, some parts of the Project site have been modified and planted after 2007. Some parts of the Project site include agricultural fields and olive groves; some parts are covered by Mediterranean type bushes while some parts are covered by annual small plants. Shoreline is rocky in natural pattern. The closest settlement is İncirli in Kurtpınarı Neighbourhood (approximately 50 m to the west of the Project site). It was observed during the ecological walkover surveys that villagers are using the area for occasional grazing activities. Because of agricultural activities, grazing activities, existing motorway and human activities in the village next to Project site, it can be said that the area is partly under human pressure. It is also noteworthy to mention that, there is not any permanent water body in the Project site. According to the ecological walkover surveys, it was found that none of the flora taxa are either endemic and/or rare species and none of the faunal species are endemic however 7 (seven) faunal species are listed in the threatened categories of IUCN. Depending on the flora and fauna species, which have been studied within the scope of the ecological study, the species were evaluated in terms of potential threats in accordance with IUCN, BERN and CITES criteria. The detailed information on the threat status of the flora and fauna species and mitigation measures that are proposed for the management of the potential risks and impacts are assessed in *Chapter 12: Terrestrial and Marine Ecology*.

It can be also said that with the development of the Project, the current status of the Project site and existing habitat characteristics might be disturbed; therefore, it is quite important to maintain untouched natural areas inside the Project site to provide some space for the faunal individuals to continue their existence in the area. Therefore, undertaking the necessary precautions and mitigation measures will be important to avoid disturbance on the fauna species during construction and operating processes. On the other hand, these impacts are envisaged to be limited within the Project site; thus, will not result in cumulative impacts.

Furthermore, the Project will also impact on marine environment. Construction activities in the marine section, in particular dredging activities to be conducted within the scope of CPIR Port Project, have the potential to result in habitat loss for macro and micro algae, planktonic

organisms, benthic fauna and fish species. Once the construction activities are finalized, the habitat will restore within a short period of time. In general, marine habitat at the Project site does not differentiate from other surrounding habitats in terms of presence of algae, planktonic organisms (phytoplanktonic and zooplanktonic organisms), benthic fauna and fish species; in other words, the habitat does not have unique characteristics.

A number of nests were identified in Incirli beach; which necessitates application of a number of mitigation measures during development of the Project. Both Incirli beach and Holland beach (i.e. one of the nesting beaches for marine turtles as defined in Communiqué on Protection of Marine Turtles (2009/10)) are in the area that is potentially to be affected by the Project activities.

The region around the Project site, which includes important nesting and breeding areas for Mediterranean Monk Seal (*Monachus monachus*) is currently being under the pressure of several industrial developments having similar potential impacts as the Ceyhan PDH-PP. On the other hand, the Project site at its current state, if not entirely, can be regarded as remote and isolated area that is favoured by the monk seal species. Therefore, the potential impacts to occur due to Project activities should carefully be mitigated during both construction and operation phases.

Yumurtalık Bay is a common sensitive environment which is exposed to impacts generated due to the activities of a number of industrial facilities in the region. Ceyhan PDH-PP Facility, which will also be developed on Yumurtalık Bay shoreline, and other existing industrial facilities have the potential to alter ecological characteristics of the Bay. In that respect, as reported during the face-to-face meetings with nearby facilities conducted within the scope of the stakeholder engagement activities, they conduct periodical monitoring activities in the marine environment (i.e. marine turtles, sediment quality, marine ecology etc.). The Project Company shall also conduct periodical monitoring both during construction and operation phase of the Project to evaluate its impacts on marine environment and to define mitigation measures, as necessary. Therefore, it is crucial that Project Company to consult and liaise with all the stakeholders having an interest on the Yumurtalık Bay.

Considering the projects, the cumulative impact on biodiversity is expected to be **medium to high** in the short term if no mitigation measure is implemented.

20.6.7 Community Health and Safety and Socio-economics

The main Project impacts with cumulation potential of negative effects on community health and safety in combination with other existing and planned development projects include the following:

- Community health and safety risks related to influx of migrant workforce from other regions;

- Community safety risks related to heavy machinery and passenger vehicles traffic on the public roads - increased traffic intensity may affect road safety and increase the risks of traffic accidents.

An influx of potential workers and employment-seekers might lead to disturbance of locals and potential conflicts between workers and local residents, as well as to increased risks of the spread of communicable diseases. In particular, this risk might be relevant to Incirli – the community located close to the Project area and BOTAS Tugboat Port area. Due to the large number of the construction workers and the proximity of communities, the cumulative impact is assessed as medium during the construction stage and low at the operation stage.

The Project Company will engage with BOTAS Tugboat Port with regard to management of the relationship with the Incirli residents in order to mitigate and manage potential cumulative impacts on this community. The Company will also share with the BOTAS Tugboat Port information on its approach to management community health and safety impacts with BOTAS Tugboat Port as needed. This may include, for example, sharing information on the Code of Conduct, grievance mechanism, measures implemented as part of the Community Health, Safety and Security Plan, etc.

As it is understood during the face-to-face meetings with local communities as part of stakeholder engagement activities, local residents have long been searching for employment within the facilities in the region. Although other facilities have created expectations regarding employment opportunities, these expectations were not met. Local residents still have expectations related to employment opportunities and community benefits.

Terrestrial land take associated with existing and future developments, including Ceyhan PDH-PP Project, will restrict agriculture, livestock breeding and grazing activities in the area. Therefore, continual reduction of available land for agriculture and grazing activities might increase pressure on remaining vacant and available lands. The Project may also lead to resettlement of several households, and resettlement might be also triggered during development of the CPIR zone.

The Project Company will undertake Land Acquisition Gap Analysis to clarify its impacts on local land users. In order to mitigate and/or compensate the impacts, the Project will develop Livelihood Restoration Plan (and potentially Resettlement Action Plan). The Project will aim at setting a benchmark in the area with regard to performing land acquisition activities according to international standards.

In addition, development of the Jetties and together with restricted zones in their premises will limit the fishing activities conducted by local residents. Fishermen in Incirli and Gölovası may be affected by the marine traffic during the construction and operation period, as well as by the flyrock caused by blasting activities that will last for about 10 months at the construction stage. The fishermen are already affected by the sea traffic created by facilities such as Toros

Tarım, BOTAŞ, Yumurtalık Free Trade Zone, SANKO Petrochemical Port Facility, İsken Sugözü Thermal Power Plant.

Marine traffic load associated with the Project during construction will be limited. Only coastal fishermen have the potential to be affected. There will be no material supply to the Project site by sea during the construction period. During the operational period, a maximum of 2 ships will berth per month. If the mitigations are not followed, it is possible for the fishermen to be affected by this traffic.

The top three industries with the highest number of major accidents reported since 1979 are general chemical manufacturing, petrochemicals, and wholesale and retail storage and distribution. In this context, HAZOP and HAZID are being prepared within the framework of SEVESO and Prevention of The Risks of Major Industrial Accidents (BEKRA Legislation) for the operational phase of the Project.

The follow-up and inspection of the plans are carried out within the Ministry of Environment, Urbanization and Climate Change, and the coordination with the existing and planned businesses in the vicinity will be carried out by the ministry.

In addition, as determined in Chapter 18, the Company will share its approach to mitigation and management of impacts, relevant management plans and procedures with third parties and cooperate on their implementation on regular basis.

The discussed impacts are expected due to potential collision of vehicles and damage to nets. Considering the Project's contribution, the cumulative impact is assessed as **low**.

20.7 Mitigations for Cumulative Impacts of the Developments

Table 20-5 includes details of the receptors which may be subject to a combined effect due to the Project. In some cases, the combined effect is equivalent to the 'worst case' effect already identified for a single environmental topic. Where it is considered that the combination of impacts may increase the overall impact magnitude, the resulting effect has been assigned based upon the professional judgement of the relevant topic specialists and in accordance with the significance criteria set out within Table 20-9.

Table 20-9. Mitigations for Cumulative Impacts of the Developments

Aspect	Cumulative Impacts	Cumulative Impact Significance	Mitigation
Air Quality	Incremental contribution of gaseous emissions to the air shed. Historically, NO _x , SO _x , CO, CO ₂ , CH ₄ , Cl ₂ , HCl and dust emissions have been identified as important gaseous emissions as a result of industrial facilities such as petrochemical facilities, thermal power plants and oil terminals	High	Mitigation measures were identified in the relevant chapters of the ESIA report (Chapter 9: Air Quality and Air Quality Control and Monitoring Plan to be prepared). Additional mitigation measures include: <ul style="list-style-type: none"> • Coordination with the CPIR Management Company and BOTAS regarding potential impacts on air quality;
Environmental Noise	Environmental noise resulting from the construction and operation phases of the existing and proposed projects.	Medium to High	Mitigation measures were identified in the relevant chapters of the ESIA report (Chapter 10: Noise) Additional mitigation measures include: <ul style="list-style-type: none"> • Coordination with the CPIR Management Company and BOTAS regarding potential noise impacts;
Biodiversity	Loss of fauna and flora resulting from the construction and operation phases of the existing and proposed projects.	Medium to High	Mitigation measures were identified in the relevant chapters of the ESIA report (Chapter 12: Terrestrial and Marine Ecology) Additional mitigation measures include: <ul style="list-style-type: none"> • Coordination with the CPIR Management Company and BOTAS regarding potential impacts on biodiversity.
Community Health and Safety and Socioeconomics	Disturbance of locals and potential conflicts resulting from the construction and operation phases of the existing and proposed projects. Traffic congestion and accidents due to increases in vehicular traffic on community roads	Low to Medium	<ul style="list-style-type: none"> • Mitigation measures were identified in the relevant chapters of the ESIA report (Chapter 14: Socio-economics and Chapter 15: Community Health and Safety). • Additional mitigation measures include: <ul style="list-style-type: none"> • Coordination with the CPIR Management Company and BOTAS regarding potential impacts on Incirli community and Incirli beach related to workers' influx; • Coordination with CPIR Management Company and other companies operating in the area regarding traffic impacts and community safety; • Cooperation with the CPIR Management Company and BOTAS regarding potential impacts on fishermen in Incirli and Golovasi; • Coordination with the CPIR Management Company regarding land acquisition impacts for the broader CPIR area;

Aspect	Cumulative Impacts	Cumulative Impact Significance	Mitigation
			<ul style="list-style-type: none"> • Coordination with the CPIR Management Company and other companies in the area regarding social investment activities and employment opportunities; • HAZOP and HAZID should be prepared within the framework of SEVESO and BEKRA for the operational phase of the project.

As described in Chapter 17: *Environmental and Social Management*, the Project Company does not have direct influence over third party facilities. However, the Company will seek for cooperation with third party facilities with regard to managing cumulative impacts. It is expected that the Project Company will set a benchmark for other companies in the area with regard to managing environmental and social impacts, and will make reasonable effort to assist third party facilities in implementing their practices in line with international standards. The Company will:

- Share results of the impact assessment with third party companies;
- Share the Company's approach to mitigation and management of impacts, relevant management plans and procedures (if these documents provide confidential information, relevant approach to management certain environmental and social impacts will be shared);
- Cooperate on a regular basis during development and implementation of the Project and third party facilities on development of proper mitigation measures and the status of their implementation. The Company's personnel will seek to conduct meetings with personnel of the third party companies with regard to management of cumulative impacts on regular basis (not less than biannually).

20.8 Conclusion

The cumulative impact assessment was undertaken considering the programme, distance to the Project site and development features of the proposed activities in order to understand the Project's potential to contribute to cumulative impacts during the construction and operation phase. As discussed in the previous sections, the Project will have the potential to interact with the existing and proposed projects that can lead to cumulative impacts.

The cumulative impacts on the surrounding area/communities that would result from the combination of the Project and other nearby developments (both existing and ongoing/planned) consist of impacts related to the air quality, environmental noise, biodiversity and community health and safety.

Cumulative impacts are often resulting from the successive, incremental and combined effects of developments in the vicinity of Project. The Project developers have responsibility for the

prevention and management of impacts of the Project and associated facilities. However, it is not the responsibility of one party but of all parties need to undertake necessary mitigation measures in order to avoid or mitigate cumulative impacts.

In anticipation of intensive industrial developments in the region, the most practical way of management would be through the adoption of a collective approach by the developers to manage environmental and social risks. Considering the presence of major industrial facilities, and relevant environmental and social issues, a negative practice of an individual facility has always the potential to disrupt social relations, which can be attributed to all the facilities in the area. Therefore, it is recommended to establish an interaction between the developers to encourage the safeguarding of environmental and social principles.

As it is summarized in Table 18-9, main impacts of the other facilities are expected to be as follows:

- Incremental contribution of gaseous emissions to the air shed. Historically, NO_x, SO_x, CO, CO₂, CH₄, Cl₂, HCl and dust emissions have been identified as important gaseous emissions as a result of industrial facilities such as petrochemical facilities, thermal power plants and oil terminals;
- Increase on environmental noise levels due to the developments in the region;
- Traffic congestion and accidents due to increases in vehicular traffic on community roadways;
- Impacts of noise and air quality (e.g., dust) on VECs along traffic routes;
- Increase in marine traffic and impacts on safe navigation;
- Impacts on biodiversity;
- Impacts on fishing community;
- Impacts on community health and safety due to workers influx and associated risks.

Cooperation on a regular basis during construction and operation of the Project and associated facilities on development of proper mitigation measures and the status of their implementation will minimize the impacts of the Project and associated facilities. The Project Company will also seek to play a proactive role in mitigating cumulative impacts by initiating and maintaining regular collaboration with other companies in the area with regard to mitigation and management of cumulative impacts.

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (CHAPTER-21)

FEBRUARY 2023

ANKARA

CEYHAN PROPANE DEHYDROGENATION - POLYPROPYLENE PRODUCTION PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Version	Revision	Date	Prepared By		Quality Management By	Checked By	Approved By
Draft	A.0	August 2022	Şeyma Nur Geyik (2U1K)	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)
	A.1	October 2022	Şeyma Nur Geyik (2U1K)	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)
Final Draft	B.0	February 2023	Şeyma Geyik (2U1K)	Onur Ali Taşkın (2U1K)	Esra Okumuşoğlu (2U1K)	D. Emre Kaya (2U1K)	Ilya Gulakov (RINA)

REVISION CODES: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 21/003

FEBRUARY 2023

CLIENT:

Ceyhan Polipropilen Üretim A.Ş
Portakal Çiçeği Sokak No:33 Yukarı Ayrancı
Çankaya - Ankara / Türkiye
☎: +90 (312) 840 10 00
☎: +90 (312) 442 58 16

TABLE OF CONTENTS

	<u>Page</u>
19 STAKEHOLDER ENGAGEMENT	3
19.1 The Project Social Area of Influence	4
19.2 Stakeholder Identification	6
19.3 Stakeholder Engagement Activities during ESIA Study	9
19.3.1 Preliminary Stakeholder Engagement Activities	11
19.3.2 Follow-up Stakeholder Engagement Activities Completed to Date	16
19.3.3 Planned Stakeholder Engagement Activities	18
19.4 Grievance Mechanism	20
19.4.1 Public Grievance Mechanism	20

LIST OF TABLES

Table 19-1. The Project Social Area of Influence.....	4
---	---

LIST OF FIGURES

Figure 19-1. Nearby neighbourhoods and sensitive receptors in the vicinity of the Project Area	6
--	---

ABBREVIATIONS

AOI	Area of Influence
CLS	Community Level Survey
CPIR	Turkish Petroleum Pipeline Company
EBRD	European Bank for Reconstruction and Development
EP	Equator Principles
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FGD	Focus Group Discussion
IFC	International Finance Corporation
NGO	Non-Governmental Organization
NTS	Non-Technical Summary
PCM	Public Consultation Meeting
SEP	Stakeholder Engagement Plan

19 STAKEHOLDER ENGAGEMENT

Stakeholder engagement is an integral and crucial part of an ESIA process, aimed at providing an opportunity for affected and/or interested individuals, groups and organizations to express their views and concerns about the project which are taken into account during the assessment of impacts and identifying mitigation measures. Stakeholder engagement helps to:

- Identify and involve all potentially affected groups and individuals;
- Identify the level of information of stakeholders on the Project and generate a good understanding of the project amongst those that will be affected;
- Identify issues early in the project cycle that may pose risk to the project or its stakeholders;
- Identify local communities' perceptions, expectations, needs and demands that might be directly or indirectly related to the Project;
- Identify potential means to maximise the Project benefits to the local communities; Ensure that mitigation measures are appropriate (implementable, effective, and efficient);
- Establish a system for long-term communication between the project and communities that is of benefit to all parties.

According to international best practice, stakeholder engagement is recommended to start at the scoping phase and to continue throughout the ESIA process. IFC PS1, EBRD PR10 and EP5 highlight the importance of stakeholder engagement as an on-going process involving the ongoing disclosure of information.

A stand-alone Stakeholder Engagement Plan (SEP) has been developed for the Project, to help structure a systematic communication with the stakeholders during the ESIA study.

The details of stakeholder engagement activities undertaken as part of the ESIA study are presented below.

The SEP also includes a grievance mechanism for community members and other stakeholders to raise any concerns and problems related to the Project. The Grievance Mechanism (GM), which is one of the most important tools of stakeholder engagement, has also been developed within the scope of the SEP.

Stakeholder engagement is an ongoing process, and the SEP will be regularly monitored and updated throughout all stages of the Project. This version of the SEP is related with the consultation activities of Environmental and Social Impact Assessment (ESIA) study which is being prepared for the Project. SEP will be published on the Project Company's website at the same time as the Final Draft ESIA Report in order to provide an opportunity for people to comment on the plans related to engagement as well as on the Project. The SEP is the

responsibility of the Project Company and Project Company is fully committed to undertaking necessary engagement activities in a manner that is consistent with international good practice as outlined in next sections.

This chapter includes the following key topics:

- Identifying key stakeholders for the Project;
- Stakeholder engagement activities carried out to date;
- Planned stakeholder engagement activities;
- Grievance mechanism.

19.1 The Project Social Area of Influence

The Project is planned to be developed in the premises of Ceyhan Petrochemical Industrial Region or Ceyhan Energy Specialized Industrial Zone (CPIR) which is located in Incirli locality, Kurtpınarı neighbourhood, Ceyhan district of Adana province.

The Project Social Area of Influence has been defined in Chapter 14: *Socioeconomics* of the ESIA document and is summarised below:

Table 19-1. The Project Social Area of Influence

Primary Social Area of Influence-Settlements				
Province	District	Neighborhoods	Settlements	Description of Potential Impacts
Adana	Ceyhan	• Kurtpınarı	• Incirli	Incirli is the closest settlement to the Project site. During construction and operation periods: impacts caused by dust, noise and vibration; impacts by conflicts caused by labor influx; impacts of acquisition of houses and farmland; impacts of traffic; impacts of life and fire risks; impacts of employment opportunities and local procurement are expected.
			• Karatepe, Karayılan and center of Kurtpınarı	During construction and operation periods: impacts caused by dust, noise and vibration; impacts by conflicts caused by labour influx; impacts of acquisition of houses and farmland; impacts of traffic; impacts of infrastructure risks; impacts of life and fire risks;

			impacts of employment opportunities and local procurement are expected.
		<ul style="list-style-type: none"> • Kurtkulağı • Sarımazı 	During construction and operation periods: impacts by conflicts caused by labour influx; impacts of acquisition of farmland; impacts of traffic; impacts of employment opportunities and local procurement are expected.
	Yumurtalık	<ul style="list-style-type: none"> • Gölovası 	During construction and operation periods: impacts of terrestrial and marine traffic is expected.
Primary Social Area of Influence-Businesses			
Businesses		Description of Potential Impacts	
Cengiz Restaurant/Incirli		It is expected that the business potential will increase due to the Project related activities. The impacts mentioned above for the Incirli settlement are also compatible for Cengiz Restaurant.	
Esentepe Kilyos Restaurant/Incirli		Esentepe Kilyos Fish Restaurant is located within the boundaries of the Project site. The fish restaurant is currently closed.	
Primary Social Area of Influence-Fishermen			
Location		Description of Potential Impacts	
Fishermen in Incirli		Marine traffic and restricts may affect fishing activity.	
Fishermen in Gölovası			
Primary Social Area of Influence-Affected Households and Land Users/Owners			
Households and Land Owners/Users		Description of Potential Impacts	
Households in Incirli		Economic and/or physical displacement	
Land owners/users in Incirli			
Primary Social Area of Influence-Facilities			
Facilities		Description of Potential Impacts	
BOTAŞ Facility (BOTAŞ and Botaş International (BIL)		Traffic, pressure on infrastructure, labor influx, risk of fire can affect facilities.	
TOROS Agri-Industry			
Primary Social Area of Influence-Schools			
Schools		Description of Potential Impacts	
Toros Tarım Primary School		Traffic, pressure on infrastructure, labor influx, risk of fire can affect schools.	
Turkish Petroleum Pipeline Company (BOTAŞ) Facility Primary School and Kindergarten			
Primary Social Area of Influence-Workers			
Project Workers (including third party workers)		Potential risks related to labour and working conditions, etc.	
Secondary Social Area of Influence			
Province	District	Neighborhoods	
Ceyhan	<ul style="list-style-type: none"> • Sağırlar • Aydınlar • Narlık • Selimiye • Hamidiy • Çiftlikler 	<ul style="list-style-type: none"> • Erenler • Değirmendere • Çevretepe • Dokuztekne • Körkuyu • Soğukpınar 	

		<ul style="list-style-type: none"> • İmran • Dutlupınar
Yumurtalık	<ul style="list-style-type: none"> • Hamzalı • Narlıören • Sugözü 	
Erzin	<ul style="list-style-type: none"> • Yukarıburna • Aşağıburnaz • Turunçlu 	
Supply Chain Workers		

The locations of nearby neighbourhoods and sensitive receptors in the vicinity of the Project site are illustrated in Figure 19-1.

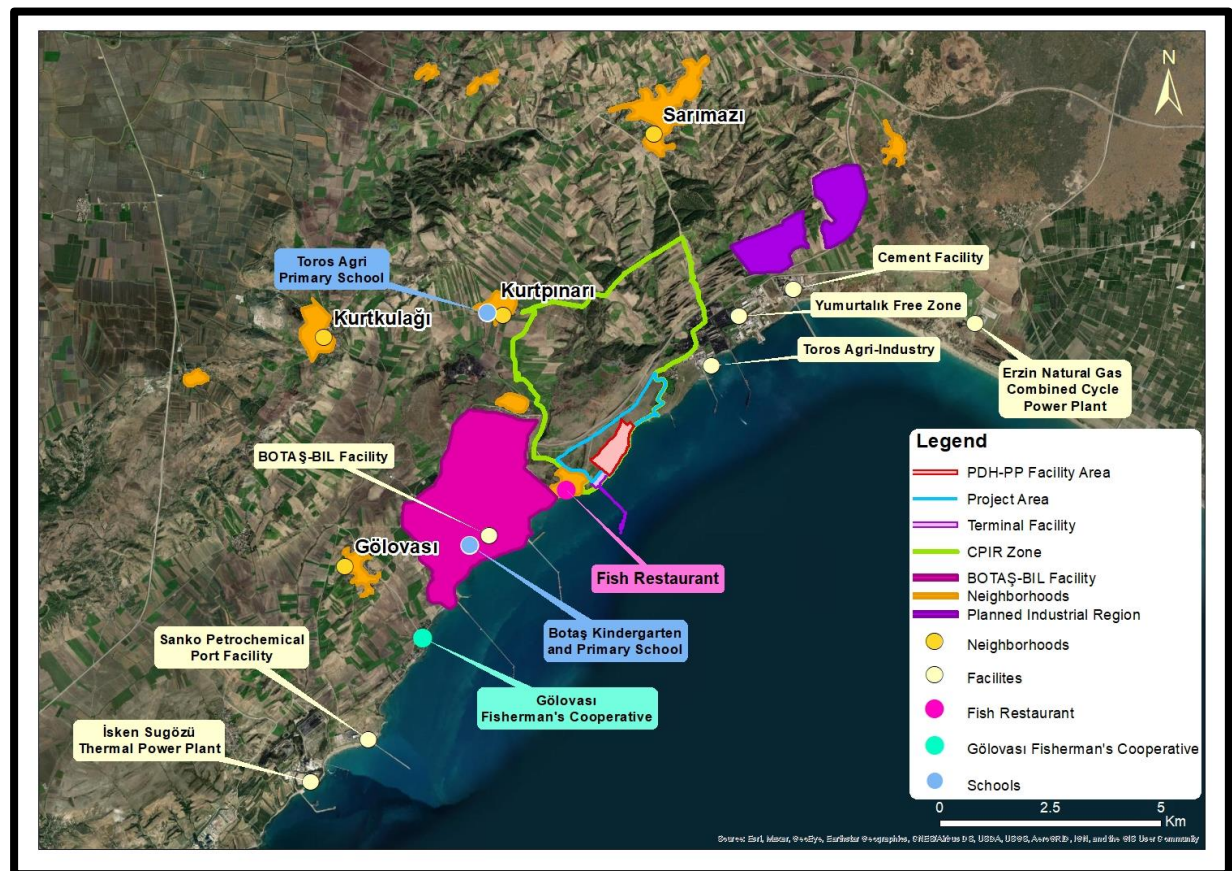


Figure 19-1. Nearby neighbourhoods and sensitive receptors in the vicinity of the Project Area

19.2 Stakeholder Identification

Stakeholder identification is a key step in managing the overall stakeholder engagement process.

IFC defines stakeholder as follows: “Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence Project's outcome. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local government

authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses” (IFC,2007:10).

Project stakeholders are divided into 3 key groups: affected parties, interested parties and vulnerable groups. Affected parties include stakeholders that might be directly or indirectly affected by a project. Interested parties include individuals, groups or institutions that will not be directly affected by the project but whose interests might be affected. This category describes government bodies, NGOs and educational institutions, etc. Vulnerable groups are people who might be directly and differentially or disproportionately affected by a project because of their disadvantaged or vulnerable status. This disadvantaged or vulnerable status may stem from an individual’s or group’s race, color, sex, language, religion, political or other opinion, national or social origin, property, birth, or other status.

Stakeholder groups, types and identification are given Table 19-1.

Table 19-2. Stakeholder Groups

Stakeholder Groups	Stakeholder Type		Potential Impact on Stakeholders / Stakeholders’ Interest
	Type of Exposure	Cause of Exposure	
Affected Parties			
<ul style="list-style-type: none"> Local communities (Kurtpınarı, Kurtkulağı, Sarımazı, Golovasi) 	Direct/Both Negative and Positive	Construction and operation period activities of the Project	Settlements that have the potential to be directly negatively affected by Project activities due to their proximity to the Project site, issues related to land acquisition, etc..
<ul style="list-style-type: none"> Businesses (Cengiz Restaurant and Esentepe Kilyos Fish Restaurant) 	Direct/Both Negative and Positive	Construction and operation period activities of the Project	They can be affected positively in terms of local procurement and negatively in terms of potential displacement impacts.
<ul style="list-style-type: none"> Fishermen in Incirli and Golovasi 	Direct/Negative	Marine traffic	Potential impacts might relate to limitation of marine area use, relevant safety and livelihood impacts.
<ul style="list-style-type: none"> Schools (Toros Tarım Primary School and BOTAŞ Primary School and Kindergarten). 	Direct/Negative	Construction and operation period terrestrial traffic	It may be negatively affected by the Project activities, especially by traffic.

Stakeholder Groups	Stakeholder Type		Potential Impact on Stakeholders / Stakeholders' Interest
	Type of Exposure	Cause of Exposure	
<ul style="list-style-type: none"> Project workers; Supply chain and 3rd parties' workers; Associated Facility's direct and indirect workers. 	Direct/Positive	Construction and operation period activities of the Project	A positive impact is expected in terms of employment. Risks related to labour and working conditions
<ul style="list-style-type: none"> Households and organizations potentially affected by economic displacement 	Direct/Negative	Potential economic displacement	Negative impact is expected due to economic displacement (associated with land acquisition, impacts on livelihoods)
<ul style="list-style-type: none"> Households affected by physical displacement 	Direct/Negative	Potential physical displacement	Negative impact is expected due to economic and/or physical displacement (resettlement)
Interested Parties			
<ul style="list-style-type: none"> Government Bodies (a total number of 78, details of the list of bodies can be found in SEP) 	Indirect	Potential involvement as per legal requirements	A positive impact is expected with taxes generated by the Project. Governmental bodies might take part in permitting process, land acquisition process or arrangement of consultations with communities
<ul style="list-style-type: none"> CPIR Management 	Indirect	Construction and operation period activities of the Project	Coordination on provision of infrastructure services, mitigation of impacts
<ul style="list-style-type: none"> Other businesses in the area (BOTAŞ, TOROS etc.) 	Indirect	Construction and operation period activities of the Project	Positive impact is expected due to potential business opportunities. Potential negative impact is expected due to dust, noise and traffic. Potential cooperation on management of cumulative impacts
<ul style="list-style-type: none"> Construction period contractor (EPC contractor and Its subcontractors); 	Indirect	Working within the scope of the project	Positive impact is expected due to potential business opportunities.

Stakeholder Groups	Stakeholder Type		Potential Impact on Stakeholders / Stakeholders' Interest
	Type of Exposure	Cause of Exposure	
<ul style="list-style-type: none"> Operational period contractors (O&M Company of the Project, Terminal Facility Company). 			
<ul style="list-style-type: none"> NGO's 	Indirect	Construction and operation period activities of the Project	Environmental and social impacts of the Project (depending on NGO's field)
<ul style="list-style-type: none"> Universities 	Indirect	Construction and operation period activities of the Project	Internship for students, employment opportunities for graduates.
Vulnerable Individuals or Groups			
<p>The following vulnerable groups were identified as part of the ESIA process:</p> <ul style="list-style-type: none"> Children; People over 65 years; People having chronic disorder or in need of special care; Disabled people (mentally and/or physically); People who do not have health insurance; People earning below the minimum wage/receiving donations from state or foundations; Female-headed households. <p>See Appendix A and Section 14.3.8 of Chapter 14 Socioeconomic of the ESIA report for more detail.</p>	Indirect/Negative	Construction and operation period activities of the Project	Vulnerable groups might be disproportionately affected by adverse Project impacts.

19.3 Stakeholder Engagement Activities during ESIA Study

As an initial stage of stakeholder engagement, stakeholders have been identified including affected parties, other interested parties and vulnerable groups. These include national, provincial and local authorities, non-governmental organizations (NGOs), women's associations, schools, universities, settlements and nearby facilities/receptors. As stakeholder identification is an ongoing process, the stakeholder list, which can be seen in SEP, will be reviewed and updated throughout the lifecycle of the Project. All the listed stakeholders were contacted during the ESIA study.

The main communication methods and mechanisms that were used to consult with key stakeholders included:

- Project Information Document and leaflets during the scoping stage;
- Public consultation meeting;
- Local and national newspapers (for announcements related to public consultation meeting);
- Project website (for providing information about the Project),
- Face-to-face meetings with project stakeholder groups including;
 - governmental authorities;
 - headmen of surrounding neighbourhoods;
 - women's focus groups;
 - key informants (local leaders and subject-matter experts, cooperatives, local government authorities, local Non-Governmental Organizations (NGOs) and other individuals that are able to provide specific information.);
- Face-to-face meetings and in-depth interviews with Project Affected People (PAP) and household surveys at local neighbourhoods within Aol.

The preliminary stakeholder engagement activities included communications with the project stakeholders using Project Information Document and leaflets, Public Consultation Meeting and preliminary face-to-face meetings for discussions with the stakeholders to gain preliminary understanding in the progress of the scoping stage. Following these preliminary activities (Section 19.3.1) more detailed analysis and assessments were conducted within the scope of stakeholder engagement activities and socio-economic assessment study.

The methodology followed for the detailed stakeholder engagement and social assessment included a two-stage baseline assessment study followed by an analysis of potential sensitivities and impacts. The findings were used for the development of the Project mitigation measures to minimise potential negative impacts and maximise the benefits from the Project.

Primary data collection was done through Project community level assessments conducted on July 5-10, 2021 by a specialised study team. Project community level assessments included:

- Household surveys (in Gölovası, Kurtpınarı/İncirli, Kurtpınarı/Karatepe, Kurtpınarı/Merkez, Kurtpınarı/Karayılan, Kurtkulağı, Sarımazı neighbourhoods);
- Community Level Surveys with Mukhtars of the Aol;
- Key Informant Interviews with local Non-Governmental Organisations (NGOs), affected / interested cooperatives, authorities and organizations;
- Focus group discussions with local women from specific demographic groups (i.e., young, elderly, unemployed and widow women) in the Aol;
- In-depth interview with the Project Affected People.

Data collected from on-site survey was supported with regional and national statistics, newspaper archives and project documents. Furthermore, feedbacks received from the stakeholders during the preliminary stakeholder engagement activities including public consultation meeting (PCM) conducted on 6th March 2020 in coffee house in Kurtkulağı Neighborhood were also used for the planning and completion of the social assessment study and development of the Project's SEP.

19.3.1 Preliminary Stakeholder Engagement Activities

A Project Information Document and Project Information Leaflet were produced in English and Turkish and were sent to identified stakeholders as the preliminary stakeholder engagement activities. Details are given of in Table 19- below.

Table 19-3. Details of the Preliminary Stakeholder Engagement Activities Undertaken to Date¹

Stakeholder Type	Engagement Method
Governmental Bodies (a total number of 78, details of the list of bodies can be found in SEP)	Project Information Document together with a cover letter, with request for comment on the Project, its potential impacts and to provide information that may be important for the ESIA study. The letters were sent as certified mail with return receipt requested to ensure that all the letters were delivered.
NGOs (a total number of 63, details of the list of NGOs can be found in SEP)	Project Information Document together with a cover letter with request for comment on the Project, its potential impacts and to provide information that may be important for the ESIA study. The letters were sent as certified mail with return receipt requested to ensure that all the letters were delivered.
Universities (a total number of 2, details of the list of universities can be found in SEP)	Project Information Document together with a cover letter with request for comment on the Project, its potential impacts and to provide information that may be important for the ESIA study. The letters were sent as certified mail with return receipt requested to ensure that all the letters were delivered.
Headmen of 24 neighbourhoods (including surrounding neighborhoods and neighborhoods at a wider distance within approximately 15 km as identified in SEP)	A project information pack (including 5 Project Information Documents, 25 Project Information Leaflets and 25 Comment/Complaint Form) were sent together with a cover letter to headmen of 24 neighbourhoods to provide information on the planned Project and related impacts, ongoing environmental and social impact assessment and to provide opportunity to express views and concerns about the Project, and to inform how views/concerns can be submitted. The letters were sent as certified mail with return receipt requested to ensure that all the letters were delivered. Prior to sending the information, the headmen were contacted by phone to inform them about the aim of the project information pack and they were requested to distribute the leaflets in their neighbourhoods.
Project EIA Public Consultation Meeting (PCM)	A meeting was held on 21.01.2020 in Sarımazı's Old Municipality building in order to inform about the EIA report of the project and to get the opinions of the public. A total of 44 people attended the meeting. Details of the meeting are included in the Project's EIA report.
Public Consultation Meeting	A PCM was held on 6th March 2020 in Kurtkulağı Neighborhood in Ceyhan District. The meeting location was selected based on its proximity to the Project site as well as its suitability to accommodate the potential attendees.

¹ The letter dated 15.05.2020 sent by the General Directorate of Environmental Impact Assessment, Permit and Inspection of the Ministry of Environment and Urbanisation stated that the Public Participation Meeting will not be held regarding the Terminal Facility, and that the national EIA submitted should be disclosed. Based on this letter, no public participation meeting has been organised for the Terminal Facility planned to be built by Ceyhan Petrokimya Endüstri Bölgesi Yönetim A.Ş. Following the approval of the EIA Report, it was disclosed on the MoEUCC website (<http://eced.csb.gov.tr/jsp/ek1/29631>).

Stakeholder Type	Engagement Method
	<p>A total of 58 people attended the PCM; including 35 people from Kurtkulağı, 8 people from Kurtpınarı, 7 people from Sarımazi, 2 people from Gölovası, 2 people from Ulus, 1 person from Sağırlar, 1 person from Narlık, 1 person from Hürriyet as well as 1 delegate of Development of Tourism in Yumurtalık and Protection of Environment Association.</p> <p>The meeting was announced via advertisements in one national (25.02.2020) and one local (27.02.2020) newspaper in advance of the PCM and the advertisement was repeated at the same newspapers a week later on 2nd March 2020.</p> <p>The meeting was also announced at mosques to local people. Ceyhan Polipropilen A.Ş. (Project Company) representatives and HaskoningDHV TR Engineering Inc. (RHDHV-TR) initial ESIA Project team members were present during the PCM. The meeting started with a brief on the Project, including fields of use of polypropylene, given by the Project Company representatives. This was followed by RHDHV-TR Project team's presentation summarizing the main features of the Project and ESIA and stakeholder engagement process and activities that had been and were to be undertaken. Photographs from the public consultation meeting and meeting notes are presented in the SEP.</p>
Stakeholder Engagement Meeting about Early Works	<p>A meeting was held in Kurtpınarı Neighbourhood on 06.07.2022 to provide information about the early works. The meeting location was selected based on its proximity to the Project, area as well as its suitability to accommodate the potential attendees. A total of 21 participants attended the meeting. The notes taken at the meeting, the consultation report, photographs of stakeholder engagement and participant list are given in Appendix-D.</p>

In addition to the aforementioned activities, a social survey was conducted comprising face-to-face meetings with governmental authorities, headmen, Toros Tarım Primary School, nearby facilities and focus groups, which were selected based on the interest and relevance for the Ceyhan PDH-PP Project (Project), as well as proximity to the Project site. During the social survey, Project Company representatives and HaskoningDHV TR Engineering Inc. (RHDHV-TR) initial ESIA Project team members were present. The survey was conducted on 10-12th February 2020.

Furthermore, three (3) neighbourhoods, Kurtpınarı, Kurtkulağı and Sarımazi, were selected, namely Kurtpınarı, Kurtkulağı and Sarımazi, for face-to-face meetings. This selection was based on the proximity of the neighbourhoods to the Project site and their high potential to be impacted by the Project development. It is noted that Kurtpınarı headman is the responsible local authority for Kurtpınarı, İncirli, Karatepe and Karayılan villages.

Focus group discussions (FGDs) were organized in Kurtpınarı and Kurtkulağı neighborhoods with the participation of the headmen as well as residents (20 residents from Kurtkulağı Neighborhood and 4 residents from Kurtpınarı Neighborhood). Women have also raised their concerns and recommendations during the FGDs; they preferred to attend to the FGDs together with the men; therefore, no separate session was organized for women. The reason for this is that women stated that they play a similar role to men in decision-making process and they do not prefer the idea of conducting separate meetings. However, women's opinions have been nevertheless considered as part of stakeholder engagement process. In particular, during the focus group discussions, women provided general information about the region and expressed their concerns related to communities and the Project.

The issues raised by the women during the FGDs are as follows:

- Young adults who maintain their lives by conducting fishing activities in the neighborhood are uncomfortable with hunting prohibitions;
- The trees on the site were moved, but many trees were damaged because they were not moved properly and carefully;
- The facilities to be built might affect livestock;
- Compensations provided for houses and land plots are insufficient, and there are also landowners who have not yet received compensations.

Women stated that there were no issues related to discrimination, violence or harassment against women in the region.

A meeting was held with Gölovası Neighbourhood Headman, who is also responsible for the S.S.S. Gölovası Neighborhood Aquaculture Cooperative on 6th March 2020 after the PCM meeting.

The key issues that were raised during the face-to-face meetings are presented in the Table 19- below.

Table 19-4. Outcomes of the face to face meetings with the interested and affected stakeholders

Stakeholder	Key Issues Discussed
<ul style="list-style-type: none"> • Adana Metropolitan Municipality • Directorate of Planning and Urbanization • Directorate of Environmental Protection and Control, Waste Management Branch • License and Supervision Department • Directorate of Planning and Urbanization • Directorate of Projects • 6th Regional Directorate of DSI (State Hydraulic Works) • Adana Regional Board Directorate of Cultural Assets Protection • Ceyhan Municipality • Adana Water and Sewerage Administration – Adana ASKİ • Adana Provincial Directorate of Environment and Urbanization (Adana PDoEU) <p>(10-12th February 2020)</p>	<ul style="list-style-type: none"> • Zoning plans for the region; • Waste disposal sites; • Status of cultural assets within and in the vicinity of the Project site; • Port reception facilities in Yumurtalık Bay; • Standards for Deep-sea discharge and natural capacity of Yumurtalık Bay to handle deep sea discharge; • Groundwater and surface water sources in the region; • Ongoing water supply projects/studies; • DSI's view on provision of secure and reliable water both for communal and industrial use; • Wastewater collection and treatment utilities in the region; • Complaints about the industrial facilities operating in the region; • Air quality monitoring in the region; • Marine accidents and emergency drills in the region.
<ul style="list-style-type: none"> • Headmen of the Affected Kurtpınar, Kurtkulağı and Sarımazı Neighbourhoods 	<ul style="list-style-type: none"> • Demographic information of the neighbourhoods; • Job opportunities during both construction and operation phases of the Project;

Stakeholder	Key Issues Discussed
<ul style="list-style-type: none"> • FGD in Kurtpinar and Kurtkulağı Neighbourhoods • Toros Tarım Primary School 10-12 th February 2020	<ul style="list-style-type: none"> • Providing vocational training courses to educate the local communities to be employed in the Project; • Heavy traffic in the region; • Complaints/concerns related to the existing environmental conditions (e.g., dust, quality of water courses, etc.); • Concerns related to expropriation of land conducted by MoIT within the CPIR Project site, outside of Ceyhan PDH-PP Project site.
Neighbouring Facilities to the Project Site (10-12 th February 2020)	<ul style="list-style-type: none"> • Technical/operational and environmental and social background information on the facilities and public housings/schools; • Environmental and social monitoring studies conducted in the region; • Marine traffic; • Emergency drills, fire safety, and accident management; • Ongoing stakeholder engagement activities; • Experiences on the region/operational activities; • Heavy traffic in the region; • Complaints/concerns related to the existing environmental conditions (e.g., dust, quality of water courses, etc.); • Future developments in the region.
S.S.S. Gölovası Neighbourhood Aquaculture Cooperative (06.03.2020)	<ul style="list-style-type: none"> • The restriction of coastal fishing activities; • Increase of time spent for round trips by fishermen.

Additional feedback received regarding the Project through different channels of communication means can be found in Table below.

Table 19-5. Additional feedbacks received from stakeholders during the initial ESIA Study

Stakeholder	Contact Method	Key Issues Discussed
Owner of fish restaurant Landowner of the closest parcel in İncirli neighbourhood	Phone Call	<ul style="list-style-type: none"> • Information on the fish restaurant (including capacity, customer detail, purpose of use, income/profits, etc.); • Concerns related to maintaining the business continuity; • Information on the use of the land parcel by the residents; • Concerns related to expropriation of land conducted by MoIT (especially on land prices, emotional/ sentimental value of land and houses; income are the main issues); • Need for local employment opportunity.
Participants of the Public Consultation Meeting (PCM) was held on 6 th March 2020 in Kurtkulağı Neighbourhood of Ceyhan District	PCM	<ul style="list-style-type: none"> • Environmental concerns/potential adverse impacts; • Potential adverse impacts on the nearby communities and community health and safety concerns related with the development of the Project; • Impacts of political discrepancy on raw material supply; • Effect of cooling water use/supply on the marine environment; • Planned volume of workforce during construction and operation phase of the Project and need for local employment opportunity; • Social responsibility activities planned by the Project Company.
Governmental Bodies ²	Response letters	<ul style="list-style-type: none"> • Traffic increase and safety;

² Adana Metropolitan Municipality, Directorate of Planning and Urbanization, Directorate of Environmental Protection and Control, Waste Management Branch (License and Supervision Department, Directorate of Planning and Urbanization, Directorate of Projects), 6th Regional

Stakeholder	Contact Method	Key Issues Discussed
		<ul style="list-style-type: none"> • Rent increase due to shelter need of people who will come from outside of the region; • Employment opportunities for local people; • Informing people about the progress; • Security of the Project site; • Social responsibility activities; • Social and environmental impacts; • Possible adverse impacts on agriculture; • Safe working environment, health and safety issues for the workers of the Project; • Wastewater discharge; • Use of cooling water (supply, discharge and impacts); • Action plans for a potential accident, fire, earthquake, etc.; • Marine traffic; • Flood Risk Preliminary Assessment; • Compliance with the related laws and regulations; • Adverse impacts on fishing activities; • Negative impacts on aquaculture and aquaculture resources; • Expectations that were raised in public meetings.
NGOs	Response Letters	<ul style="list-style-type: none"> • Increase in traffic and relevant safety issues; • Rent increase due to accommodation need of people who will come from outside of the region; • Employment opportunities for local people; • Distribution of Information to public about the progress; • Security of the Project site; • Social responsibility activities; • Social and environmental impacts; • Possible adverse impacts on agriculture; • Safe working environment, health and safety issues for the workers of the Project; • Wastewater discharge; • Use of cooling water (supply, discharge and impacts); • Action plans for a possible accident, fire, earthquake, etc.; • Marine traffic; • Flood Risk Preliminary Assessment; • Compliance with the related laws and regulations; • Adverse impacts on fishing activities; • Negative impacts on aquaculture and aquaculture resources; • Expectations that were raised in public meetings.
Local Public 10-12th February 2020	Feedback Forms Collected During Face-to-face Meetings	<ul style="list-style-type: none"> • Employment expectations; • Ecological impacts; • Concerns about environmental pollution; • Waste management; • Occupational health and safety for those who will be employed in the Project; • Balance between working hours and wages; • Benefits of the Project; • Conducting environmentally friendly activities; • Recruitment for disabled staff; • Development of the region;

Directorate of DSI (State Hydraulic Works), Adana Regional Board Directorate of Cultural Assets Protection, Ceyhan Municipality, Adana Water and Sewerage Administration – Adana ASKİ, Adana Provincial Directorate of Environment and Urbanization (Adana PDoEU).

Stakeholder	Contact Method	Key Issues Discussed
		<ul style="list-style-type: none"> • Providing sufficient information throughout the development of the Project; • Economical contributions; • Measures for protection of the environment.

The issues raised during the discussed above consultations have been reflected during preparation of the ESIA report (this document). In particular, the ESIA covers issues related to labour and working conditions and employment opportunities, traffic, waste management, land acquisition, air quality, etc. These issues are covered in relevant chapters of the ESIA document, with the assessment of relevant impacts being made and measures to mitigate adverse impacts and enhance positive impacts being provided accordingly.

Examples of cover letters sent to governmental authorities, NGOs and headmen; the Project Information Document and the Project Information Leaflet; newspaper announcement, handout distributed to public and photos from the public consultation meeting are presented in SEP.

19.3.2 Follow-up Stakeholder Engagement Activities Completed to Date

Following the preliminary stakeholder engagement activities at the early stage of the ESIA process, further social assessment studies and stakeholder engagement activities were conducted to fulfil the gaps and improve initial ESIA in line with the revisions in the Project design in progress so as to finalise the ESIA in line with the IFI's requirements. The study was conducted on July 5-10, 2021 for verification of existing data or collecting new information where existing data were insufficient. Below are the people and groups interviewed within the scope of the study:

- 4 in-depth interviews with Non-Governmental Organizations (NGOs);
- 2 focus group discussions with women residing within the Social Aol;
- In-depth interviews with residents of the affected communities (Kurtpinarı, Kurtkulağı, Sarımazı and Golovası);
- Community level surveys with Mukhtars (local government heads of villages) within the Social Influence Area.

In that context, the field research that was conducted using quantitative and qualitative data collection techniques in the Social Area of Influence included the interview and surveys listed in Table 19-.

Table 19-6. Surveys and interviews conducted by 2U1K

Type of Survey/ Interview	Number of Surveys/Interviews/ Meetings
Household Surveys	223
Community Level Surveys (CLS)	4
Key Informant Interviews (KIs)	12

Type of Survey/ Interview	Number of Surveys/Interviews/ Meetings
Focus Group Discussions	2

The household survey aims to collect data about the local people living in these settlements, including socio-economic characteristics (age, gender, education, employment, land use, income level, etc.) and general views of the local people. The purpose of the CLS is to determine the socio-economic status of each settlement, including population, reasons for migration and migration, ethnic composition, age and gender distributions, education level of social facilities, local conflicts and problems, livelihoods and basic income generating activities. economic production in the settlement, land use, land ownership, use of ecosystem services, services and infrastructure, vulnerable groups and perceptions of project impacts in the settlement.

KIIs were held with relevant local leaders and relevant experts, cooperatives, local government officers, local Non-Governmental Organizations (NGOs) and other individuals that are able to provide specific information. KIIs involve specific 'deep dives' into certain topics to close any remaining data gaps. Following stakeholders were interviewed within the scope of KIIs:

- NGO's (Kurtkulağı Agricultural Credit Cooperative No. 2001, Sarımazı Agricultural Credit Cooperative No. 1953, Gölovası Fisheries Cooperatives, Mediterranean Agriculture and Citrus Workers Motor Carriers Cooperative);
- Botas International (Pipelines and Petroleum Transport Joint Stock Company, has been restructured in order to operate the BTC (Baku-Tbilisi-Ceyhan) Crude Oil Pipeline.);
- Botaş Port Authority;
- ASCHEM Petrochemical Industry and Trade Inc.;
- Yumurtalık Municipality;
- Ceyhan Municipality;
- Ministry of Food, Agriculture and Livestock Ceyhan District Directorate;
- Neighbouring businesses to the Project Site (Cengiz Restaurant and Esentepe Kilyos Restaurant).

Another method for qualitative primary data collection is focus group discussions (FGDs) with different women groups within the social AoI. The aim of the study was not only to target women for the general population, but also interview with women from specific demographic groups, including young, elderly, unemployed and widow women. In total, two focus group discussions with 10 participants were conducted in İncirli locality of Kurtpınarı neighbourhood within the Primary Social AoI.

Stakeholder Meeting about Early Works

A stakeholder meeting was held in Kurtpınarı Neighborhood on 06.07.2022 to provide information about the early works conducted for the Project. The meeting location was selected based on its proximity to the Project area as well as its suitability to accommodate the potential attendees. A total of 21 people attended the meeting. During the meeting, information was provided about the start dates of the construction activities, and also characteristics of the Project were explained. Stakeholders were informed about local employment opportunities. It was stated that the stakeholders will be informed about the blasting activities in advance and the houses will be checked for physical integrity before the blasting starts. Information was provided about the RAP process, and the grievance mechanism was introduced.

During the meeting, stakeholders requested information on compensation for losses resulting from expropriation. The neighborhood headman asked for support to establish a company/cooperative so that the women could sell their local materials. After the stakeholder meeting, a one-on-one consultation meeting was held with Kurtpınarı neighborhood headman.

Land Acquisition Gap Analysis

In July 2022, one-on-one interviews were held with the people affected by the land acquisition within the scope of the Land Acquisition (LA) Gap Analysis. The information obtained is included in the LA Gap Analysis report. In addition, interviews with neighbourhood headmen were conducted for collecting information on vulnerable groups, etc.

The notes taken at the stakeholder engagement meetings, the photographs and the consultation report are provided in Annex-D.

19.3.3 Planned Stakeholder Engagement Activities

Stakeholder engagement activities will continue during the construction period which will then be followed by engagement activities during 49-year operation period. Consultation activities during construction and operation phases are important in order to maintain constructive relationships both with the local communities and other stakeholders. There will be a Community Liaison Officer (CLO) during construction and operation phases who will be the main contact person to handle comments and grievances. Project Company will be responsible for updating the SEP on a regular basis during construction and operation phases. Although not precisely determined yet, planned engagement activities are briefly outlined below.

Planned stakeholder engagement activities will include the disclosure of the Final Draft ESIA package. The following Project documents will be disclosed in English and Turkish languages on the Project website (www.ceyhanpp.com) and in the affected communities:

- **Final ESIA Report** – consisting of main text and supplementary annexes including the ESMP;

- **Non-Technical Summary (NTS)** of the Final Draft ESIA Report;
- **Stakeholder Engagement Plan (SEP)**.

The documents will be made available to the public for review and comments for 60 days. The objective of the disclosure period is to inform the stakeholders about the Project activities, impacts, proposed mitigation, monitoring and management measures. The Project Team and the ESIA team will, in consultation with the Lenders, review the comments received during the consultation process so that relevant mitigation measures can be taken to address the concerns raised by different stakeholders.

In addition to disclosure of the documents, the following activities will be conducted:

- Press announcement will be made at the beginning of the disclosure period announcing the publication of the Final Draft ESIA Report and other documents and the commencement of the consultation phase. The advertisements will also provide information on the date and time of community meetings. Targeted notification of certain stakeholders (for example, fishermen) will be also used. The press announcement will also provide a notification for vulnerable groups (see below);
- To inform vulnerable groups, the Project Company will seek opportunity to put posters informing on information disclosure and the meetings in local health care facilities, community centers and social protection bodies, i.e. facilities that might be visited by vulnerable groups.

The press announcement will also provide information that if special assistance is needed for accessing disclosed documents or participation in the meetings, a person might contact the Project Company which will seek for opportunities to meet relevant needs;

- Since during completed consultations women requested not to conduct separate meetings for women and men, common meetings for men and women will be conducted. However, separate consultations for women might be provided under request. Information on opportunity for conducting such consultations will be outlined in the press announcement;
- Posters will be placed in affected communities in 1-2 weeks prior to the meetings to inform residents of affected communities;
- Within the disclosure period, the following consultations will be held to explain the outcomes of the ESIA study and to address questions raised.

Type of Meeting	Stakeholder	Date	Venue
Community meeting	Incirli and Karatepe	To be defined	To be defined (for example, premise of restaurant in Incirli or office premises in Mobilization Area)

Type of Meeting	Stakeholder	Date	Venue
Community meeting	Kurtpınarı	To be defined	Community centre in Kurtpınarı
Round table meeting	Golovasi and Incirli fishermen	To be defined	To be defined (for example, premises of fishing port)
NGO meetings	Meeting might be conducted upon stakeholders (NGOs') request	To be defined	To be defined accordingly

This table does not describe consultations with stakeholders affected by land acquisition and physical/economic displacement. These consultations will be described by the Livelihood Restoration Plan and/or Resettlement Action Plan. Consultations with communities regarding emergency and response issues will be determined as part of the Emergency Preparedness and Response Plan (a standalone document) to be publicly disclosed

With the start of the disclosure period, comments can be submitted via following communication means:

Ceyhan Polipropilen Üretim A.Ş.

Address: Aziziye mahallesi, Portakal Çiçeği sokak, No: 33 Yukarı Ayrancı, Çankaya/ANKARA

E-mail: info.cpp@ronesans.com

Telephone: +90 312 497 3428

On completion of the disclosure period, the ESIA Report will be finalized by reflecting the comments received during the disclosure period where required. The Final ESIA Report will then be published on the Project website.

After completion of the ESIA process, the Project will continue to engage with the stakeholders during construction and operation of the Project. Outline plans for this are set out in the SEP.

19.4 Grievance Mechanism

A grievance mechanism will be established to ensure that all comments, suggestions and objections from project stakeholders, particularly from nearby communities and facilities, are addressed appropriately and in a timely manner. It is important to note that there will also be a separate grievance mechanism for workers/employees during construction and operation phases. Ceyhan PP A.Ş. will also be responsible for management of grievances related to services conducted by the Project (sub)contractors.

19.4.1 Public Grievance Mechanism

Complaint will be filed after it is received by the means of:

- letters or e-mails to the provided addresses;
- call on the provided phone number;

- grievance boxes;
- visit to Project site by using the Grievance Form;
- in person by contacting the Project CLO.

The contact details for submitting grievances are provided below:

Ceyhan Polipropilen Üretim A.Ş.

Community Liaison Officer: Nergiz Karakurt (CLO) ³

Address: Aziziye Mahallesi, Portakal Çiçeği sokak, No: 33 Yukarı Ayrancı, Çankaya/ANKARA

E-mail: info.cpp@ronesans.com@ronesans.com

Telephone: +90 312 840 1201

It should be noted that all individuals are free to raise their grievances anonymously when requested. For the recording of the complaint it is however important to specify an address that can be used by the Community Liaison Officer (CLO) to send a reply.

All incoming grievances will be reflected in a Grievance Log to assign an individual reference number in a daily basis and inform the complainant about the reference number assigned to his/her complaint, either on the date of filing (if a complaint is delivered personally or over the telephone) or within seven days of receipt (if a complaint is sent by ordinary or electronic mail).

The Grievance Log will also be used to track the status of a grievance, analyses the frequency of complaints arising, typical sources and causes of complaints, as well as to identify prevailing topics and any recurrent trends.

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

- Grievance reference number;
- Date of the grievance;
- Location where the grievance was received and in what form (for grievance boxes);
- Complainant's contact details (in case of non-anonymous grievances);
- Content of the grievance;
- Parties responsible for the addressing the issue;
- Dates when the investigation of the grievances initiated and completed;
- Results of the investigation;
- Information on the proposed corrective actions to be sent to complainant (for non-anonymous complaints) and the date of the sending the information;

³ During construction, operation phases and decommissioning phase, a sited-based CLO will be assigned and contact details will be updated accordingly.

- Deadlines for required actions by the Project staff;
- Indication on whether the corrective action was satisfactory or a reason for non-resolution of the grievance;
- The result of the close-out;
- Any outstanding actions for non-closed grievance cases.

After the registration of the grievance to the log, significance of the grievance will be assessed within five to seven days.