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NAME OF THE PROJECT

**PETRO-CHEMISTRY INTEGRATED PROJECT
FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

PLACE OF PROJECT

Aliğa/İzmir

PREPARED BY

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SECTION 6. A NON-TECHNICAL SUMMARY OF THE INFORMATION PROVIDED AS PER THE HEADINGS SPECIFIED ABOVE

The realization of the **Integrated Project comprised of 5 factories** as explicated in detail below **within the boundaries of the Petkim Complex site** has been planned by Petkim which is situated within the boundaries of the province of Izmir, county of Aliğa.

Within this scope, an application has been made to the repealed Ministry of Environment and Forestry (Ministry of Environment and Urban Planning) and the Environmental Impact Assessment process has been initiated within the scope of the Regulation on the Environmental Impact Assessment in line with the opinion of the Ministry for the **Integrated Project** which is contemplated to be realized.

The following shall be performed within the scope of the subject matter Integrated Project:

1. Establishment of PET (Polyethylene Terephthalate) Production Factory.
2. Establishment of BDX (Butadiene Extraction) Factory.
3. Ethylene Factory Capacity Increase.
4. PTA (Pure Terephthalic Acid) Factory Capacity Increase.
5. AYPE-T Factory Capacity Increase.

3. Ethylene Factory Capacity Increase

The total amount of the project is approximately 117,000,000.-USD including detail engineering, supervisor service, equipment-material supply, construction and assembly, and the life of the project has been determined as 15 years. It has been planned that the construction and assembly operations of the factory are to be completed within 1.5 years. Works of 8000 hours and 3 shifts will be made per annum. Average 500 persons will work in the construction stage and average 192 persons work in the operation stage and there is no need for the additional personnel.

The capacity increase of 13% is prescribed for the purpose of providing the ethylene need of the complex in its current situation and the ethylene need to occur on account of the

capacity increases to be realized in other factories. After the capacity increase works, the ethylene production will be increased from the established production capacity of 520,000 tons/year to the production capacity of 587,600 tons/year.

The timing schedule pertaining to the Factories within the scope of the referred project is provided in Table 1.1.1.

The layout plans of the units in relation to the factory contemplated to be established and realized within the scope of the project and in relation to the capacity increase and the modifications to be realized are provided in **Annex 2**.

The auxiliary establishments included in Petkim Complex are specified herein below and explicated in the Report in detail:

- Waste Water Treatment Unit,
- Demineralized Water Unit,
- Cooling Water Towers,
- Steam Production Unit,
- Electricity Production Unit,
- Waste Disposal Unit,
- Harbor.

The waste management procedure has been established and is being implemented for the procurement of the controlled collection, storage and disposal and/or recycling operations of the wastes of Petkim occurring as a result of its activities in a manner not to damage the human and environmental health and as specified in the relevant laws and regulations.

Service is provided in the facility of Petkim with the personnel and equipments in the below mentioned scope of activities by the “Health Unit of the Workplace” formed in line with the provisions of Article 81 of the Labor Law Numbered 4857.

It is contemplated that in the entire construction stage of the activity, **total 977 people** will work and in the operation stage thereof, **368 personnel -together with the existing ones- will be employed.**

The construction stages of the projects will be completed between **6 months and 3 years** and the project lives are 15 years. As it is the case in such high technology facilities, also here, the units will be constantly modernized with the maintenance, repair and renovation works and thus the renovation of the technology and the extension of the project lives will be procured.

The air quality measurement works have been made by NEN Mühendislik ve Laboratuar Hizmetleri Ltd. Şti. and the Air Quality Distribution Modeling Report has been drawn up.

The physical and chemical qualifications of the raw materials to be used for the factories included within the scope of the Project, the utility consumptions, the utilized raw materials, consumption quantities and the place from where and the way how the same will be supplied are provided in the Report.

The products produced in Petkim Complex and their capacities are provided in Figure 1.4.1 and their areas of use are provided in Figure 1.4.2.

Acoustic Report also covering the construction and operation stages within the scope of project have been made drawn up.

In the Planned Maintenance practices of Petkim, SAP PM Maintenance Module designed as per EN 13306 Maintenance Terminology is used.

The existing facilities, administrative buildings, service buildings, social facilities and infrastructure systems included in Petkim Complex will continue to be used also within the scope of the referred integrated project. The existing roads will be used in the construction and operation stage of the project and a new road will not be built.

Aliağa Petrochemistry Complex is performing activities on İzmir-Çanakkale way, in the distance of approximately 60 km to Izmir and approximately 2 km to Aliağa, on the fraction -facing to Nemrut Gulf- of the peninsula between Aliağa and Nemrut Gulf.

The transportation from the area of activity to the İzmir-Çanakkale main road is provided with the linking roads and the traffic load to arise from activity (in construction and operation stages) as per 2011 traffic volume prepared pursuant to the results of the measurement performed by the General Directorate for Highways is provided in Table 1.8.1. The satellite picture indicating the transportation to the areas where works are to be performed within the scope of the project is provided in Figure 1.8.1.

The units included within the scope of integrated project is on an area of total 180,747 square meters and the operations to be carried out will be realized in total 46,785 square meters of such units.

In the Petkim facility area within the scope of integrated project, the closed and open area quantities where the units -which will be newly established and for which capacity increase and modifications will be made- are located are provided in Table 2.2.1.

General layout plan/plans are provided in **Annex 2** and the Topographical Map Scaled 1/25,000 showing the project area and its surroundings is provided in **Annex 5**.

The project areas are included within the boundaries of the existing Petkim Complex Site.

The operations shall be realized in the integrated factory sites possessing the area of total 180,747 square meters falling within the boundaries of Petkim complex. The area (square meter) distributions pertaining to the factories are provided in the Report in detail.

Petkim Complex is performing activities in the west of İzmir-Çanakkale highway, in the distance of approximately 60 km to Izmir and approximately 2 km to Aliğa, on the fraction -facing to Nemrut Gulf- of the peninsula between Aliğa and Nemrut Gulf.

In the project area, there are no places having high landscape value and recreation areas, areas where there are geological and geomorphologic formations of unique character

and land possessing any protection statute. Furthermore, it has no relation with the agriculture and forest areas.

In the site, there are existing factories, administrative buildings, service buildings, pipe lines, social facilities etc. -the ownership of which belongs to the owner of the activity- and these shall continue to be used also within the integrated project scope.

The settlement area which is closest to the project area is the Petkim Lodging Buildings in the distance of approximately 500 m and the County of Aliğa in the distance of approximately 2 km. The settlement areas around the activity site and its close surroundings are indicated below and on the topographical map (air line) provided in Figure 2.1.3:

The topographical status of Petkim complex and the region where the integrated units forming the complex are located are provided in Figure 2.1.4 and the slope in the fraction where the project areas are located varies between 3 m and 25 m.

In the Petkim facility area within the scope of integrated project, the closed and open area quantities where the units -which will be newly established and for which capacity increases and modifications will be made- are located are provided in Table 2.2.1. The units included within the scope of integrated project is on an area of total 180,747 square meters and the operations to be carried out will be realized in total 46,785 square meters of such units. The picture indicating Petkim Complex and harbor layouts are provided in Figure 2.2.1.

It is contemplated that the water need in the construction and operation stages is to be provided from Güzelhisar Dam used for the purpose of the water supply of Petkim facilities. Güzelhisar Dam is in the statute of basic water source of Petkim and the construction and assembly thereof was made performed by Petkim between 1975-1982. The operation rights of the dam belong to the General Directorate of State Water Affairs (SWA) as per law. Pursuant to the agreement entered into with SWA, Petkim has the right to take water of maximum 2550 L/s.

The data recorded in Dikili Meteorology Station and Aliğa Meteorology Station has been used during the evaluation of the meteorological and climactic qualifications.

By means of the taking of the necessary precautions within the scope of project contemplated to be realized and the compliance with the effective legislations, regulations and by-laws, negative impact of the activity on the environment is not expected in the construction and operation stages. No negative impact on the surrounding facilities, residential areas and roads on account of the activity within the scope of project is expected and the damages that may arise from the activity will be remedied in cooperation with the relevant institutions.

Warning signs will be placed in the operation stage of the facility to the site against the probable work accidents and the workers will be constantly warned and the workers will be supplied with protective clothing, ear protection sets, safety glasses and helmets and the provisions of the Labor Law numbered 4857, the “Occupational Health and Safety Regulation” which entered into force through announcement in the Official Journal dated 09.12.2003 and numbered 25311 and “By-Laws on the Precautions to be Taken in the Workplaces and Works Where Works are conducted with Inflammable, Explosive, Dangerous and Hazardous Materials” shall be complied with. All precautions and permits for the protection of the environment and community health shall be taken within the framework of the effective legislations.

The information pertaining to liquid wastes, solid wastes, emission and noise to occur within the scope of activity are provided in the Report in detail and acts shall be performed in compliance with the relevant laws, regulations and by-laws of the environment legislation within the scope of the project for the purpose of keeping the environmental impacts to arise from the project at the minimum level.

For Petkim Complex, the process has been initiated by means of making an application for “**Environment Permit and License**” within the scope of the “**Regulation on the Permits and Licenses Required to be Taken under the Environment Law**” and the process is still ongoing.

Following the positive completion of the Environmental Impact Assessment process, the Monitoring Reports which are required to be submitted will be presented within the given term.

The precautions in relation to the waste waters, emissions, noise, odor and to-be-used chemicals which may constitute risk in terms of society and environment health shall be performed in line with the relevant legislations in the construction and operation stages.

With respect to the assembly and operation of the facilities specified in the project and the operations after the establishment is closed for activity, the undertakings specified in the Environmental Impact Assessment Report and the **Environment Law Numbered 2872** and the provisions of all legislations enacted pursuant to such law shall be complied with.

Table 1.1.1 Timing Schedule Pertaining to the Factories within the Scope of the Project

| Units/Factories | 2011 | 2012 | | | | 2013 | | | | 2014 | | | | 2015 | |
|------------------------------------|--|-----------|-----------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| | 1-12 | 1-3 | 4-6 | 7-9 | 10-12 | 1-3 | 4-6 | 7-9 | 10-12 | 1-3 | 4-6 | 7-9 | 10-12 | 1-3 | 4-6 |
| PET Production Factory | Dark Blue | Dark Blue | Dark Blue | Dark Blue | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Green | Green | | | |
| BDX Production Factory | Dark Blue | Dark Blue | Dark Blue | Dark Blue | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Green | Green |
| Ethylene Factory Capacity Increase | Dark Blue | Dark Blue | Dark Blue | Dark Blue | Yellow | Yellow | Yellow | Yellow | Yellow | Green | | | | | |
| PTA Factory Capacity Increase | Dark Blue | Dark Blue | Dark Blue | Dark Blue | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Green | | | |
| AYPE-T Factory Capacity Increase | Dark Blue | Dark Blue | Dark Blue | Dark Blue | Yellow | Green | | | | | | | | | |
| | Environmental Impact Assessment Process and Permits | | | | | | | | | | | | | | |
| | Construction Process (Engineering-Equipment Supply- Construction – Assembly) | | | | | | | | | | | | | | |
| | Start-Up | | | | | | | | | | | | | | |

(Translation of the Content of Figure 1.4.1)

Products and Capacity

Factory Capacities

- Thermoplastics

Capacity 740,000 tons/year

PVC 150,000

AYPE 350,000

YYPE 96,000

PP 144,000

- Fiber Raw Materials

Capacity 249,000 tons/year

MEG 89,000

ACN 90,000

PTA 70,000

- Other Factories

Capacity 970,000 tons/year

ETHYLENE 520,000

Propylene 240,000

C4 140,000

Py-Gas 390,000

BENZENE 150,000

P-x 136,000

O-x 50,000

CHLORINE 100,000

VCM 152,000

PA 34,000

Master Batch 10,000

Plastic Processing 4,000

Electricity Production (MW) 226

Figure 1.4.1 Products Produced in Petkim Complex and their Capacities

(Translation of the Content of Figure 1.4.2)

AREAS OF USE OF THE PRODUCTS

Propylene

PP

Cover sack, carpet yarn, thread-rope, table cloths, napkin, doormat, felt, hosepipe, radiator pipe, fishing net, brush, blanket

ACN

Fiber, lanital, ABS (acrylonitrile butadiene styrene) used in the manufacture of fabric

Ethylene

AYPE

Bag, glasshouse cover, film, cable, toy, pipe, bottle, hosepipe, package

YYPE

Package film, infrastructure and water pipes, bottle, beverage case, toy, fuel tank, bin

MEG

Polyester thread, polyester film, antifreeze

VCM-PVC

Pipe, window-door joinery, window blind, cable, bottle, construction materials, package film, floor tile, serum bags

CA-CAUSTIC SODA

Textile, detergent, aluminum

C4

Butadiene

Rubber and automobile tire

Aromatics

Benzene

Detergents, white appliance parts

Toluene

Solvent, explosive materials, medical industry, cosmetics

O-X – PA

Dye raw materials, plasticizer materials, synthetic chemical materials, polyester

P-X – PTA

Polyester fiber, polyester resin, polyester film

Figure 1.4.2 Areas of Use of Products



Figure 1.8.1 Satellite Picture Indicating the Transportation to the Project Areas

Table 1.8.1. Traffic Load to Arise from Activity

| Type of Vehicle* | Number of Vehicle * (Daily) | Number of Vehicle to Render Service for the Activity | | Additional Traffic Burden Arising from Activity (%) | |
|--|--------------------------------|--|-----------------|---|-------------|
| | | Construction** | Operation** | Construction** | Operation** |
| Automobile | 15,152 | 10 | 25 | 0,07 | 0,16 |
| Middle Loaded Commercial Vehicle | 917 | 15 | 37** | 1,64 | - ** |
| Bus | 438 | - | 17 | - | 0,39 |
| Truck | 3,013 | 12 | - | 0,40 | 0,04 |
| Truck+Trailer, Towing Truck+Side Trailer | 1,937 | - | - | - | - |
| Total Vehicle ** | 21,457 | 37 | 79-37=32 | 0,02 | 0,02 |

* Source: 2011 Traffic Volume Map by the General Directorate of Highways

**If the values given in the Number of Vehicles are accepted as 100%, the value found by making direct proportion of the vehicles to render service to the number of vehicles to come in the construction and operation stage is the percentage value of the additional traffic load (For ex.: $(100 \times 19) / 19312 = 0,1$). Since, in the operation stage, 37 vehicles (forklift, crane, tractor etc.) will operate in the facility, the same shall not create additional load outside the facility.



Figure 2.1.3. Topographic Map Indicating the Project Area and its Close Surrounding

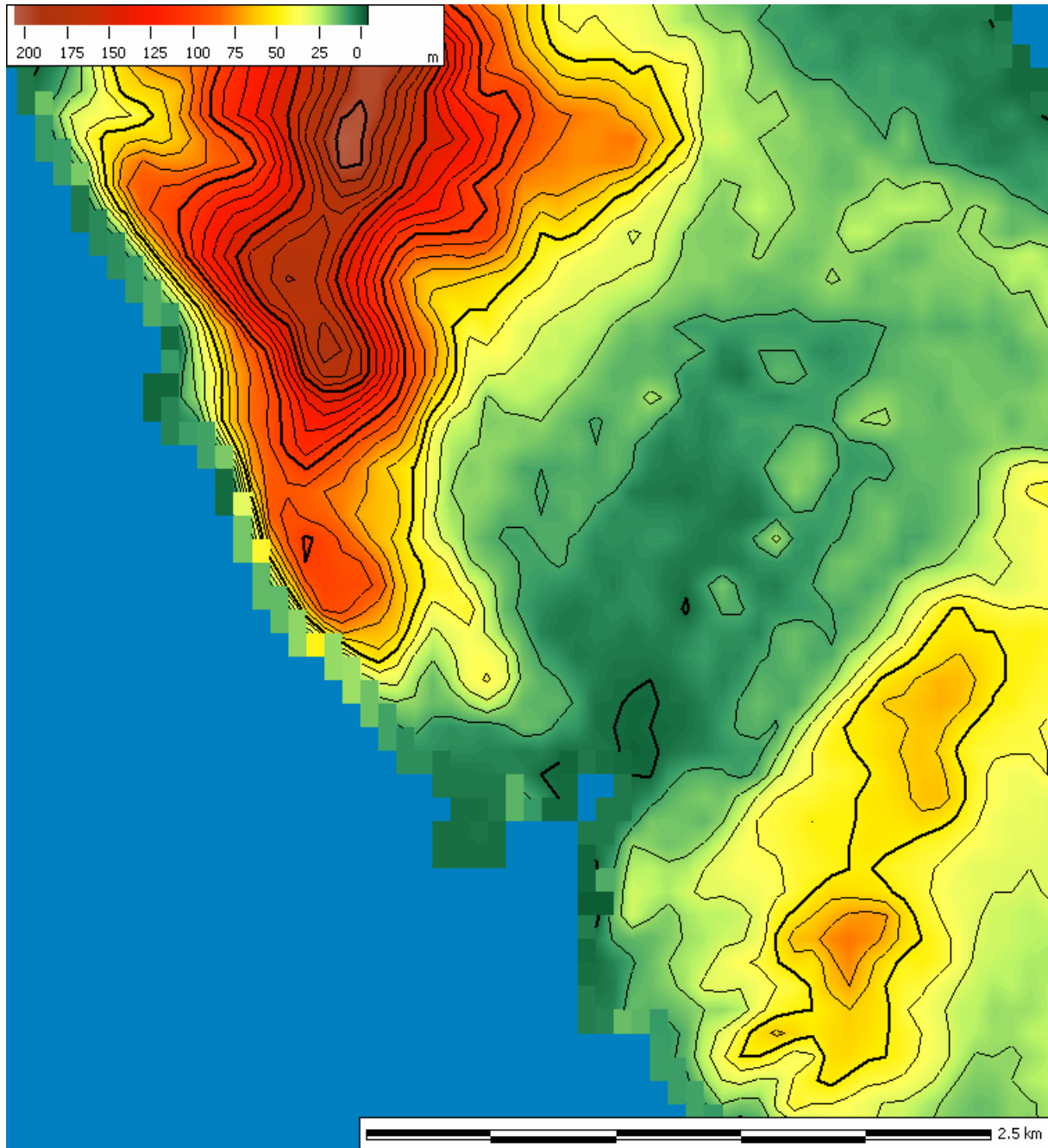


Figure 2.1.4. Topography of Petkim Complex and the Region Where the Project Areas are Included

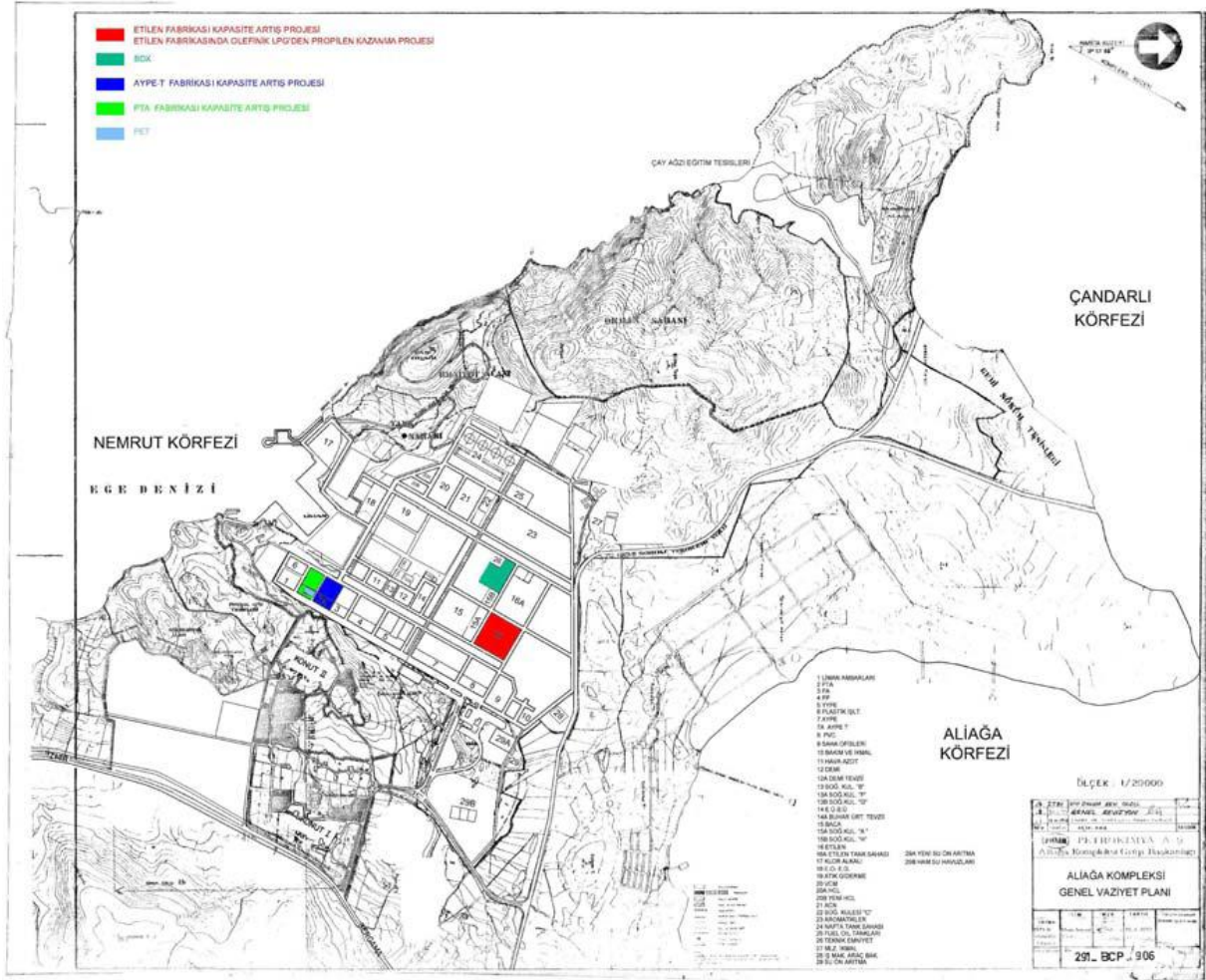
Table 2.2.1. Closed and Open Area Values of the Units (Facilities) within the Scope of Project

| No | Units | Total Open Area Values (m ²) | Total Closed Area Values (m ²) |
|-------------------|--|--|--|
| 1 | PET (Polyethylene Terephthalate) Production Factory | 4,400 | 4,000 |
| 2 | Butadiene Extraction (BDX) Factory | 31,372 | 31,000 |
| 3 | Ethylene Factory Capacity Increase | 67,507 | Change of Equipment |
| 4 | PTA (Pure Terephthalic Acid) Factory Capacity Increase | 33,868 | Change of Equipment Area of 300 m ² |
| 5 | AYPE-T Factory Capacity Increase | 43,600 | 11,485 |
| Total Area | | 180,747 | 46,785 |



Figure 2.2.1. Photograph Indicating Petkim Complex and Harbor Layout

ANNEX: 2



ANNEX: 5

