



# **Environmental and Social Impact Assessment for Ikitelli Integrated Health Campus Project Non-Technical Summary (NTS) Final**

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## ABBREVIATIONS

CCTV	Closed Circuit Television
dBA	Decibel
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EN	European Norms
EPRP	Emergency Preparedness and Response Plan
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
FIs	Financial Institutions
IBC	International Building Code
IFC	International Finance Corporation
IHC	Integrated Health Campus
IMM	Istanbul Metropolitan municipality
ISO	International Organization for Standardization
Istanbul PPP A.S.	Istanbul PPP Sağlık Yatırım A.Ş.
JBIC	Japan Bank for International Cooperation
m	Meter
m <sup>2</sup>	Square Meter
m <sup>3</sup>	Cubic Meter
MoEU	Ministry of Environment and Urbanization
MH	Main Hospital
MoH	Ministry of Health
MW	Megawatt
NEXI	Nippon Export and Investment Insurance
NFPA	National Fire Protection Association
NGOs	Non-Governmental Organizations
NTS	Non-Technical Summary
OHSAS	Occupational Health and Safety Assessment System
PDEU	Provincial Directorate of Environment and Urbanization
PM	Particulate Matter
PM <sub>10</sub>	Particulate matter with diameter of 10 µm or less
PPP	Public Private Partnership
PS	Performance Standard
RFID	Radio Frequency Identification System
SEP	Stakeholder Engagement Plan
SPV	Special Purpose Vehicle
WWTP	Wastewater Treatment Plant



## 1.0 INTRODUCTION

### 1.1 Background

This document is a non-technical summary (NTS) of the Final Draft Environmental and Social Impact Assessment (ESIA) Report for the Ikitelli Integrated Health Campus Project (IHC or Project) located in the Basaksehir district of Istanbul province, Turkey. The Project will be developed on a 789,031 m<sup>2</sup> area at the location shown in Figure 1-1.



Figure 1-1: Project location within Istanbul province (a), Project site and its boundaries (yellow line indicates the Project site boundary)

A bid was tendered by the Ministry of Health (MoH) for the *Construction Works and the Provision of Products and Services for Ikitelli Integrated Health Campus* under a Public Private Partnership (PPP) model, and awarded to a Special Purpose Vehicle (SPV) entitled “Istanbul PPP Sağlık Yatırım A.Ş.”

(Istanbul PPP A.S.) (previously Istanbul Ikitelli International Healthcare Investments Incorporation (IHIC)) which comprises the shareholders Rönesans Sağlık Yatırım A.Ş. and Sojitz Corporation.

Ikitelli IHC Project is one of the 31 health campuses of different sizes and bed capacities within 27 provinces that MoH plans to develop within the scope of the Health Transformation Program (HTP) initiated in 2003. These health campuses will serve 29 health regions in Turkey, which were determined based on the need for health services, geographical structure, patient flow, accessibility and socio-economic conditions. For each health region, usually a province is identified as the center of the health region and sub-provinces to be connected to the center province. Ikitelli IHC Project has been proposed by MoH to serve the 29<sup>th</sup> health region named as Istanbul Cekmece that covers Buyukcekmece, Kucukcekmece, Beylikduzu, Basaksehir, Silivri, Catalca, Esenyurt and Avcilar districts of Istanbul Province (with a total population of 3,025,889 (Turkish Statistical Institute 2015 data)).

The 2,682-bed capacity IHC will consist of eight hospitals: 469-bed General Hospital, 311-bed Neurological Sciences and Orthopedic Hospital, 327-bed Cardiovascular Hospital, 367-bed Oncology Hospital, 397-bed Children's Hospital, 459-bed Women Diseases Hospital, 152-bed Psychiatric Hospital and 200-bed Physical Therapy and Rehabilitation Hospital. Istanbul PPP A.S. is seeking finance from multinational financial institutions (FIs) including export credit agencies to fund the Project development. One of the FIs requirements for granting loans is the preparation of an ESIA Report. In order to be in line with good international practice and to meet the requirements of the FIs, Istanbul PPP A.S. has commissioned ACE Consulting and Engineering Inc. (ACE) to undertake the ESIA study. A Draft ESIA study (dated October 2014) for the Project was previously prepared for a project configuration that is different than the current Ikitelli IHC design. These Project design variations and likely associated impacts required the undertaking of the present ESIA study.

The purpose of the ESIA study is to describe the Project, identify the environmental and social impacts that will or may occur as a result of the Project and determine mitigation measures that can be taken to avoid and/or minimize the adverse impacts and maximize benefits. This document summarizes key points and findings of the ESIA Report which was prepared in line with the FI requirements for the IHC Project.

## **1.2 National Environmental Impact Assessment (EIA) Requirements**

Hospital projects do not fall within the scope of the latest Turkish Environmental Impact Assessment Regulation (EIA) (Official Gazette date/number: 25.11.2014/29186). MoH has asked the view of the Ministry of the Environment and Urbanization (MoEU) in 2014 on the applicability of the EIA Regulation for the Project. Accordingly, MoEU provided an EIA exemption letter for the Project. MoH has made an application to MoEU in November 2016 for a recent view on the applicability of the EIA Regulation for the Project. MoEU responded that the previous EIA Exemption is still valid for the Project.

Together with the main hospital components, there will be a trigeneration plant, boilers and concrete batching plant to be used as auxiliary facilities within the scope of the Project. Based on the official letter of MoEU issued to Istanbul Provincial Directorate of Environment and Urbanization (dated 13.07.2015), the auxiliary facilities were evaluated as part of the Project components and therefore exempted from the requirements of the EIA Regulation. The total energy need for the IHC will be 48 MW. The estimated rated thermal capacities of the trigeneration system and boilers will be 39.24

MW and 52.92 MW, respectively. The trigeneration system and the boilers will not be operated in full capacity together and the operating scheme will change according to system needs and/or season.

In addition, there are two concrete batching plants that were installed inside the Project site. A concrete batching plant with a capacity of 90 m<sup>3</sup>/h was previously installed at the Project site which was relocated to approximately 100 m south by Oyak Beton A.S. (appointed by Istanbul PPP A.S.). This concrete plant obtained an EIA Exemption from the Istanbul PDEU (dated 27.10.2015) based on the fact that its capacity is lower than 100 m<sup>3</sup>/h threshold that would have triggered the EIA Regulation requirements (i.e. Annex 2 of the EIA Regulation). A second concrete batching plant with a capacity of 90 m<sup>3</sup>/h was also installed at the same area by Oyak Beton A.S. The EIA exemption official letter is being awaited from the Istanbul PDEU for the second concrete batching plant as reported by Oyak Beton A.S. (based on the decision of MoEU dated 13.07.2015 as explained above).

### **1.3 ESIA Requirements**

In order to be in line with good international practice and being aware of the fact that the Project is an important public infrastructure project, Istanbul PPP A.S. has initiated an ESIA study for identifying potential environmental and social impacts and risks of the Project and subsequently developing mitigation measures appropriate to the nature and scale of the Project. These mitigation measures are included in an accompanying Environmental and Social Management Plan (ESMP) as described in Section 4 of this NTS.

The ESIA report and the ESMP will be used as a basis by the lenders for the environmental and social appraisal of the Project. The Project lenders will be the Japan Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance (NEXI). JBIC and NEXI standards also refer to the International Finance Corporation (IFC) Performance Standards. Based on the above, the ESIA study has been conducted to meet the requirements of the following international standards:

- IFC Performance Standards on Social and Environmental Sustainability (1 January 2012)
- IFC General Environmental, Health and Safety (EHS) Guidelines (30 April 2007)
- IFC EHS Guidelines for Healthcare Facilities (30 April 2007)
- JBIC Environmental and Social Considerations Required for Funded Projects (January 2015)
- NEXI Environmental and Social Considerations Required of Covered Projects (January 2015)

In addition to these standards, the Project must comply with Turkish environmental and social legislation.

### **1.4 Stakeholder Engagement**

The stakeholder engagement is an integral and crucial part of an ESIA process, aiming to provide an opportunity to 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 identification of mitigation measures. According to the international best practice, stakeholder engagement is recommended to start with the scoping phase and to continue throughout the ESIA process. IFC Performance Standard 1 describes stakeholder engagement as an on-going process during the life of the Project involving the disclosure of information. It should be noted that



stakeholder engagement activities about the Project has initially started during the preparation of the previous Draft ESIA study (dated October 2014).

A stand-alone Stakeholder Engagement Plan (SEP) has been developed for the Project to help structure systematic communication with the stakeholders. Relevant stakeholders were identified including governmental authorities and non-governmental organizations (NGOs) at national, regional and district level; local communities and women's associations. All these stakeholders were contacted during the previous Draft ESIA study. The main communication methods and mechanisms that were used to consult with key stakeholders during the previous ESIA study included:

- Information about the Project and potential impacts to be provided to stakeholders via project document and leaflets
- Face-to-face meetings with selected governmental authorities
- Face-to-face meetings with selected headmen of neighborhoods around the Project site
- Public consultation meeting
- Local newspapers (for announcements related to public consultation meeting)
- Project website (for providing information about the Project)

The summary of consultation activities that were conducted within the scope of the previous ESIA study are provided below:

- Face-to-face meetings were held with selected governmental authorities
- Face-to-face meetings were held with the selected headmen of neighborhoods supported by questionnaires to collect information on social data.
- Identified governmental authorities (107 agencies) and NGOs (53 agencies) were sent a Project Information Document together with a cover letter and asked to 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.
- A project information pack (including 5 Project Information Documents, 25 Project Information Leaflets and 25 Comment/Grievance Forms) were sent together with a cover letter to headmen of 13 neighbourhoods located within a diameter of 10 km to the Project site (considering the potential for traffic impacts to be felt up to this distance) 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.
- A Public Consultation Meeting was held on 3rd January 2014 in Basaksehir District. Eleven people participated the meeting. The meeting was announced via advertisements in one national newspaper sixteen days in advance of the meeting, and the advertisement was repeated at the same newspaper and also announced in a second national newspaper one week after the first announcement.
- A Project specific email address to be used during the ESIA study was created to collect opinions via email.
- A Project specific website was established where the Project Information Document, Project Information Leaflet and Comment/Complaint Form were made available to the public.

Within the scope of the present ESIA study, face-to-face meetings were held (between 23-27 December 2016) with the selected headmen of neighborhoods supported by questionnaires to collect recent information on social data. The results of the engagement activities are summarized in the Stakeholder Engagement Plan (SEP) prepared for the Project. Furthermore, a Project specific website (<http://www.pppikitellihastanesi.com/>) was established to disclose Project information to the public.

## **1.5 Report Structure**

The report structure is as follows:

- Project Description
- Environmental and Social Impacts and Mitigation
- Project Environmental and Social Management System

The Non-Technical Summary of the ESIA Report and other Project related documents can be found in Project website: <http://www.pppikitellihastanesi.com/>

## 2.0 PROJECT DESCRIPTION

### 2.1 Project Need

#### *Existing Conditions*

Istanbul Province is located in the Marmara Region of Turkey with a surface area of 5,343 km<sup>2</sup>, of which 1,864.21 km<sup>2</sup> is located on the Thracian side and 3,478.79 km<sup>2</sup> is located on the Anatolian side. Istanbul is the most crowded province in Turkey with a population of 14,657,434 (2015 data) which is equal to 18.6% of the total population of the country. Total number of potential patients in Istanbul Province is high due to high per capita healthcare spending of the residents of Istanbul and high rate of urbanization in the province. Istanbul is also a healthcare hub for neighboring regions. Citizens in the surrounding provinces travel to Istanbul due to its central location and the lack of healthcare facilities in their hometowns. Accordingly, the occupancy rates exceed 100% in many hospitals run by MoH in Istanbul.

As of 2015, there are 57 hospitals, 949 health centers, 3 health houses, 187 emergency response stations, 12 oral and dental health centers, 32 child and mother health and family planning centers, 4 public health centers, 28 tuberculosis combat centers and 28 blood centers in Istanbul that are affiliated with MoH. The total bed capacity of these hospitals is 33,581 (2014 data).

Although the number of patient beds is increasing in Turkey over the years, the number of beds per 10,000 people (i.e. particularly for MoH hospitals) is decreasing both for Turkey and Istanbul. This reveals that the health investments provided between 2002 and 2015 were not sufficient to meet the needs as a result of increased population in Istanbul (10,553,738 in 2002 and 14,657,434 in 2015). The number of beds per 10,000 people in Istanbul province as well as in the 29<sup>th</sup> health region is lower than the values for Turkey and also the World and EU average (Table 2-1). The number of beds per 10,000 people in the 29<sup>th</sup> health region where Ikitelli IHC will be built will increase from 11 to 25 after new investments in the region (including both MoH and private hospitals).

Table 2-1: Comparison of hospital bed capacity per 10,000 people with EU and World

World	European Union	Turkey	Istanbul	29 <sup>th</sup> Health Region
30 <sup>a</sup>	53.5 <sup>b</sup>	26.6 <sup>c</sup>	23.3 <sup>c</sup>	11 <sup>d</sup>

<sup>a</sup> World Health Statistics by WHO, 2013

<sup>b</sup> The EU in the World by Eurostat, 2015

<sup>c</sup> Annual Health Statistics of MoH, 2015

<sup>d</sup> Inpatient Health Facility Planning Guide, 2011

Existing hospitals affiliated with MoH in Istanbul Province are very old and out-dated (e.g. Haydarpasa Numune Hospital, one of the largest hospitals in terms of number of beds, is 121 years old). In addition, hospitals are located in the most built-up parts of the city and therefore are unable to physically expand. Moreover, these hospitals do not have adequate parking and green areas. Patient rooms are generally ward type. The number of qualified hospital beds (i.e. 1, 2, 3 or 4 beds per room with a bathroom and shower) is only 15% in MoH hospitals. Due to physical constraints, hospitals lack the flexibility to reduce the number of beds in patient rooms. Another important issue in the existing hospitals of MoH is the lack of intensive care units. The total number of intensive care beds is 1,207 out of 15,621 beds making 7.7% of all beds in MoH hospitals which is lower than the MoH objective of 10%.

When the hospitals in the 29<sup>th</sup> health region (for which İkitelli IHC will provide service) are considered, it is observed that there are a total of 2,962 patient beds in 27 hospitals serving health services to a population of 3,025,889 in this region. Nine out of 28 hospitals are affiliated with MoH and other 19 are private hospitals. There are no appropriate spaces in the hospital buildings of the 29<sup>th</sup> health region for supporting the changing and evolving technology of medical devices and equipment. Service units such as the operating theater, intensive care, emergency, laboratory, imaging center and polyclinics do not meet the standards in terms of physical structure and equipment. These hospitals are unable to physically expand in these already condensed areas. It also does not seem possible to effectively repair and renovate the existing hospitals due to the physical structure constraints. In this context, İkitelli IHC will contribute to health services with 2,682 bed capacity, rooms having one or two beds, and up-to-date technical infrastructure and overall it will modernize the healthcare facilities in the 29<sup>th</sup> health region.

#### *Need for Physical Therapy and Rehabilitation Hospitals*

Increasing population, improving technology, changes in health perception and expectations of people have resulted in changes in the health needs of community. The need for Physical Therapy and Rehabilitation health services is also increasing due to increasing aging and high rates of traffic and occupational accidents in the country. However, there is presently insufficient bed capacity specifically for providing active rehabilitation services across Turkey. The existing Physical Therapy and Rehabilitation Hospitals (2,038 bed capacity based on 2015 Annual Health Statistics of MoH) are able to provide physical therapy services only to the patients with little provision of rehabilitation services. In addition, existing Physical Therapy and Rehabilitation Hospitals are located in large provinces such as Ankara and Istanbul resulting in the need for patients and patients' relatives to travel to those provinces. As part of the HTP, Physical Therapy and Rehabilitation Hospitals are planned so that people can have access to these services in their own provinces or in the near region which will help in easy access to these services, reducing treatment costs and preventing accumulation of patients in the hospitals located in large provinces.

There are currently two specific physical therapy and rehabilitation hospitals in Istanbul that are affiliated with MoH, which are 101-bed capacity Istanbul Erenkoy Physical Therapy and Rehabilitation Hospital and 267-bed capacity Istanbul Physical Therapy and Rehabilitation Education and Research Hospital. According to the planning by the MoH, a total of 3,585 bed capacity for Physical Therapy and Rehabilitation services will be introduced in the health regions across Turkey, among which 200 bed capacity will be within the scope of İkitelli IHC Project.

#### *Need for Psychiatric Hospitals*

According to the 2015 data provided by MoH in Annual Health Statistics Report, there are 9 psychiatric hospitals (two of them are in Istanbul, the others are in Manisa, Bolu, Samsun, Elazığ, Adana, Trabzon and Tokat) and 2 community mental health centers (in Ordu and Eskisehir) across Turkey that serve under the responsibility of MoH, with a total bed capacity of 4,231. Psychiatric services are also provided in some of the general hospitals, university hospitals and private hospitals. Altogether, the total bed capacity in Turkey is 7,356 (2010 data) for psychiatric services. The psychiatric hospitals which are affiliated with MoH serve as regional hospitals that provide services for a number of provinces in a defined region. Patients whose diagnosis, treatment and rehabilitation

cannot be provided in their own provinces, are sent to the regional hospital responsible from their province.

According to the statistics of the World Health Organization, Turkey has the second lowest ratio in European region with only 1.0 psychiatric beds per 10,000 people (2008 data). Current bed capacities are not enough to meet the demand of patients who are exposed to long queues for admission to the hospitals. There are two psychiatric hospitals in Istanbul which are 250-bed capacity Istanbul Erenkoy Psychiatric Education and Research Hospital (ERH) and 1,472-bed capacity Bakirkoy Mazhar Osman Psychiatric ERH (total bed capacity of 1,722). Bakirkoy Mazhar Osman Psychiatric ERH is located in the European part of the Istanbul province and serves psychiatric services to 12,797,601 people living in this part of Istanbul together with five other cities (Edirne, Kirklareli, Tekirdag, Canakkale and Bursa). In order to provide better psychiatric services, MoH plans to reorganize hospital bed capacities by reducing numbers of beds in the existing 9 hospitals and maintain these hospitals to serve only their own provinces. MoH also plans to increase the total psychiatric bed capacity to 11,736. İkitelli IHC will contribute to this planning with a 152-bed capacity psychiatric hospital.

## **2.2 Project Site**

Current site was selected by MoH based on two major criteria: (i) the land, which is owned by the Treasury, is large enough for Project development (ii) the Project site is one of the best locations in Istanbul as the residential development of the city moves to the northern part and residents there can benefit from the planned İkitelli IHC. In addition, it should be noted that the authorities had previously planned road development projects around the Project site as part of the city development plans, which will provide/ease the accessibility to the health campus.

## **2.3 Project Components and Design**

The Project comprises of the development of an integrated health campus with a total capacity of 2,682 beds consisting of eight hospitals. The layout of the hospitals and other units are shown in Figure 2-1 and Figure 2-2.



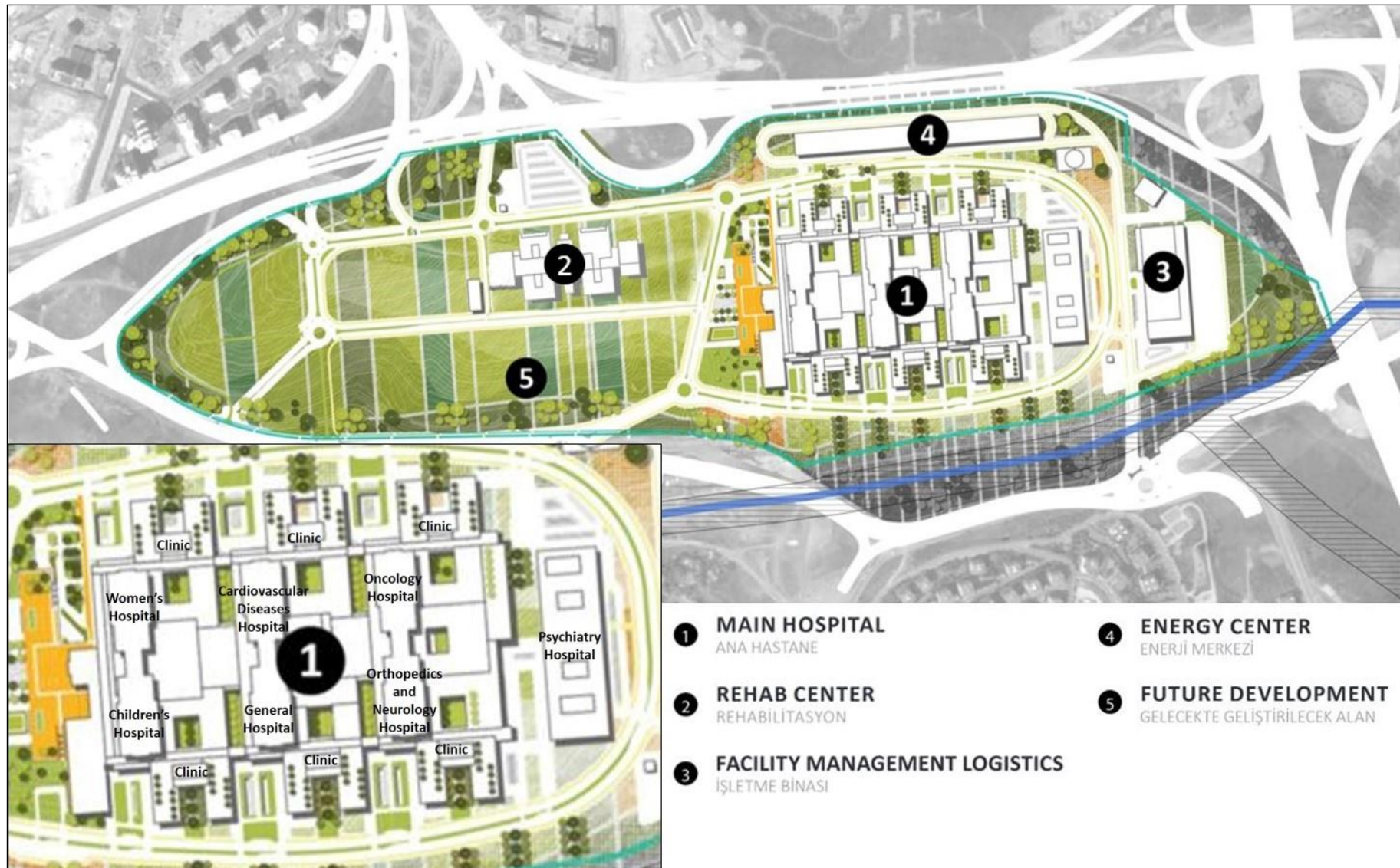


Figure 2-1: Layout of the hospitals and other units within IHC (green line indicates the boundaries of the Project site)



Figure 2-2: Layout and 3D-view of Main Hospital

### **2.3.1 Main Hospital (MH)**

MH will be located at the northern part of the Project site, which is comprised of six hospitals and six clinics in east-west direction with a total of 2,330 bed capacity:

- 469-bed General Hospital,
- 311-bed Neurological Sciences and Orthopedic Hospital,
- 327-bed Cardiovascular Hospital,
- 367-bed Oncology Hospital,
- 397-bed Children's Hospital,
- 459-bed Women Diseases Hospital

The Main Hospital will consist of the following services and units: Acute care unit, intensive care unit (ICU), infectious diseases, cardiovascular ICU, transplant, bone marrow transplant, newborn ICU, trauma, labor/delivery/recovery room, VIP beds, burn unit, iodine treatment and forensic ward. The total gross area of the MH for medical areas will be 831,208 m<sup>2</sup> and a total of 6,300 cars will be able to park in the closed parking areas inside the Ikitelli IHC. In addition to the closed car parking areas, there will be open car parking areas with a capacity of 1,900 cars at several locations inside the campus.

### **2.3.2 Physical Therapy and Rehabilitation Hospital**

The Physical Therapy and Rehabilitation Hospital will have a capacity of 200 beds. The total gross area of the Physical Therapy and Rehabilitation Hospital will be 63,790 m<sup>2</sup>. The services and units within the scope of the hospital will include clinics, treatment areas, common grounds for patients, outpatient clinics, general support areas, administration offices, imaging area, laboratories and technical areas. The hospital will have 5 floors (with one higher and one lower entrance level) as well as one basement floor.

### **2.3.3 Psychiatric Hospital**

The Psychiatric Hospital will have a capacity of 152 beds and will be located at the north of the MH. The total gross area of the Psychiatric Hospital will be 35,000 m<sup>2</sup>. The PH will include patient rooms,

intensive care units, psychiatric clinic, psychiatric rehabilitation area, psychiatry sport complex, clinic support area, patient admissions, shared support zones. The hospital will have 3 floors (with one higher and one lower entrance level) as well as one basement floor.

#### **2.3.4 Other components**

There will be a technical service building, located west of the Main Hospital, to house a boiler system to include seven boilers (among which one boiler is spare) each with a rated thermal capacity of 8.82 MW, and to house a trigeneration system. The trigeneration system will have a total electrical capacity of 17.2 MW that will consist of four gas engines using natural gas with a capacity of 4.3 MW each. The efficient rated thermal capacity of the trigeneration system will be 39.24 MW (4x9.81 MW) in total. The trigeneration plant and the boilers will not be operated in full capacity together and the operating scheme will change according to system needs and/or season. The electricity, heating and cooling needs of the facility will be provided from the trigeneration.

In addition, there will be four helipads within the Ikitelli IHC. The helipads will serve the ambulance helicopters which are directly under the service of MoH. An average of 1 cycle/day and on peak, 3 cycles/day are expected (depending on the severity and priority of the possible incident) for Ikitelli IHC helipads.

#### **2.3.5 Fire Safety**

Health facility operations are exposed to life and fire safety risks, as they are accessible to the public. Ikitelli IHC is being designed in accordance with the Turkish Regulation on the Fire Protection of the Buildings (Official Gazette Date/No: 19.12.2007/26735 revised on 09.07.2015). The technical specifications for the Project require the following to be integrated into the design: compartmentalization, fire zones, sealants, smoke control, fire elevator, sprinkler system, fire suppression systems and fire alarm system. The EPC Contractor of Istanbul PPP A.S. has assigned a fire consultant and a 3<sup>rd</sup> party consultant for the identification of necessary life and fire safety design criteria. When local standards are not sufficiently detailed, European Standards or internationally accepted life and fire standards (NFPA standards, IBC Codes, etc.) will be applied. For this reason, mapping of Turkish requirements for life and fire safety will be conducted by Istanbul PPP A.S. in order to identify the insufficient areas and incorporate them into the design.

### **2.4 City Planning and Components near the Project area**

The Project comprises development of an IHC within an area that is owned by the Treasury and allocated for the use of the MoH. The Project site was included in the 1/100,000 scaled Istanbul Environmental Plan, 1/5,000 and 1/1,000 scaled zoning plans as health area. No land take, expropriation, resettlement and/or economic displacement have occurred related to the Project.

There is a natural gas pipeline buried under the road that is passing through the Project site. The natural gas pipeline will be relocated by IGDAS around the Project site boundary. The replaced pipeline will either pass through adjacent to and/or under the planned roads around the Project site. These areas were already allocated to the planned roads and/or to passive green fields around the planned roads as indicated in the local zoning plans. For this reason, there will be no need for expropriation related to the relocation of the natural gas pipeline.



## **2.5 Construction**

### **2.5.1 Overview**

The planning of the Project is still ongoing. This ESIA study is based on the construction schedule provided by the EPC Contractor, which assumes a 36 months of construction period. The construction work timeframe is proposed to be 24 hours per day in shifts and 7 days per week. The construction site facilities (including offices, camping area, cafeteria, resting areas, infirmary, workshop, material storage areas) will be located inside the Project site.

### **2.5.2 Excavated Soils to be Disposed / Fill Materials**

It is anticipated that approximately 3,865,000 m<sup>3</sup> of excavated soil will be generated in the Project site and 2,726,500 m<sup>3</sup> of fill material will be needed. It is anticipated that approximately 580,000 m<sup>3</sup> of the excavated soils would be found suitable to be used as fill material. This results in 3,285,000 m<sup>3</sup> of remaining excavated soil that will require off-site disposal and this should ensure compliance with the Regulation on Control of Excavated Soil, Construction and Demolition Wastes (Official Gazette Date/No: 18.03.2004/25406).

Two alternative disposal areas are planned to be used: Ciftalan/Eyup disposal site located at approximately 38 km distance and Bogazkoy disposal site located at approximately 28 km distance to the Project site. The required fill material (i.e. remaining 2,146,000 m<sup>3</sup>) will be supplied from two borrow pits located in Catalca district center (located to the west of the Project site at an approximate distance of 25 km) and Cebeci neighborhood of Sultangazi district (located to the east of the Project site at an approximate distance of 7 km).

### **2.5.3 Workforce**

The maximum workforce that is anticipated during the construction phase is 6,500 people (including foreman, workers, technical and administrative staff). Workforce will be supplied locally to the extent possible including local sub-contractors. Appropriate pre-fabricated facilities will be provided to those employees who need on-site accommodation.

## **2.6 Operation**

### **2.6.1 Responsibilities and Organizational Management**

Ikitelli IHC will be managed by the MoH and Istanbul PPP A.S. will be MoH's main contractor during the operation phase. MoH will be responsible for providing medical and support staff, and the general management of the clinical hospital activities will be undertaken by the administrative staff provided by MoH. MoH administrative staff will be responsible for the tasks excluding those under the responsibility of Istanbul PPP A.S. as described below. Staff other than the doctors and support health personnel will be provided by Istanbul PPP A.S.

Istanbul PPP A.S. will be responsible for the management of services classified as obligatory services (P1) and optional services (P2) as listed below:

- P1 - Obligatory services include building and land services, extraordinary maintenance and repair, Common Service Management, furniture service, ground and gardening, and other medical support services.
- P2 - Optional services include soft services including pest control, car parking, cleaning, implementation and Hospital Information and Management System, security, companionship, reception, help desk, and transportation, laundry, food and waste management; and medical support service including laboratory, imaging, sterilization and disinfection, and rehabilitation service.

### **2.6.2 Traffic and Access Management**

In order to understand the existing baseline conditions and future conditions, the Contractor of the Istanbul PPP A.S. has assigned a traffic consultant to undertake a traffic assessment study which will also identify the necessary traffic arrangements inside the IHC site. It is estimated that approximately 63,500 people will visit the IHC daily during its operation. The Project site is easily accessible by private vehicles. A metro station will be constructed inside the Ikitelli IHC. There are planned road developments around the Project site which will provide easier and direct access to the IHC by private vehicles and public transportation is expected to be further developed prior to the commencement of the IHC.

### **2.6.3 Emergency Preparedness and Response**

An Emergency Preparedness and Response Plan (EPRP) will be prepared by Istanbul PPP A.S. prior to operation as part of the Environmental and Social Management System to be established for the IHC. The EPRP will cover issues related to occupational accidents, fire, fuel and chemical spills, natural disasters such as flooding and earthquakes.

### **2.6.4 Security**

An electronic security system will be provided in the IHC and will consist of CCTV cameras, Access Control System, Intrusion Detection System and Radio Frequency Identification System (RFID). CCTV cameras will be located at exterior entrances, main entrance lobbies, elevator lobbies, car parks, loading docks, pharmacy, service corridors and material storage area.

### **2.6.5 Operational Workforce**

The workforce requirement during the operation phase is anticipated to be 9,248 in total with 4,285 health service personnel and 810 administrative personnel to be employed by MoH and 4,153 service employees and 31 administrative personnel to be employed by Istanbul PPP A.S. and its service providers.



## 3.0 ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION

### 3.1 Overview

The ESIA Report provides a description of the environment and social baseline and explains the Project's potential impacts and identifies the mitigation measures to avoid or minimize the significant adverse environmental and social impacts. The mitigation measures are also included in the ESMP that has been developed as part of the ESIA study, and includes description of the mitigation measures, responsible parties for the implementation of the mitigation measures, the timing, monitoring and audit requirements.

The topics that are included in the ESIA study include (1) Land Use and Zoning, (2) Geology, Soils and Contaminated Land, (3) Hydrology and Hydrogeology, (4) Material Resources and Waste Management, (5) Air Quality, (6) Noise, (7) Traffic Impact, (8) Ecology, (9) Archaeology, (10) Socio-Economy, (11) Community Health and Safety and (12) Labor and Working Conditions. These topics and related impacts and proposed mitigation measures are summarized in the following sections.

### 3.2 Summary of Impacts and Mitigation Measures

#### 3.2.1 Land Use and Zoning

The Project comprises development of an IHC within an area that is owned by the Treasury and allocated for the use of the MoH. No land take, expropriation, resettlement and/or economic displacement have occurred related to the Project. The construction activities will be undertaken within the defined Project site and no additional land is planned to be used.

The Project site was included in the 1/100,000 scaled Istanbul Environmental Plan, 1/5,000 and 1/1,000 scaled zoning plans as health area. There will be no impact with respect to zoning requirement.

There is a natural gas pipeline buried under the road that is passing through the Project site which connects the Basaksehir and Kayasehir neighbourhoods. The natural gas pipeline will be relocated by IGDAS to pass around the Project site boundary. The replaced pipeline will either pass through adjacent to and/or under the planned roads around the Project site. These areas were already allocated to the planned roads and/or to passive green fields around the planned roads as indicated in the local zoning plans. For this reason, there will be no need for expropriation related to the relocation of the natural gas pipeline.

#### 3.2.2 Geology, Soils and Contaminated Land

The Project site lies within a 2<sup>nd</sup> degree seismic zone and is located within the influence zone of Northern Anatolia Fault. The Project design will take into account the Turkish regulatory requirements (i.e. Regulation on Buildings to be built in Seismic Zones) related to seismic design and risk assessment. In addition, earthquake isolation system, by means of installation of seismic isolators, will be implemented in the Main Hospital building.

A geological/geotechnical site investigation was conducted to determine the geological and geotechnical properties of the Project site. Groundwater was encountered in the western part of the Project site where the ground level elevation is lower than the other parts. However, the review of the boring logs indicated that the groundwater found at these levels are most likely perched water rather

than an evidence of an aquifer. Nevertheless, presence of groundwater should be taken into account during the construction of the buildings both in terms of construction techniques and the vulnerability of the water system (even in perched conditions) to potential spills.

Soil investigation studies were conducted by a third party accredited consultant in January 2014 and June 2016. According to the results of the first study (January 2014), levels of Arsenic, Chromium and Cobalt were identified in majority of the soil samples that exceed the generic values of the Regulation on Soil Pollution Control and Point Source Contaminated Sites; the levels of Arsenic, Chromium and Cobalt in the majority of the soil samples remained below Dutch intervention guideline levels. It should be noted that the levels of Arsenic, Chromium and Cobalt in all soil samples were similar in range indicating these levels represent natural conditions in the site soils rather than any contamination. On the other hand, Nickel values were below the Turkish generic values of Turkish regulation but above the Dutch intervention guidelines at some locations, which are on the artificial fill material that was brought to the Project site. The purpose of the June 2016 investigation was to define the horizontal extent of four sampling locations of the previous study that were determined to be the most impacted areas. Additional samples were taken from ten test pits around each of those four locations and analysed for Arsenic, Chromium (Total Chromium and Cr+6), Nickel and Cobalt parameters, which have been identified as the target contaminants at the site according to the previous site investigation in January 2014. The second round of sampling was conducted on the same area but with greater number of soil samples to identify whether the high levels of Arsenic, Chromium, Nickel and Cobalt identified in the first round of sampling were existing at a wider areal extent. The first and second round of sampling study confirmed that values are similar in range, statistically within the expected variation and below the Dutch intervention standards indicating these levels represent natural conditions in the site soils rather than any contamination; or likely to be related to artificial fill material that was brought to the area. The second round of sampling indicated that (i) the Arsenic levels within the same area were within allowable limits overall the studied area. There is no risk at the levels identified in the sampling event, (ii) the Chromium levels within the same area were within allowable limits overall the studied area. Given the lack of evidence of wide areal extent for elevated Chromium levels and the lack of direct exposure route to potential receptors, it can be concluded that the human health risks are negligible, (iii) the great majority of Nickel levels within the same area were within allowable limits overall the studied area. Given the lack of evidence of areal extent for elevated Chromium levels and the lack of direct exposure route to potential receptors, it can be concluded that the human health risks are negligible, (iv) the Cobalt levels within the same area were within allowable limits overall the studied area. Given the lack of evidence of wide areal extent for elevated Cobalt levels and the lack of direct exposure route to potential receptors, it can be concluded that the human health risks are negligible.

Hazardous and non-hazardous materials and waste during operation will be handled according to the Integrated Quality, Environment, Health and Safety Management System to be prepared by Istanbul PPP and where needed, further site-specific management plans will be developed (i.e. Hazardous Material Management Plan). Operation of a closed drainage system and implementation of Emergency Preparedness and Response Plan in the event of spills, fire etc. will prevent significant impacts on soils during construction and operation phases.

Fuels, oils and chemicals will be stored on an impervious base protected by bunds to 110% of capacity. Drip trays will be used for fueling mobile equipment. Any spillages from handling fuel and liquids will

be immediately contained on site and the contaminated soil removed from the site for suitable treatment and disposal.

### **3.2.3 Hydrology and Hydrogeology**

Ikitelli IHC site lies within the Kucukcekmece basin, which has a large surface water resource potential and is adjacent to the Marmara Sea on the southern side. There are two surface water streams (Menekse and Hasanoglu creeks) flowing in north-south direction in the vicinity of the Project site and Kucukcekmece Lake is located approximately 5.3 km southeast. A groundwater table (perched water) has been detected at 11-18 m within the western and mid portions of the Project site.

The Project site falls into a flood protected development area designated by the IMM. Menekse and Hasanoglu creeks are located to the east and the west of the Project site, respectively. The distance between the Menekse creek and the Project boundary varies between 15 to 130 m along the boundary. Streambeds of both creeks were recently rehabilitated against flood risks. Additionally, specific measures that have been requested by ISKI regarding the Project will be implemented, including preservation of 20-m wide operation strips along the creeks and ensuring that basement elevations are greater than the flood risk elevation (minimum +1.5 m above the stream elevation) at the nearest point. Therefore, associated impacts related with the flood risk of these two streams are considered as minor significance.

Inappropriate storm water drainage conditions for the Ikitelli IHC facilities may result in flooding of the site. From health and safety perspective, flooding may result in impacts ranging from minor to major significance depending on the surface water runoff generated during rainfall events. Considering that the storm water will be connected to the municipal infrastructure no impacts are expected associated with this issue.

The mitigation measures that will be taken will include the EHS based design criteria and infrastructure requirements (as indicated in the Technical Specifications provided by MoH). Site specific mitigation measures will also include good construction practices, staff training, appropriate handling of hazardous materials and waste materials through the development and implementation of management plans. Specifically, the development and implementation of the Hazardous Waste Management Plan, Hazardous Material Management Plan and Emergency Preparedness and Response Plan will help protection of the surface water and groundwater media.

### **3.2.4 Material Resources and Waste Management**

It is anticipated that approximately 850,000 m<sup>3</sup> of concrete, 260,000 m<sup>2</sup> of bituminous membrane, 4,900 tons of steel and 170,000 tons of asphalt will be needed for the Project which will be transported to the site via roads from local suppliers. Concrete will be supplied from the two concrete plants with a 90 m<sup>3</sup>/hour capacity each, that were installed at the Project site. Cement needed for concrete production will be supplied from Aslan Çimento in Darıca district of Kocaeli Province located at a distance of approximately 90 km to the Project site. Aggregate will be supplied from Oyak Beton Cendere Aggregate Plant and Akdaglar Aggregate Plant located in the Kemerburgaz town of Eyup district and Ayazaga neighborhood of Sisli district. The aggregate plants are located at a distance of approximately 38 km to the Project site. The required fill material (i.e. remaining 2,146,000 m<sup>3</sup> after 580,000 m<sup>3</sup> excavated soil is used as fill material) will be supplied from two borrow pits located in Catalca district center (located to the west of the Project site at an approximate distance of 25 km) and

Cebeci neighborhood of Sultangazi district (located to the east of the Project site at an approximate distance of 7 km).

There will be drinking and potable water usage by construction workers and during construction activities. The total daily water consumption during the construction phase of the Project is estimated to be 1,658 m<sup>3</sup>/day during regular construction works. Four deep groundwater abstraction wells are planned to be drilled in relation to the operation of the concrete batching plant and construction activities. Based on initial calculations, it is expected to abstract 120m<sup>3</sup>/h of water from each of the groundwater abstraction wells. In addition to the groundwater abstraction wells, water will be supplied from the existing water network of the city. During the operation phase, there will be water uses related to general domestic and sanitary use (including laundry), food preparation processes, sterilizers and autoclaves, X-ray equipment (water used in the processing of prints), and water used for gardens. The water consumption of the IHC is predicted to vary between 3,352 m<sup>3</sup>/day and 4,291 m<sup>3</sup>/day. The domestic water will be provided from the existing water supply line of the municipality. The water supply increase during the construction and operation of the IHC Project can be considered negligible on the water supply requirements for the region.

The main waste treatment/handling facilities in Istanbul province for the management of the waste streams generated by the IHC include the following:

- Medical waste sterilization facility and incineration facility (operated by ISTAC under the responsibility of IMM)
- Odayeri Class II Landfill Facility (operated by ISTAC under the responsibility of IMM)
- Atakoy Advanced Biological WWTP (under the responsibility of IMM)
- Authorized recycling and hazardous waste treatment facilities
- Authorized disposal areas for excavation materials and construction wastes

The capacities of the medical waste sterilization and incineration facilities were noted to be sufficient to handle the medical waste generated during the operation of Ikitelli IHC. Considering that a daily average of 16,300 tons of solid waste is being collected and disposed of in the Class II landfill facilities by the Istanbul IMM and district municipalities, additional 6.3 tons of solid waste generated daily in the IHC during its operation is not expected to lead to a significant overload.

Maximum wastewater generation of the IHC during its operation is expected to be 4,291 m<sup>3</sup>/day. Considering that the existing capacity of the Atakoy Advanced Biological WWTP is 400,000 m<sup>3</sup>/day, the IHC wastewater load will result in approximately 1% contribution in the existing capacity. This figure will be within the treatment capacity of the WWTP. Moreover, an official letter from ISKI (dated 29.11.2016) has been obtained which allows discharge of 3,300 m<sup>3</sup>/day of wastewater. Istanbul PPP A.S. will make an application to ISKI to revise this letter for the estimated wastewater amount of 4,291 m<sup>3</sup>/day. There will be no separate WWTP within the IHC, wastewater from departments within the IHC will be collected via different piping systems and discharged directly into the sewer system, except for the wastewater that is contaminated with radioactive substances (i.e. from nuclear medicine department and laboratories) which will be collected separately and/or subject to neutralization prior to being discharged into the sewer system according to the relevant regulation.

A waste management plan covering both construction and operation phases for Ikitelli IHC has been developed within the scope of the ESIA study. In addition, a Healthcare Waste Management System will also be established and implemented during the operation phase of the IHC.

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. Furthermore, the waste disposal infrastructure for domestic, medical, hazardous and wastewater streams are available and operational in Istanbul province. The impacts of the generated wastes can be considered negligible if the IHC Project complies with the applicable regulations during construction and operation including disposal of the waste stream in licensed facilities.

### **3.2.5 Air Quality**

During the construction of the Project, dust emissions will arise from earth movements, operation of concrete batch plant, transport of construction materials and resources, transport of excavated soils outside the Project site, working of machinery and vehicle movements inside the Project site. There will be also gas emissions from construction vehicles and equipment such as generators, excavators, bulldozers, trucks, cars. Transport of construction materials and transport of excavated soils outside the Project site will result in emissions related to construction traffic which may have the potential to affect the ambient air quality.

The transport routes to the Project site might pass through settlements which may be affected by the emissions. 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.

There will be impacts on the air quality from the health campus during the operation phase which will be mainly related with the emissions from the trigeneration and boiler systems, open car parking areas and fugitive emissions (released from sources such as medical waste storage areas, medical technology areas and isolation wards) that may be potentially contaminated with biological agents, pathogens, or toxic materials. It is expected that necessary exhaust/treatment systems will be included in the design of the health campus to eliminate mentioned 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 health campus.

Air quality baseline measurements were undertaken during the ESIA study that included PM deposition and PM<sub>10</sub> (parameters related to construction phase activities representing dust emissions) and NO<sub>2</sub> (parameter related to trigeneration/boiler emissions). Air dispersion modelling study (for PM<sub>10</sub> and PM dispersion related to construction, for NO<sub>2</sub> related to operation) was undertaken to estimate the air quality impacts associated with the construction and operation. Baseline PM<sub>10</sub>, PM deposition and NO<sub>2</sub> concentrations were found to be in compliance with the national and IFC limit values. The results of air quality modelling showed that the Total Pollution Values (TPVs) (*TPV represent the sum of the long-term measurement results (background concentrations) and Air Pollution Contribution Value*) of dust emissions during construction and TPV of NO<sub>2</sub> emissions during operation are in compliance with the national and IFC limit values.

In addition, there will be a generation of greenhouse gas emissions during the operation of the trigeneration and boiler systems which is calculated as 93,618 tons CO<sub>2</sub>/year. According to the IFC Performance Standard 3, for projects that produce more than 25,000 tons of CO<sub>2</sub> equivalent annually, there is a need to quantify the direct and indirect emissions annually. The Project will be expected to meet this requirement and undertake necessary actions to minimize the greenhouse gas emissions.



An Air Quality Control and Monitoring Plan and Construction Traffic Management Plan/Traffic Management Plan will be developed and implemented during construction and operation phases.

### **3.2.6 Noise**

Main noise sources during construction activities include use of construction machinery and equipment during earthworks and structural works, operation of concrete batch plant and construction traffic related to the transportation of excavated soils and construction materials. Increased noise levels during construction activities have the potential to result in negative impacts to the background noise levels including health risks at nearest sensitive receptors. The actual impact level due to construction activities will depend also on aspects such as the type of equipment to be used, time period and duration, and the perception of specific noise patterns (e.g. continuous, regular intervals, irregular). No piling or blasting which are important sources of vibration will be conducted at the Project site. For this reason, potential vibration impacts will be related to the truck movements and use of construction machinery at the Project site. The transfer of construction materials to the site and excavated materials off-site for disposal may cause disturbance particularly to the residents close to the west boundary of the Project site as a result of frequent truck movements.

Main noise sources during operation phase include the operation of the heating and cooling systems (i.e. trigeneration system, boilers, pumps, chillers and cooling towers) and the increase in road traffic from the operation of the facility. There will be also open car parking areas with a capacity of 1,016 cars. In addition, there will be ambulance helicopter movements causing occasional noise.

In order to predict the impacts of the Project on the existing background noise conditions, the assessment included (i) baseline environmental noise measurements at four locations, (ii) noise modeling study for construction and operation phases. Existing background noise levels are above the IFC daytime limit value of 55 dBA and nighttime limit value of 45 dBA at the majority of the time at all the measurement locations. Based on the baseline measurements and modeling study, cumulative noise levels were calculated. Construction phase cumulative noise levels were found to be below the national regulatory limit set for construction sites, but resulted in an increase in existing baseline noise levels by more than 3 dBA which is the maximum allowable increase indicated in IFC standards. Construction phase noise impacts will be temporary and can be mitigated with the implementation of measures. During operation phase, cumulative noise levels either do not result in a change or result in minor changes (i.e. maximum of 0.06 – 1 dBA increase) in majority in existing background noise levels which meets IFC requirements. Noise impacts will be followed with the implementation of a Noise Control and Monitoring Plan during construction phase.

### **3.2.7 Traffic Impact**

The Project area is located on Olimpiyat Boulevard, which connects TEM (E-80) Motorway on north. Great attractions such as olympic stadium and mass housing projects are located around the project area. Densities of residential and commercial areas will be increased as a result of new mixed use projects around the project area and as the city grows in this direction. Access to project area from Ankara direction is available with the side road of TEM (E-80) Motorway and Mahmutbey West Intersection, which connects to Olimpiyat Boulevard. Besides, TEM (E-80) Motorway Mahmutbey West Intersection provides connection to Ataturk Boulevard. Likewise, access from Tekirdag direction is available by connecting to Ataturk Boulevard too.

The planned road network developments in the vicinity of the Project site include new roads roads are to be connected to larger intersections, clover intersections are planned at the south and north of the area, links to the North Marmara Motorway, the Health Campus Intersection and ISKI Intersection. These developments were previously planned by General Directorate of Highways and Istanbul Metropolitan Municipality as part of the wider road and public transport development plans in the city.

In addition, Project area has strong road connections because of its close location to TEM (E-80) Motorway, however pedestrian and public transport access is presently insufficient. Although there are bus stops at housing areas around, due to the vacancy of project area in presence, reaching the project area by bus is not available. Locations of current bus stops around are out of the walking distance, hence new bus stops should be planned in order to meet the future demand. On the other hand, public transportation access to the area is also proposed to be improved especially by the proposed metro station within the campus area, which has been planned by IMM as part of the city development plans. The existing M3 Metro line runs on east of the project area and constitutes a strong access for surrounding zones. This metro line is planned to connect to the project area by IMM, until 2019.

During construction phase of the Ikitelli IHC, there will be an additional traffic load on the existing road network near the Project site as a result of the activities including transport of construction materials to the Project site, transport of excavation wastes from the site and travel to/from Project site by construction workers and other personnel. Taking into account the existing high traffic values in the area, the impacts were identified to vary between low to medium significance for the area near the construction site. The magnitude of the traffic increase in the surrounding roads that are developed as part of the transportation infrastructure will be large based on the traffic projections of the Istanbul Metropolitan Municipality, however the capacity of the road system is likely to be able to absorb the traffic increase, hence the magnitude of the impact is expected to be medium. The magnitude of the traffic impact on the existing local road network is likely to be medium to high depending on the amount of IHC induced traffic entering these areas.

Istanbul PPP A.S. will implement necessary mitigation measures to minimize the impacts to the extent possible that will include among others implementation of Construction Traffic Management Plan and IHC Traffic Management Plan during operation.

### 3.2.8 Ecology

Potential impacts during construction include loss of habitat, damage or loss of individuals and communities of endemic species during site clearance and excavation activities, as well as establishment of construction areas, accommodation areas and other areas such as temporary laydown areas. As a result of terrestrial flora studies, 230 taxa of 59 plant families found at the site were identified to be mostly widespread and cosmopolitan species. There are two naturally occurring local endemic species; *Cephalaria tuteliana* and *Cirsium polycephalum* observed at the site, both of which are listed under IUCN Red List category of “CR: Critically Endangered”. No adverse impacts on the identified endemic species are expected in terms of their population as 90% of their population is present outside the Project site. As a mitigation to preserve the populations of the two critically endangered local endemic species, their seeds were collected on 16.09.2014 and transferred to the Turkish Seed Gene Bank.

The fauna of the Marmara Region of Turkey, especially Istanbul and its surroundings are quite well-studied. The area around the Project site has been declared as a settlement zone, there is dense housing around the Project site, natural areas within the Project site are limited and anthropogenic impacts within the Project site like excavation and grazing are still continuing. Because the Project site is limited in terms of its surface area and affected by anthropogenic effects, faunal elements were low. As a result of the field studies carried out in October of 2013 and December 2016, a total of 64 faunal taxa that belong to 3 vertebrate classes were identified in the Project site, of which 11 were reptiles, 48 were birds and 5 were mammals. No species is endemic. According to International Union for the Conservation of (IUCN) criteria, only one species is being listed under risk categories as vulnerable. This species is *Testudo graeca* (Spur-thighed Tortoise) and one single tortoise was seen during the field trip in October 2013. The main mitigation measure for this species would be either to protect "in-situ" by leaving semi natural parts in the Project site or to transfer to suitable natural habitats that are found especially in the north of the Project site. In addition, measures can be taken to mitigate potential impacts on birds that may include leaving semi natural areas inside the Project area to the extent possible, implanting plants with fruit and/or seed as food sources for birds, creating water sources such as small lakes or ponds in the project site.

The nearest protected site to the Project site is Samlar Natural Park located approximately at a distance of 2,850 m to the north of the Project site. The Natural Park is one of the largest recreational areas of Istanbul with a land of 337.05 ha dominated by coniferous species. Kucukcekmece Lake wetland is another protected land close to the Project site (approximately at a distance of 5.3 km) as a bird resting and breeding area in the scope of Ramsar Convention and archaeologically important area according to the provincial environmental status report of the MoEU. Kucukcekmece Lake is a brackish (lightly salted) reed-bed lagoon with 179 km<sup>2</sup> of catchment area and 15 km<sup>2</sup> of total surface area. The marsh area formed by the tides of the lake provides a breeding and wintering habitat on the migration route of bird species. The lake is registered as one of the 97 important bird areas of Turkey by Society for Protection of Nature and Bird Life International as it provides shelter for a considerable amount of birds in winter, including kingfisher, cormorant and black backed gull.

### 3.2.9 Archaeology

The initial archaeological assessment and the subsequent archaeogeophysical research suggested that there is a potential for archaeological importance at the Project site. This has triggered consultation with relevant regulatory authorities (Istanbul 1<sup>st</sup> Cultural Assets Protection Regional Board Directorate and Istanbul Archaeological Museums Directorate) which resulted in undertaking further surface surveys and archaeological excavations and assignment of a scientific committee to provide view on the findings of the studies conducted.

Based on the studies conducted by Istanbul Archeological Museums Directorate and the view of the scientific committee, Istanbul 1<sup>st</sup> Cultural Assets Protection Regional Board Directorate made a decision (Decision Date/No: 07.08.2014/1133) which states the following: (i) it is understood that the remains do not possess characteristics stated in the 6<sup>th</sup> article of Law no: 2863 and accordingly, they do not need to be registered, (ii) the Municipality can take actions as per the zoning legislation in force, and (iii) the related parties shall be informed on the validity of the 4<sup>th</sup> article (obligation of notification) of the Law no: 2863 in case of cultural asset findings during construction works.

An Archaeological Chance Finds Management Plan will be developed and implemented during the construction phase of the Project.

### **3.2.10 Socio-Economy**

There will be employment opportunities related with the Project. The maximum workforce that is anticipated during the construction phase of the Project is 6,500 workers. 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: Labor and Working Conditions. There will be on-site worker accommodations which will be established in line with the IFC guidance note on worker's accommodation. A Construction Camp Management Plan will be developed and implemented together with Worker Code of Conduct to manage worker's behavior inside the construction site, camp and outside. During operation phase, the workforce requirement is anticipated to be 9,143 in total with 4,285 health service personnel and 810 administrative personnel to be employed by MoH and 4,048 service employees. It is estimated that approximately 63,500 people will visit the Ikitelli IHC daily which will be an important source of income for the supporting service sector.

Based on previous consultation with the Istanbul Provincial Directorate of Health, it is understood that there is a need for additional healthcare facilities in Istanbul province and accordingly, there are no immediate plans for closing the existing hospitals. However, this issue will be clarified with additional planning to be conducted by the MoH. It should be noted that planning will not only be related to Ikitelli IHC Project but rather related to create a more efficient health service in Istanbul Province. In case of any hospital closures and/or new arrangements, MoH will be the responsible authority to manage staff relocation.

### **3.2.11 Community Health and Safety**

Typical risks on community health and safety associated with the Project include safety risks, increased traffic, dust and noise, life and fire safety, infrastructure safety and security. The risks and impacts of the Project, in the context of health and safety of off-site communities, will be managed through a Community Health and Safety Management Plan and Construction Traffic Management Plan to be developed and implemented by Istanbul PPP A.S. In addition, IHC Traffic Management Plan, Noise Control and Monitoring Plan, Air Quality Control and Monitoring Plan, Security Plan and Life and Fire Safety Plan will be developed and implemented for the Project.

During all construction works, the Regulation on Buildings to be constructed in Seismic Zones will be complied with.

IHC will be designed in accordance with the Regulation on the Protection of Buildings from Fire. A Life and Fire Safety Plan will be prepared identifying major fire risks, applicable codes, standards and regulations, and mitigation measures. Life and Fire Safety Plan will be approved by a third party acceptable to JBIC/NEXI. The third-party life and fire safety consultant will be appointed prior to the financial close and the third party audit report will be completed after financial close during the construction phase.

### **3.2.12 Labor and Working Conditions**

Istanbul PPP A.S. will fulfill the requirements of IFC PS2: Labor and Working Conditions 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 need to be established

and maintained in line with the relevant national legislation and IFC requirements. A grievance mechanism will be developed for employees.

Istanbul PPP A.S will develop an Environmental and Social Management System covering OHSAS 18001:2007 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 PS2, IFC EHS General Guidelines and IFC EHS Guidelines for Health Care Facilities for the operational stage are met during construction and operation phases of the Project.

Subcontractors will also be required to follow the requirements of PS2 and contracts to be signed with subcontractors will include EHS requirements. Accordingly, a Subcontractor Management and Monitoring Plan will be prepared and implemented.

Of specific to operation phase, an Exposure Control Plan for blood-borne pathogens and Radioactive Substance Management Plan will be developed and implemented.

In case of a hospital closure, MoH will apply its own Relocation Policy for its own staff based on Turkish law. It is not clear at this stage whether MoH will develop a Retrenchment Plan (Istanbul PPP A.S. will have no responsibility and control on the development of such a Retrenchment Plan). During its recruitment process, Service Provider of Istanbul PPP A.S. will provide equal opportunity to the non-MoH employees of the closed hospitals, if any.



## **4.0 PROJECT ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM**

This section describes the arrangements by how environmental, occupational and community health and safety, social and labor related (altogether described as “environmental and social”) risks and impacts will be managed during the construction and operation phases of the Project. A management system is proposed to be used in order to manage these risks and also to meet applicable Turkish laws and regulations as well as the Lenders’ Requirements.

Istanbul PPP A.S. 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 as it will be the main construction work contractor and the product and service provider of the Ikitelli IHC. ESMS will be established in line with ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 and IFC PS1 “Assessment and Management of Environmental and Social Risks”.

The ESMS will integrate planning, implementation, control and review of the processes in terms of environmental and social impacts. In addition to the ESMS, a Health Care Waste Management System will be established and implemented as per IFC requirements.

The management of the IHC will be shared between MoH and Istanbul PPP A.S. during the operation phase. Due to the fact that there will be a shared management, it is expected that there should be cooperation between MoH and Istanbul PPP A.S. for some specific areas during the development and implementation of the ESMS which are not clear at this stage. It is expected that necessary discussions and engagement will be made with MoH by Istanbul PPP A.S. prior to the start of developing the operation phase ESMS in order to clarify these issues.

### **4.1 Environmental and Social Management Plan (ESMP)**

An ESMP has been developed for the Project (covering construction and operation phases) in order to manage the adverse impacts on the environment. The ESMP is prepared based on the international standards and national laws and regulations. The ESMP includes description of the mitigation measures to avoid, minimize or compensate the 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 and to reflect the requirements of new and/or amended laws and regulations.

A Waste Management Plan has also been established as part of the ESIA. Waste Management Plan will be updated based on the final design and site layout plan. In addition to the updated Waste Management Plan, the following plans are described in the ESMP and will be developed to achieve EHSS objectives for the construction and operation phases:

*For construction phase:*

- Air Quality Control and Monitoring Plan
- Noise Control and Monitoring Plan
- Hazardous Material Management Plan
- Emergency Preparedness and Response Plan
- Construction Camp Management Plan
- Construction Traffic Management Plan
- Human Resources Management Plan
- Health and Safety Management Plan
- Community Health, Safety and Security Management Plan
- Archaeological Chance Finds Management Plan
- Subcontractor Management and Monitoring Plan

*For operation phase:*

- Air Quality Control and Monitoring Plan
- Hazardous Material Management Plan
- Emergency Preparedness and Response Plan
- IHC Traffic Management Plan
- Community Health and Safety Management Plan
- Health and Safety Management Plan
- Exposure Control Plan for blood-borne pathogens
- Radiation Exposure Control Plan
- Radioactive Substance Management Plan
- Life and Fire Safety Plan
- Security Plan
- Human Resources Management Plan
- Subcontractor Management and Monitoring Plan

These plans will be supported with 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. Additional procedures and plans will be developed as the Project progresses, as necessary.

## **4.2 Grievance Process**

A Grievance Management Procedure 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. It is important to note that there will also be a separate grievance management procedure for workers/employees during construction and operation phases, and for patients during the operation phase. Of specific to the operation phase, it is important to mention that Istanbul PPP A.S. will only be responsible for the management of grievances related with the services it provides and also grievances of workers that are working at these services; grievances related with the health services or grievances by the health personnel will be under the responsibility of MoH.

Local communities will be informed about the grievance management system during the consultation and disclosure activities. All grievances will be recorded, responded and resolved in a defined timeframe. The planning of the grievance management is currently at a planning stage. There will be

a full-time, site based Community Liasion Officer (CLO) to whom comments and grievances can be submitted via face-to-face contact, mail, e-mail, and fax during the construction and operation stages as well as through the Project website and telephone. Istanbul PPP A.S. would be a secondary platform as well for handling grievances.

The procedure to handle grievances include consideration of all grievances submitted by in verbal and written, logging all grievances, evaluation of the grievances in a timely manner, and informing the complainant about the corrective actions to be taken to manage the grievance. The grievance mechanism is described in SEP document. Any grievance related to subcontractors' activities will also be managed in line with the same grievance mechanism. In addition to grievances, comments will also be reviewed once a week to identify if they require a response and reflected to a comment log.

The planning of the grievance management process particularly for operation phase is still ongoing. It is expected that a call center will manage the grievance system of Istanbul PPP A.S during operation phase. If any grievance related with health services is obtained, the grievance will be conveyed to MoH and people giving the grievance will be informed about this action accordingly. It is important to note that there is already a hotline (184) known as 'MoH communication center' which is used to submit grievances related with health services all over Turkey. It is expected that this hotline will continue to be used during the operation of Ikitelli IHC through which MoH can receive grievances.