Environmental and Social Impact Assessment for Gaziantep Integrated Health Campus

Volume I

Final

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Environmental and Social Impact Assessment for Gaziantep Integrated Health Campus: *Volume I*

September 2016

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For and on behalf of
Environmental Resources Management

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ACRONYMS

Acronym	Description
AHUs	Air Handling Units
ALARP	As Low As Reasonably Possible
AQAMR	Air Quality Assessment and Management Regulation 2008
AQIA	Air Quality Impact Assessment
AQMP	Air Quality Management Plan
AQS	Air Quality Standards
ARM	Ambient Ratio Method
BMS	Building Management Systems
CCTV	Closed Circuit Television
CHP	Combined Heat and Power
CMP	Construction Management Plan
CV	Curriculum Vitae
D400	The Gaziantep – Sanliurfa Motorway
D850	The Gaziantep – Kilis Motorway
dB(A)	A-Weighted Decibels
DSFZ	Dead Sea Fault Zone
EAFZ	East Anatolia Fault Zone
EBRD	European Bank for Reconstruction and Development
eg	For example
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ELC	ELC Group Consulting and Engineering
EPC	Engineering, Procurement and Construction
EPCJV	Engineering, Procurement and Construction Joint Venture
EPRP	Emergency Preparedness and Response Plan
EPV	Emergency Vehicle Pre-emption
ERM	Environmental Resources Management
ESIA	Environmental & Social Impact Assessment
ESMMP	Environmental, Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU	European Union
EU IED	European Union Industrial Emissions Directive
FGDs	Focus group discussions
CGDYY	Official Gazette Date and Number: 10.06.2010/27601
G1	Gate 1
G2 to G6	Gate 2, Gate 3, Gate 4, Gate 5 and Gate 6
GEP	Good Engineering Practice
GASKI	Gaziantep Water and Sewerage Administration
GIIP	Good International Industry Practice
GPS	Geographical Positioning System
HCM	Highway Capacity Manual

Acronym	Description
HCV	Hepatitis C Virus
HGV	Heavy Goods Vehicle
HIB	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
Hrs	Hours
HSE	Health, Safety and Environment
HTP	Health Transformation Program
Hz	Hertz
IA	Impact Assessment
ICNIRP	International Commission for Non-Ionizing Radiation
ICUs	Intensive Care Units
IFC	International Finance Corporation
IHSM	Administration Building
ILO (convention)	International Labour Organisation
IPS	Isolation Power System
kHz	Kilohertz
Kg	Kilogram
Km^2	Square Kilometre
LAeq	Daytime ambient
LV	Low Voltage
m	Metre
m^2	Square Metre
m^3	Cubic Metre
MASW	Multispectral Analysis of Surface Waves
MEP	Mechanical, Electrical and Plumbing
MEUP	Ministry of Environment and Urban Planning
MFWA	Ministry of Forest and Water Affairs
mg	Milligram
mm	Millimetre
MoH	Ministry of Health
MoHA	Ministry of Home Affairs
MoJ	Ministry of Justice
MTA	Mineral Research and Exploration
MV	Medium Voltage
Mw	Megawatt
MW_{th}	Megawatt Thermal
NAFZ	North Anatolia Fault Zone
NEHRP	National Earthquake Hazards Reduction Program
NGO	Non-Governmental Organisation
Nm^3	Normalised Meter Cubed
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxide
NTS	Non-Technical Summary
NVIA	Noise and Vibration Impact Assessment
O-54	Otoyol-54
OECD	Organisation for Economic Cooperation and Development
OG	Official Gazette
OHS	Occupational Health and Safety
OHSAS	Occupational Health and Safety Assessment System
OLM	Ozone Limiting Method
OT	Operating Theatres
PC	Process Contribution
PEC	Predicted Environmental Concentration

Acronym	Description
PIDs	Project Information Documents
PM_{10}	Particulate matter
$PM_{2.5}$	Particular particulate matter
PNL	The Project Noise Level
PPP	Public Private Partnership
PR 2	Performance requirements
PR10	Performance Requirements
PS1	Performance Standards
PS2	Performance Standards
PVMRM	Plume Volume Molar Ratio Method
Qe	Old Alluvion
RSPC	Regulation on Soil Pollution Control and Point-Source Contaminated Sites
RWPC	Regulation on Water Pollution Control
R1	Receptor 1
R2	Receptor 2
R3	Receptor 3
R4	Receptor 4
SATV	Satellite Antenna Television System
SEP	Stakeholder Engagement Plan
SGDD	Association for Solidarity with Asylum Seekers and Migrants (Siğinmacilar ve Göçmenlerle Dayanişma Derneği)
SO_2	Sulphur Dioxide
SPM	Social Performance Manager
SPV	Special Purpose Vehicle
SSK	Social Security Institution
SWL	Sound power level
SWMR	Surface Water Quality Management Regulation
TBC	To Be Confirmed
TIS	Traffic Impact Study
TMF	Fırat Formation
TOBB	Türkiye Odalar Ve Borsalar Birliği (High School)
ToR	Terms of Reference
TSE	Turkish Standards Institution
Ty	Yavuzeli Basalt
UKOME	Ulaşım Koordinasyon Merkezi (Turkish Transportation Coordination Directorate)
UN	United Nations
UPS	Uninterruptible Power Supply
USEPA	United States Environmental Protection Agency
VAT	Value Added Tax
WAGs	Waste Anaesthetic Gases
WEEE	Waste Electronic and Electrical Equipment
WMP	Waste Management Plan
WWTP	Wastewater Treatment Plants

1 INTRODUCTION

1.1 PROJECT BACKGROUND

Samsung C&T Corporation, *Salini Impregilo* and *Kayi* are the Special Purpose Vehicle (the SPV) responsible for the development of the Gaziantep Integrated Healthcare Campus ('the Project'). The Project is located in Şahinbey District of Gaziantep, southwest of Gaziantep in southern Turkey and covers an area of 330,091 m². The Project will have a capacity of 1,875 beds. In addition to the main hospital, which will include a core building and four towers with a total bed capacity of 1,625, the healthcare campus will have a 100 bed High-Security Forensics Psychiatric Hospital and a 150 bed Physical Medicine and Rehabilitation Hospital. In addition, there will be administrative buildings, car parking areas, a helipad and a tri-generation plant.

Construction commenced in March 2016 and will continue for three years. The Project is expected to be commissioned and fully operational by September 2019.

The SPV is seeking financing from multinational financial institutions to fund the development of the Project and is in discussions with commercial banks and financial institutions including, but not limited to the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and The Export and Import Bank of Korea (Korea Exim Bank).

This Project is considered to be a Category B project under the EBRD Performance Requirements (1). Category B projects or operations are those where an environmental analysis must be prepared. The Environmental and Social Impact Assessment (ESIA) for this project was initiated before project categorisation by the Lenders and it was decided by the SPV to continue to undertake a full ESIA. This approach has been accepted by the principal lenders as it goes beyond EBRD requirements for Category B projects.

1.2 THE ESIA PROCESS

The ESIA has been undertaken in accordance with Turkish legislative requirements, EBRD, EIB, International Finance Corporation (IFC) requirements and internal corporate standards. The ESIA process included the following steps:

1. Scoping: this phase presented a description of the proposed Project, the ESIA process, relevant legislation and Project standards, the physical, biological and socio-economic characteristics of the Project Study Area, perceived issues and an outline of the Terms of Reference (ToR) for the

(1) EBRD Environmental and Social Policy, May 2014.

specialist studies to be included in the ESIA. Key stakeholders, including interested and affected parties, were identified during this phase and provided with an opportunity to raise any interim comments, concerns, and/or queries that they may have had on the proposed Project.

2. Environmental and Social Impact Assessment: this study functions as the main document for the ESIA study and provides a detailed analysis of the potential environmental and social impacts, supported by objective and defendable specialist scientific studies.

3. Environmental and Social Management and Monitoring Plan (ESMMP): this provides a concise tabular framework of all mitigation measures, key performance indicators, responsibilities and reporting requirements aligned with the assessment of environmental and social impacts.

4. Stakeholder Engagement: stakeholders have been engaged throughout the ESIA process. Key findings from the Scoping process have been presented to government officials, local communities and key interest groups.

1.3 PURPOSE OF THIS DOCUMENT

The main objective of this ESIA report is to present the following:

- a detailed description of the proposed Project and relevant Project alternatives;
- the ESIA process and methodology and a detailed legal register of legislation, standards, guidelines and strategies (both national and international) pertinent to the proposed Project and this ESIA;
- the outcomes of stakeholder engagement activities carried out throughout the ESIA process;
- a detailed baseline review of the physical, biological and socio-economic characteristics of the Project area and surrounds;
- an assessment of impacts to the physical, biological and socio-economic environments during construction and operation of the Project;
- an assessment of cumulative impacts associated with the other planned, existing or project-related developments in the broader area of the proposed Project; and
- mitigation measures and associated management plans that aim to avoid / minimise / manage the identified impacts.

1.4 STRUCTURE OF THIS REPORT

This ESIA is provided in two Volumes:

- **Volume I:** the main Environmental and Social Impact Assessment (ESIA) Report, which outlines the key findings and significant conclusions of the ESIA process.

- **Volume II:** Technical Annexes that provide the extensive detail covering each technical discipline. This Volume supports the conclusions summarised in Volume I.

The detailed structure of Volumes I and II is outlined in *Table 1.1* and *Table 1.2* below.

Table 1.1 Volume I – ESIA Report

Chapter	Contents
Non-Technical Summary	Non-Technical Summary (NTS) to provide an overview of the full ESIA and can be used as a stand-alone legal document during the stakeholder engagement process.
Chapter 1 - Introduction	This Chapter.
Chapter 2 – Project Description	Describes the Project and its geographical and temporal context. Including a site description, an overview of the Project Design, details of project inputs and outputs and an overview of ancillary infrastructure. Project alternatives that have been considered in the ESIA process are also discussed.
Chapter 3 – Administrative Framework	Describes that national environmental and social legislative, policy and administrative requirements, as well as international good practice and guidelines applicable to the Project.
Chapter 4– Stakeholder Engagement	Provides the results of consultation undertaken as part of the ESIA, plus plans for future consultation, including during operation. It identifies key project stakeholders and present their feedback on the Project
Chapter 5 – ESIA Methodology	Describes the overall ESIA approach and methodology for the technical assessments with consideration of national and international guidelines and requirements.
Chapter 6 –Impacts & Mitigation	Provides an overview of key baseline findings, sensitive receptors and significant construction and operational impacts, mitigation measures and residual impacts. Cumulative impacts are also presented.
Chapter 7 – Environmental and Social Management Plans	Provides a summary of the ESMMS and presents the Environmental and Social Management Plans (ESMPs) that are to be implemented to manage identified significant impacts.

Table 1.2 Volume II – Technical Annexes

Chapter	Contents
Introduction	Presents a brief overview of the ESIA Technical Annexes and their role in the overall ESIA report, including an overview of the general Area of Influence for the ESIA.
Annex A – Administrative Framework	Presents the Administrative Framework for the ESIA.
Annex B – Social Assessment and Chance Finds Procedure.	Presents the Socio-Economic Area of Influence, scope of work, baseline, impact assessment, mitigation and all associated technical data. The Chance Finds Procedure is an appendix to this annex.
Annex C – Air Quality	Presents the Air Quality Area of Influence, scope of work, baseline, impact assessment, mitigation and all associated technical data.
Annex D – Noise and Vibration	Presents the Noise Area of Influence, scope of work, baseline, impact assessment, mitigation and all associated technical data.
Annex E – Waste Management	Presents the Waste Area of Influence, scope of work, baseline, impact assessment, mitigation and all associated technical data.
Annex F- Traffic Assessment	Presents the Traffic Area of Influence, scope of work, baseline, impact assessment, mitigation and all associated technical data.
Annex G – Water Resources	Presents the Water Resources Area of Influence, scope of work, baseline, impact assessment, mitigation and all associated technical data.
Annex H – Geology and Soils	Presents the Geology and Soils Area of Influence, scope of work, baseline, impact assessment, mitigation and all associated technical data.
Annex I – Stakeholder Engagement Plan	Presents the Stakeholder Engagement Plan for the Project.

2 PROJECT DESCRIPTION

2.1 INTRODUCTION

This chapter presents the Project Description of the Gaziantep IHC Project and summarises the key components and activities that will be required for construction and operation, including the associated facilities and required infrastructure.

The Project involves the construction of a 1,875 bed Healthcare Campus over an area of 330,091 m^2. The Project will include four towers and a core building with a total bed capacity of 1,625; a 100 bed High- Security Forensics Hospital; and a 150 bed Rehabilitation Hospital. In addition, there will be administrative buildings, car parking areas, a helipad and a tri-generation plant. Construction will take approximately three years to complete. The Healthcare Campus will be managed for an initial 25 years by the SPV while medical staff will be provided by the Ministry of Health (MoH). The Ministry of Justice (MoJ) and Ministry of Home Affairs (MoHA) will also play a role in managing the High Security Forensic Unit however their roles at this stage have not been fully clarified. Roles will be guided by the *Management and External Security of Prisons, Convicts and Detainees regarding the Transportation of Prisoners and Health Services Protocol*, signed on 19th August, 2011.

This report does not consider the decommissioning of the Project or any activities associated with decommissioning. Due to the long term nature of the Project, decommissioning will be assessed closer to the time this is required, and in advance of any works proceeding.

2.1.1 Healthcare in Turkey

To meet the growing demand for healthcare provision in Turkey, the MoH initiated the Health Transformation Program (HTP), which has brought about improvements in healthcare delivery in recent years [(1)]. One of the objectives of the HTP was to strengthen primary healthcare services and to support this; the Family Medicine Programme was introduced in 2010 assigning a specific doctor to each patient. Community Health Centres were also established to provide free-of-charge priority services such as vaccinations, maternity and child health care, and family planning services.

The improvements in healthcare sought to strengthen financial and organisational structure across the country, compared to a previously fragmented approach. As a result of the HTP, the total health expenditure increased from 5.4 percent of GDP in 2002 to 6.1 percent in 2008. The HTP also increased investment in training for medical professionals and has seen an increase in the number of doctors and nurses from 256,000 in 2002 to

(1) World Health Organisation, Turkey Country Cooperation Strategy: http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_tur_en.pdf

482,000 in 2011. The new strategic plan for healthcare delivery in Turkey (2013 – 2017) embeds the new European Health Policy, Health 2020 (1) and incorporates the Tallinn Charter principles (2).

In recent years, major health indicators such as infant mortality and maternal mortality rates have improved. For example, infant mortality rate has decreased from 31.5 per 1,000 live births in 2002 to 7.7 per 1,000 live births in 2011. Maternal mortality rate has decreased from 64 per 100,000 live births to 15.5 per 100,000 live births during the same period. Life expectancy has increased in Turkey during this period and more people are using healthcare services, including preventative health services. Patient rights have also improved through the implementation of the Patients' Rights Charter, established in 1998 (3).

The HTP is also changing the way hospital services are provided with a focus on improved efficiency. As a result, the HTP has been uniting all existing hospitals under a single umbrella within the MoH rather than having some hospitals run by the MoH (state hospitals) and others by the Social Insurance Organisation in Turkey (SSK). This has also opened up more hospitals to the general public, regardless of whether they are covered by social insurance or not (4).

Hospitals are also undergoing restructuring as part of the HTP and the MoH has embarked upon a programme comprising of about 28 healthcare campus projects with a total capacity of over 26,000 beds to be procured through the Public Private Partnership ('PPP') model. The Gaziantep IHC will be one of these 28 campuses across the country, providing a health care campus for each Health Region. The PPP arrangement is expected to ensure the latest technology is available along with greater capacity. The MoH believes healthcare campuses are important for the following reasons (5):

- **Increasing health service efficiency in Turkey:** spreading a diversity of treatment across the country, improving service quality and delivering a cost effective health service.

- **Meeting the needs of society:** ensuring sufficient numbers of beds as well as quality, providing a specialised team to service a whole region, providing new technologies and developing curative services.

(1) http://www.euro.who.int/en/health-topics/health-policy/health-2020-the-european-policy-for-health-and-well-being/about-health-2020
(2) http://www.euro.who.int/__data/assets/pdf_file/0008/88613/E91438.pdf
(3) World Health Organisation, Turkey Country Cooperation Strategy: http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_tur_en.pdf
(4) Health Transformation Programme in Turkey (2010), Progress Report, Ministry of Health, http://www.saglik.gov.tr/EN/dosya/2-1251/h/healthtransformationprogrammeinturkey.pdf
(5) Health Transformation Programme in Turkey (2010), Progress Report, Ministry of Health, http://www.saglik.gov.tr/EN/dosya/2-1251/h/healthtransformationprogrammeinturkey.pdf

- **Meeting the needs of patients:** shortening the length of hospital stay, reducing the number of patient transfers, decreasing hospital infections and improving patient safety and satisfaction.
- **Meeting the needs of personnel:** increasing staff satisfaction and safety while improving the quality of the workforce and associated services.

In 2013, the Government passed a law to facilitate and regulate public-private partnerships in the provision of healthcare, recognising the opportunities created in partnering with the private sector. This Project will be implemented within the PPP framework through a 'built-lease-manager' model where the SPV will be responsible for the full construction of the site and service delivery, while the MoH will be responsible for the provision of medical services. The MoH will take full responsibility for the Project at the end of the 28-year agreement with the SPV.

2.2 NEED FOR THE PROJECT

Gaziantep Province has a population of 1,889,466. The province currently has a combined hospital bed capacity of 4,027 consisting of 2,945 beds in government and university hospitals and the remaining 1,082 beds in private hospitals. The city currently has one of the highest in-migration rates in Turkey at 1.26 percent per annum. Şahinbey District, where the Project is located, covers the southern part of Gaziantep city and has an estimated population of 845,528. Gaziantep also has a very high population density of 277 people/km^2 compared with the national average of 100 people/km^2 and has experienced highly significant influx of Syrian refugees. Whilst the official registered number is 350,000; it is estimated that up to 500,000 (1) refugees may be residing in the city. For example; Güneş Mahalle, a neighbourhood close to the Project site, has a Turkish population of 30,000 and 2,500 registered refugees, plus an estimated 5,000 unregistered refugees.

The Provincial Directorate of Health estimates (2) that there is currently a hospital bed shortage of between 1,200 and 1,800 in the province and pressure on hospitals is expected to increase. State hospitals are running at 90 percent capacity, university hospitals at 96 percent capacity and private hospitals at 60 percent capacity. Additional pressure is being placed on the Gaziantep healthcare system by the presence of large numbers of Syrian refugees and this is unlikely to change over the next five to ten years.

Gaziantep is already expanding existing hospital infrastructure by 800 beds but still needs the additional bed capacity that the Project will provide. Additionally, only around 40 percent of existing government hospitals and 60 percent of university hospitals meet relevant EU standards. There is also an

(1) Quoted by the Association for Solidarity with Asylum Seekers and Migrants, July 2015.
(2) Information provided by the Director of the Provincial Directorate of Health during the Scoping site visit on 21 April, 2015.

urgent need to expand and upgrade hospital infrastructure and services in Gaziantep Province.

2.2.1 *Existing Bed Capacity*

Gaziantep City currently has eight state hospitals located in either Şehitkamil or Şahinbey Districts and five provincial state hospitals in Oğuzeli, Nizip, Islahiye, Nurdağı and Araban Districts. In addition, there are 12 private hospitals in Gaziantep which are also listed below. The bed capacity of these hospitals is provided in *Table 2.1.*

Table 2.1 Capacity of Hospitals in Gaziantep Province (1)

Hospital Type	Bed Capacity
State Hospitals	
Dr.Ersin Arslan State Hospital	606
Children Hospital	368
Cengiz Gökçek Women Hospital	188
Şehitkamil State Hospital	336
Gaziantep University Hospital	792
25 Aralık State Hospital	350
Gaziantep Oral and Dental Clinic	NA
Şahinbey Oral and Dental Clinic	NA
Total Gaziantep City Beds	**2,640**
State Hospitals in Other Districts	
Nizip State Hospital	150
Nurdağı State Hospital	20
Araban State Hospital	15
İslahiye State Hospital	100
Oğuzeli State Hospital	20
Total Provincial State Beds	**305**
Private Hospitals	
Hayat Private Hospital	46
Düztepe Yaşam Private Hospital	60
Göznuru Eye Hospital	12
Primer Private Hospital	69
Tam-Med Private Hospital	51
Medical Park Private Hospital	135
Amerikan Private Hospital	50
Yılmazer Private Hospital	27
Sani Konukoğlu Private Hospital	611
Hatem Private Hospital	21
Dentaland Oral and dental clinic	NA
Artemis Women Health Hospital	NA
Total Private Sector Beds	**1,028**

(1) Based on 2010 data from the MoH website: http://www.tkhk.gov.tr/DB/6/766_DB_6_kamu-hastane-birliklerine-bagli-hastanelerin-yatak-sayilari-rol-tanimlari-ve-listeleri-sunum-rehberi and the Gaziantep Provincial Health Directorate: http://gaziantepsaglik.gov.tr/index.php?sayfa=SayfaOku&SayfaId=103

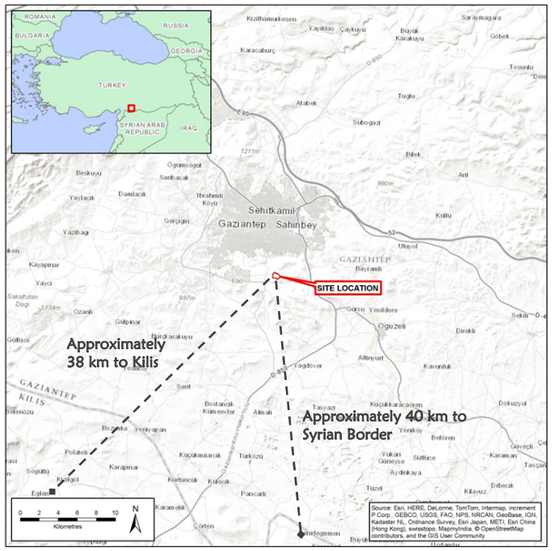
2.3 PROJECT LOCATION

2.3.1 *Area Overview*

The Project is located in Şahinbey District, one of nine districts in Gaziantep Province, southwest of Gaziantep City in southeast Turkey. The Project area is surrounded by several neighbourhoods including Akkent, Karataş, Güneş, 75 Yıl and Dumlupınar. The Project is approximately 38 km from Kilis and approximately 40 km from the Syrian border.

The Project location and the neighbourhoods in the Şahinbey District are illustrated in *Figure 2.1*. Two facilities are located adjacent to the Project site including the Türkiye Odalar ve Borsalar Birliği High School and the Tram Depot. These are illustrated in *Figure 2.1*. The school is described in more detail in *Volume II, Annex B* and the tram depot is described in *Volume II, Annex F*. The nearest neighbourhoods to the Project site are Akkent, Karataş and Güneş. Akkent and Karataş are relatively new neighbourhoods with apartment blocks and amenities including shops and parks and a largely middle class demographic with a considerable retirement-age population. Güneş is an older, more established neighbourhood.

PROJECT LOCATION

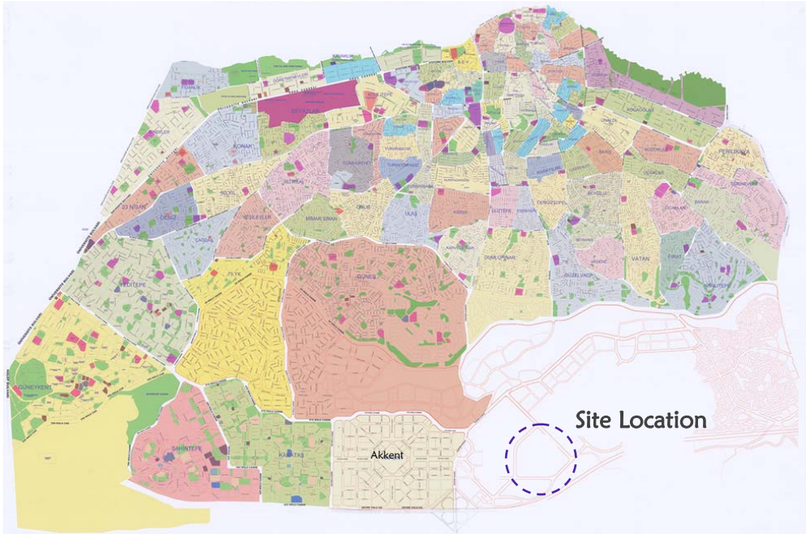


Akkent neighborhood is a new urban development of apartment blocks and amenities including shops and parks

The Project is located in Şahinbey District, one of nine districts in Gaziantep Province, southwest of Gaziantep city in southeast Turkey. The Project area is surrounded by several neighbourhoods including Akkent, Karataş, Guneş, 75 Yil and Dumlupinar.

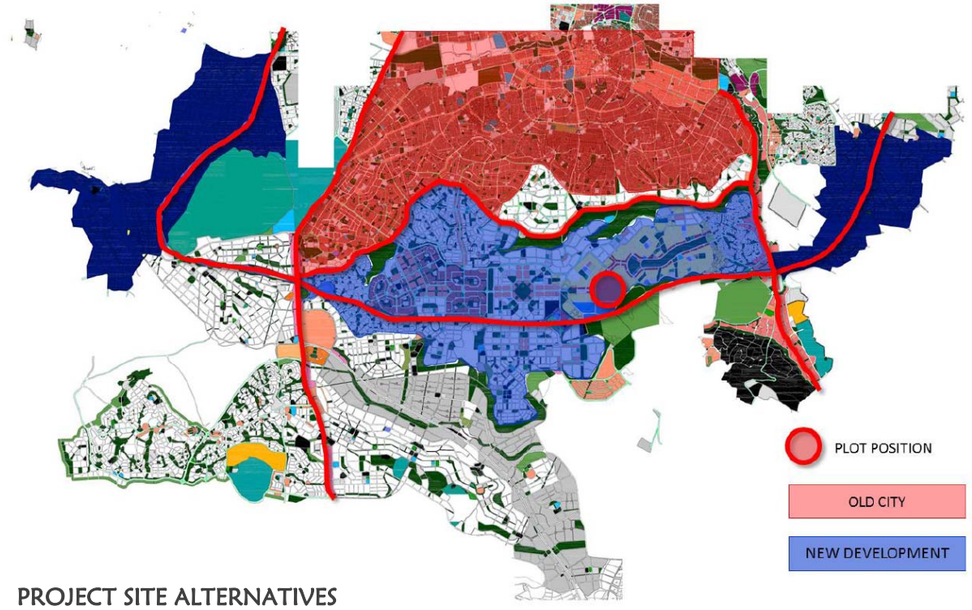
Recent maps produced by Şahinbey District indicate that the Project is located in Akkent neighbourhood although earlier correspondence from the Ministry of Health locates the site in Bağlarbaşı. The Bağlarbaşı Muhtar indicated that Bağlarbaşı is one of the oldest neighborhoods in Gaziantep that used to include Akkent, Karataş and Mavikent.

Neighbourhoods in Şahinbey District



Gaziantep / Development plan

Parcels of land surrounding the Project site have been earmarked for similar urban development and the Project has been incorporated into the wider Master Plan for the area.



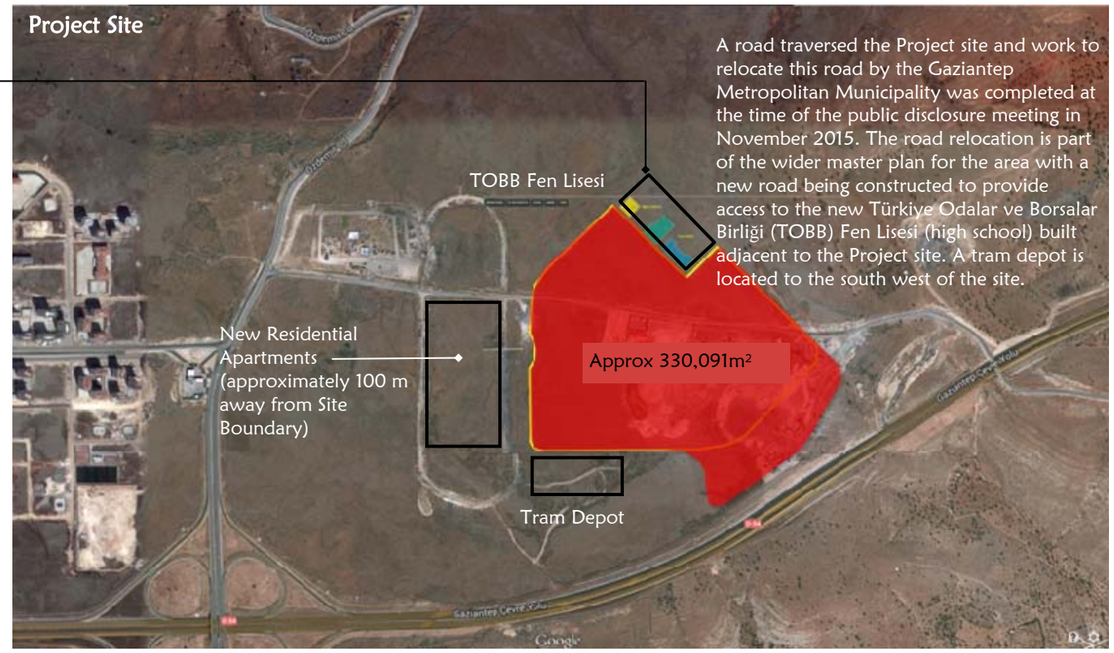
Local park

Apartment buildings

TOBB Fen Lisesi adjacent to project site

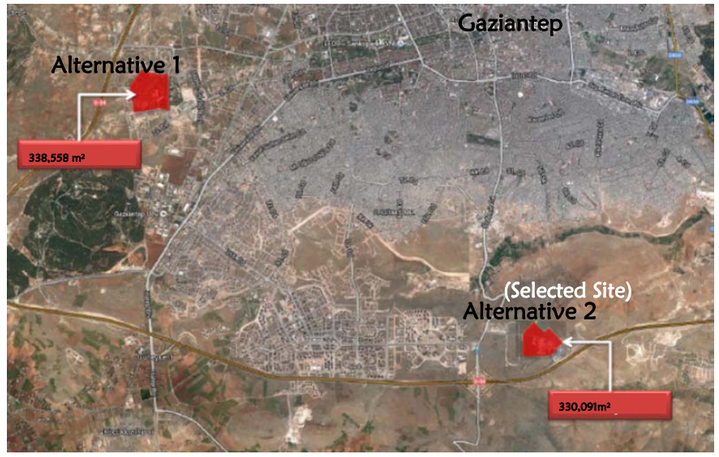
Main road looking east to the Project site, local shops in Akkent.

Main road through Akkent looking west



PROJECT SITE ALTERNATIVES

Alternative 1: Osmangazi, Şehitkamil District: The Project was originally planned to be located in Şehitkamil District of Gaziantep Metropolitan Municipality, on the western side of the city. However, access was challenging at this site. While the hospital could be accessed via the Gaziantep Ring Road, access from the centre of town was considered to be very difficult. The eastern side of the city currently has one university hospital and a maternity and children's hospital. Due to the presence of existing hospitals and the difficulty in accessing the site, a new site was chosen.



Alternative 2: Akkent, Şahinbey District: This is the current Project site, which was chosen because of the opportunities created by planned large scale urban development in the area. The Hospital will benefit from access road networks into central Gaziantep and around the city, its proximity to the airport and the additional infrastructure such as water and electricity provision that is planned as part of the new development. The Mayor of Şahinbey District Municipality and the Gaziantep Metropolitan Municipality were involved in the decision making process.

CLIENT:	SIZE	ERM		DATE: 21/04/2016	CHECKED: NT	PROJECT: 0259525	DRAWING NUMBER & TITLE:	PROJECT:
SAMSUNG SAMSUNG C&T salini impregilo KAYI	A3	Eaton House Wallbrook Court North Hinksey Lane Oxford, OX2 0QS Tel: 01865 38 4800 Fax: 01865 384848	© ERM This print is confidential and is supplied on the understanding that it will be used onlyas a record to identify or inspect parts, concepts or designs and that it is not disclosed to other persons or to be used for construction purposes without permission.	DRAWN: NT/AK	APPROVED: TD	STATUS: Final	2.1 Project Location & Alternatives	Gaziantep Integrated Healthcare Campus ESIA

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Map Source: Google earth and Digitalglobe, CNES/Astrium copyright 2015. The road data produced by openstreetmap (OSM) open data. Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2.3.2 *Project Site*

The Project Site is shown in *Figure 2.1* and covers an area of 330,091 m^2. The parcels of land used for the Project were previously administered by the Treasury, with ownership for the entire site being passed on to the MoH to lease to the SPV on the 4th September 2015. The SPV now has a lease for these parcels. No involuntary resettlement (physical or economic displacement) has arisen out of the land acquisition and lease process.

2.4 *PROJECT ALTERNATIVES*

2.4.1 *'No Project' Scenario*

The 'no project' scenario considers not developing the Project at all. This would mean no investment in the healthcare system and no improvement in health services. Given the demand for improved and modern healthcare facilities in Gaziantep, the 'no project' scenario has not been considered further.

2.4.2 *Project Site Alternatives*

The Project site was initially identified by Gaziantep Municipality and the Ministry of Health in Osmangazi, Şehitkamil District. In 2014 the Ministry of Health, jointly with Gaziantep Municipality, decided to move the Project location to Akkent, Şahinbey District, which was chosen to align with proposed new developments in Şahinbey District. These are illustrated and described in *Figure 2.1*.

2.4.3 *Schematic Design Alternatives*

Significant changes were made to the schematic design of the Project in January / February 2016 and approved by the MoH in March 2016. Additional changes were made in April 2016. The final schematic design elements are described in more detail in *Sections 2.5* and *2.6*. The schematic design was changed in order to satisfy the following MoH requests:

- to improve accessibility to the healthcare campus for vehicles and bicycles as well as pedestrians, disabled people and staff;
- to maximise recreational space within the healthcare campus;
- to optimise logistic infrastructure and service routes;
- to improve patient satisfaction and staff productivity;
- to enhance planning options for car parks; and
- to optimise the layout of technical services such as kitchens and laundry.

The design improvements were addressed through six categories: green areas; space enhancement; daylight; car parking; service routes; and internal circulation. These are described below with comparisons between the original design and revised design.

Green Areas

Building footprints and recreational / green areas are illustrated in the *Figure 2.2* below. As a result of the changes in the schematic design, the building footprints (i.e. main hospital, forensic hospital and rehabilitation hospital) have decreased while the amount of green / recreational space has increased. The ratio of green / recreational space with respect to the total land area of the Project was 59% in the original design and this has now increased to 65% in the new design. The total green / recreational area is presented in *Table 2.2.*

Figure 2.2 Footprint of IHC Buildings, Location of Recreational Areas and Zoning

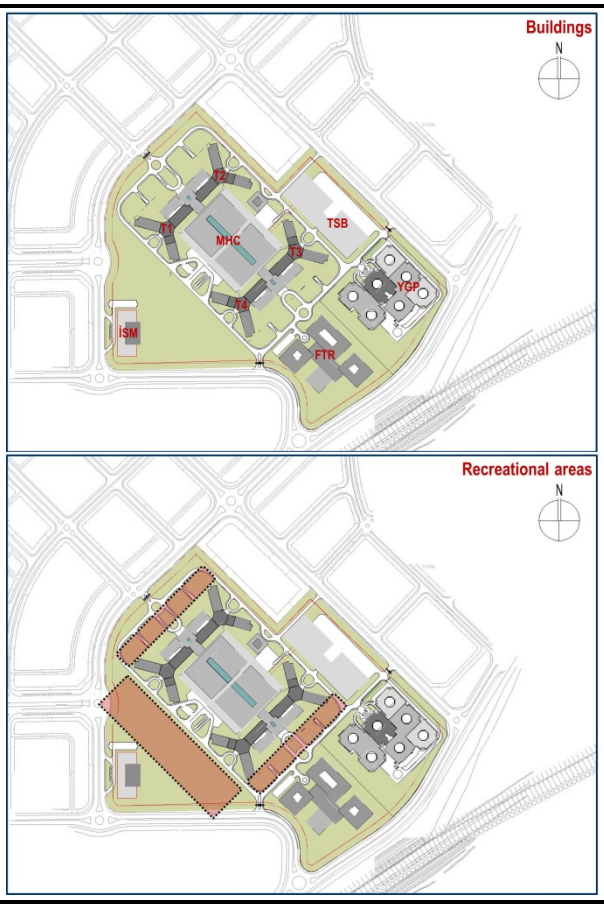


Table 2.2 Improvements in Recreational / Green Space

Building Footprint	Original Design	Revised Design
Main Hospital	59,000 m²	53,000 m²
Forensic Hospital	14,000 m²	17,000 m²
Rehabilitation Hospital	11,000 m²	21,000 m²
Total	**119,000 m²**	**102,000 m²**
Recreational / Green Space		
Total	174,000 m²	191,000 m²
Ratio (Green Space / Land Area)	59.1%	65.2%

Expansion Area

The new layout design incorporates more opportunities for expansion, therefore improving future options for adding new buildings if required. The new layout has almost doubled the area available for future expansion.

Table 2.3 Creation of an Expansion Area

	Original Design	Revised Design
Zone 1	6,000 m²	44,000 m²
Zone 2	16,000 m²	
Zone 3	6,000 m²	
Total	**29,000 m²**	**44,000 m²**
Ratio (Expansion area /Building footprints)	24.4%	43.1%

Daylight

The new layout has shifted to orientation of hospital buildings to maximise the use of daylight. *Figure 2.3* below illustrates the change in building rotation to maximise the amount of daylight entering rooms and wards and other key Project buildings.

Figure 2.3 Change in Daylight Conditions: Original design (left) and Revised design (right)

Car Park Planning

The majority of the car parking is provided in closed parking areas. The revised design incorporates a closed car parking design strategy for a shared car parking area under the Main Hospital building, providing users of the car park easy access to the Main Hospital and other buildings.

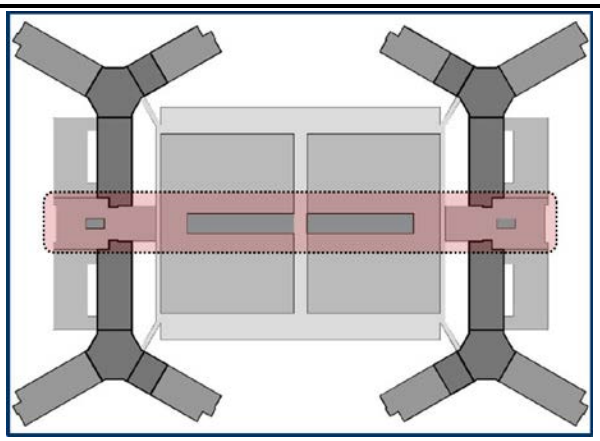
Service Routes

Under the new design, the Technical Services Building will be connected to the Main Hospital building via a 20 m tunnel. Access will make use of a mezzanine floor to ensure a larger separate, clean and easy-to-access service route without expanding the footprint of the building.

Internal Circulation

A new central corridor has been included in the design of the Project to enable easy and spacious circulation of people movement within the facility. This is illustrated in *Figure 2.4*.

Figure 2.4 Internal Circulation Strategy of the Main Hospital Building



2.4.4 *Tri-generation Plant and Boiler Design Alternatives*

A gas-fired tri-generation plant (combined heating, cooling and power), will be installed at the site, together with boilers for the generation of hot water.

Three tri-generation units (each with a capacity of 5.75 MW_{th}) and five boilers (each with a capacity of 8 MW_{th}) will be installed, with the total rated thermal input of all combustion activities within the installation is approximately 57.25MW_{th}. The combined thermal input of the tri-generation plant during the operational phase is understood to be 17.25 MW_{th} and the boilers are expected to be 40MW_{th}. The proposed stack heights for the tri-generation units and boilers in the original design were 13 m and 20 m, respectively. It was also proposed that each unit would have its own exhaust emission stack ie eight stacks in total.

Due to the proximity and height of the proposed buildings surrounding the building where the plants are located, concerns were raised regarding the potential impact of the base design parameters upon local air quality at both on-site and off-site sensitive receptors. A number of alternative design options were therefore considered to reduce potential impacts to as low as reasonably practicable. This was an iterative process undertaken with close liaison between the design engineers and the air quality experts.

Three further options were considered and assessed, taking into account the following parameter design changes:

- Increased stack heights for both tri-generation plant and boiler plant;
- Use of combined stacks for the tri-generation plant and boiler plant; and,

- Reduction/improvement in the oxides of nitrogen (NO_x) emission concentration of the tri-generation plant.

The recommended alternative design therefore incorporates a reduction in NO_x emission concentrations from the tri-generation unit, combined emission point flues into single stacks ie one combined tri-generation plant stack and one combined boiler stacks, and an increase in the proposed stack height to 45 m. Further details into these alternative designs can be found in *Volume II, Annex C Air Quality*.

2.5 PROJECT DESIGN & LAYOUT

2.5.1 *Overview of Facilities*

The Project will have a total capacity of 1,875 beds. In addition to the main hospital which will include a core building and four towers with a total bed capacity of 1,625, the healthcare campus will have a 100 bed High- Security Forensic Hospital and a 150 bed Rehabilitation Hospital.

The health campus will house administrative buildings (including the Provincial Directorate of Health), car parking areas and a helipad located to the south of the Main Hospital. The helipad will service ambulance helicopters currently under the direct service of the MoH.

The concept design and hospital details have been illustrated in *Figure 2.5*.

The Project will have a total capacity of 1,875 beds

MH Main Hospital: Core building and four towers with a bed capacity of 1,625 beds

FRH Forensic Hospital: Bed capacity of 100 beds (3 Floors)

RH Rehabilitation Hospital: Bed capacity of 150 beds (4 Floors)

The Forensic Hospital will be located east of the Main Hospital and the Rehabilitation Hospital will be located northwest southeast of the Main Hospital.
The Forensic Hospital will face the Gaziantep Ring Road (O-54) and will be located below ground level.

ADM Administration

ISM The **Provincial Directorate of Health** (ISM) will be located in the south west of the Project Site and will house various services and have several functions across eleven floors including one ground floor and a basement. Services will include: :

Local Health Authority;

Union of Public Hospitals ;

Provincial Department of Public Health; and

Command and Control Centre of 112 Emergency Services.

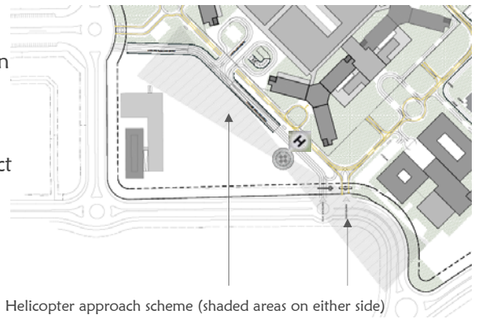
There is also a technical building in the north of the Project Site. It will include the tri-generation plant, various services such as laundry, catering and storage, mechanical and electrical units as well as a waste collection point.

Car Park:

Total;	3852 Spaces
Indoor Car park:	3175 Spaces (spread across two basement levels in the Main Hospital and Rehabilitation Hospital)
Outdoor Car park:	677 Spaces in total 250 Main Hospital 10 Forensic Hospital 297 Rehabilitation Hospital 120 IHSM Building

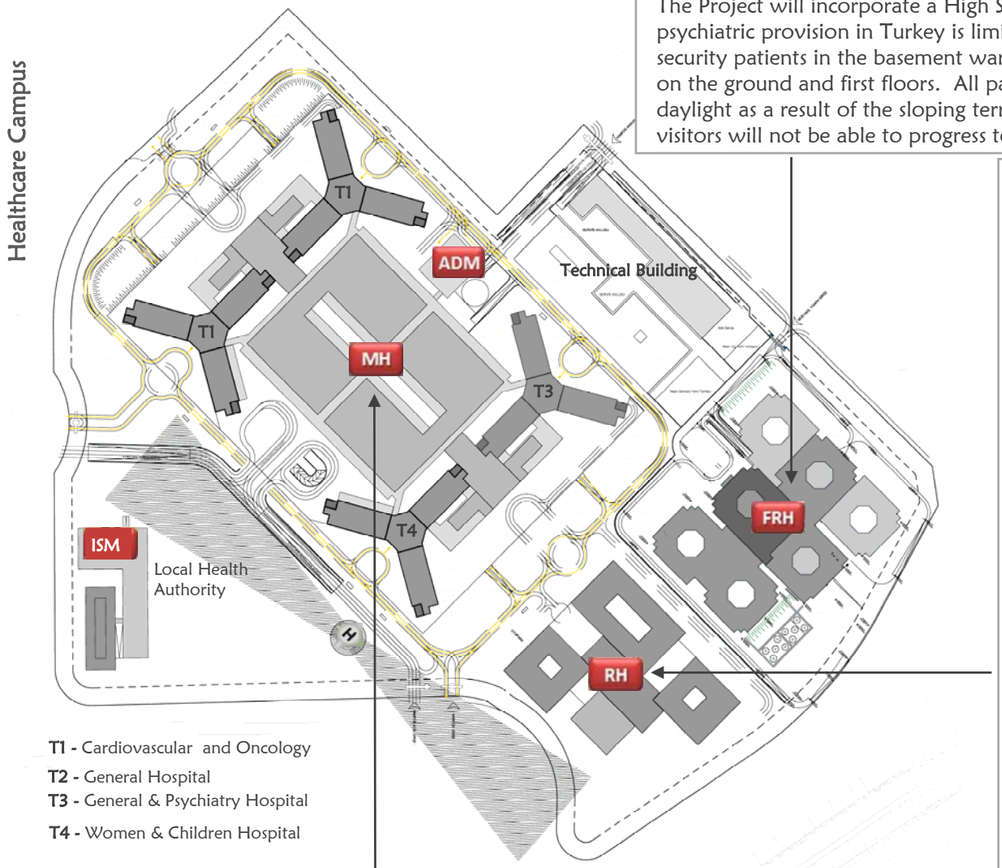
Helipad

The helipad is located on the west side of the site. The helipad will service ambulance helicopters currently under the direct service of the MoH.



Helicopter approach scheme (shaded areas on either side)

Indicative Layout Plan of Healthcare Campus



T1 - Cardiovascular and Oncology
T2 - General Hospital
T3 - General & Psychiatry Hospital
T4 - Women & Children Hospital

Forensic Hospital: 100 beds

The Project will incorporate a High Security Forensic Psychiatric Hospital. Existing forensic psychiatric provision in Turkey is limited. The building will have three floors with high security patients in the basement wards and first floor, and medium / low security patients on the ground and first floors. All patient rooms / cells in the basement will have access to daylight as a result of the sloping terrain. The visitor entrance is on the ground floor and visitors will not be able to progress to other parts of the hospital without being escorted.

Rehabilitation Hospital:

The Rehabilitation Hospital will consist of four floors and include:

rehabilitation radiology unit;
electrotherapy unit;
electrophysiology laboratory;
urodynamic laboratory and sexual rehabilitation clinic;
oncology rehabilitation unit;
speech rehabilitation;
occupational rehabilitation;
orthopaedic rehabilitation;
gait laboratory;
traumatic brain rehabilitation unit;
paediatric rehabilitation;
psychotherapy unit;
dietary unit;
hand rehabilitation unit;
prosthetics and orthotics laboratory;
cardio-pulmonary rehabilitation unit;
spinal cord injury rehabilitation unit;
rheumatological rehabilitation unit;
hydrotherapy pools;
acute care wards with a total of 150 beds;
gymnasium;
physician rooms; and
cafeteria, pharmacy, shop and public area.

Main Hospital: Four Towers and Core Building

The Main Hospital will have a total of 1,625 beds spread across a core building and four 10-floor towers .

- **Main Hospital Core** will have a total capacity of 33 beds.
- Tower one will house the **Oncology Hospital and Cardiovascular Diseases Building** and will have a total capacity of 401 beds.
- Tower two will house the **General Hospital** and will have a total capacity of 328 beds.
- Tower three will house the **General and Psychiatric Hospital** and have a total capacity of 402 beds.
- Tower four will house the **Women's and Children's Hospital** and have a total capacity of 461 beds.

3D Model

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SAMSUNG SAMSUNG C&T salini impregilo KAYI	A3	Eaton House Wallbrook Court North Hinksey Lane Oxford, OX2 0QS Tel: 01865 38 4800 Fax: 01865 384848		DRAWN: NT/AK	APPROVED: TD	STATUS: Final	2.5 Project Design	Gaziantep Integrated Healthcare Campus ESIA

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2.6 UTILITIES

The Project will incorporate well designed and integrated utilities which will comprise of the following components.

- Water supply;
- Site drainage and run off;
- Wastewater;
- Waste disposal;
- Tri-generation system;
- Electrical system;
- Mechanical design; and
- Fire safety.

All of the above utilities have been detailed in *Figure 2.6* Project Utilities.

PROJECT UTILITIES

Water Supply:

Site Drainage & Run Off:

Wastewater:

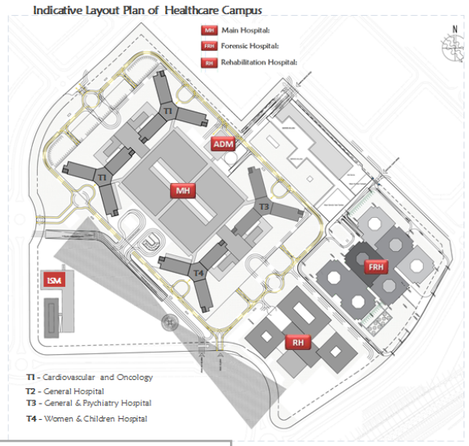
Waste Disposal:

Tri-Generation System:

Electrical System:

Mechanical Design:

Fire Safety:



Water Supply:

During construction water will be taken from an existing pipeline which will be connected in the north west of the site. During operation water will be required for general domestic and sanitary use, food preparation process, sterilisers and autoclaves and X-Ray equipment. Water will be taken from the existing pipeline which will provide sufficient supply.

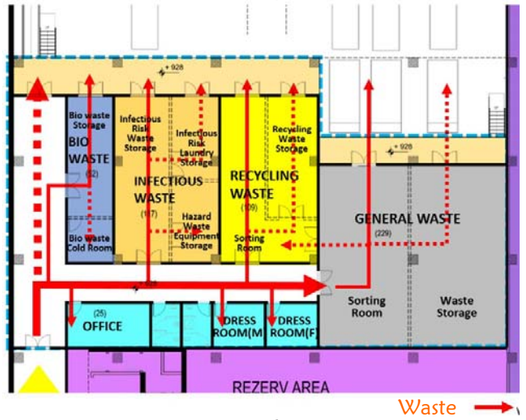
Electrical System:

The electrical system will include standard power distribution systems, emergency and back up. The systems will comply with various standards and codes eg Turkish Standards Institutions, International Industry Association etc. Diesel generators will provide 100 percent backup power supply for hospital buildings. Automatic transfer switches will control the distribution of emergency power to essential systems which include life safety, critical and equipment branches.

Waste Disposal:

The Project will produce hazardous medical wastes (from activities in labs, departments of pathological anatomy and expired medication), other wastes (including toners, neon light bulbs and batteries) and general wastes (such as kitchen and cafeteria wastes, paper, plastic, glass and aluminium). The predicted volumes of wastes produced by the Project are provided below along with frequency of disposal.

Type of Waste	Kg/day per bed	Ton/year Total	Frequency of Withdrawal for Disposal
Hazardous Medical Waste	1.3	800	Daily sterilisation of waste (Monday-Friday)
Non Hazardous Medical Waste	0.45	270	Monthly disposal
Hazardous Non -Medical Waste	0.27	160	Monthly disposal
Non Hazardous Waste (toners, light bulbs, batteries)		2,600	Monthly disposal
Non Hazardous Waste (general)	6.37	4,200	Daily (to prevent odours)



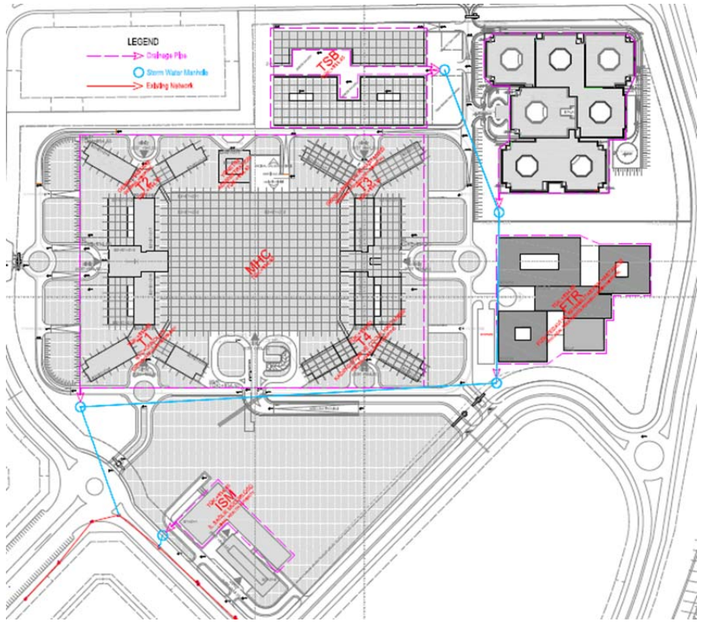
Waste will be segregated on site and transported to the designated waste collection areas in the technical building for safe storage. The hazardous waste storage area *(labelled Infection waste in figure left)* will be fenced to prevent unauthorised access and will hold metallic containers of 1m³ for the separation of different hazardous wastes. A sterilisation system for hazardous medical wastes will also be installed along with a washing system with high pressure water jet for cleaning bins and trolleys used to transport hazardous medical waste.

Once separated and stored, wastes will be transported offsite by a licensed operator or the municipality to licensed disposal/recycling facilities. Hazardous medical wastes will be disposed of at appropriate facilities, which shall have all applicable permits and capacity to handle specific types of health care waste.

No medical waste incinerator is proposed for the Project.

Site Drainage & Run Off:

Site drainage, sewage, storm water and potable water lines will be installed and are illustrated in below figure.



Wastewater:

There is no provision for a sewage treatment plant as part of the Project. Wastewater will be conveyed to a filter decontamination tank and oil catchers and then to the municipality sewage pipeline. Wastewater load has been confirmed with the Municipality. Wastewater coming from nuclear medicine will be conveyed to an appropriate waste disposal plant for the storage and decay of organic waste water deriving from the use of radioactive substances. Wastewater from laboratory sources will flow through dedicated discharge lines to an outside tank for collection and disposal by authorised providers.

Tri-Generation System:

Power will be supplied to the Project through a tri-generation system that provides power, heat and cooling facilities. The plant will have a total boiler capacity of 40 MW and tri-generation capacity of 17 MW. The tri-generation will have a stack height of 13m above ground and the boiler a stack height of 20m above ground.

The tri-generation system will use natural gas. It will provide hot water at a temperature of 75 degrees Celsius to provide power to boilers for sanitary purposes. It will also provide cool water.

Domestic Cold Water System

Both the Main Hospital and Forensic Hospital will be provided with two independent domestic water sources. Each domestic water service will have metered and reduced pressure backflow preventers and a booster pump to provide sufficient water pressure. The cooling tower water supply will also be provided with a water meter so that consumption can be monitored and measured. The steam boiler feed-water will have a water softener that will be a multiple tank with a hard water bypass.

Plant Steam System

The main boiler plant will consist of multiple boilers located in tri-generation plant. The steam boilers will be of a size that meets hospital requirements when the largest boiler is out of service. The boilers will generate steam at the plant steam supply pressure described above. Condensate return from the buildings will be collected into two surge tanks, one in service and one used as a standby. Each will have two transfer pumps for each deaerator included in the system.

Make-up water will be added to the system through these surge tanks. Surge tank transfer pumps will supply condensate return and make-up water to each deaerator with one additional standby pump located at each surge tank. Deaerators will be of a size to meet make-up water demand of the boilers with the largest deaerator out of service. They will be cross connected to ensure that any deaerator can supply any boiler. Each deaerator will serve two to three boilers. Feed water pumps will supply the condensate return and make-up water for the boilers associated with that deaerator. An additional pump will be installed as a standby pump, although changeover to the standby pump will require manual operation of the valves.

Mechanical Design:

Mechanical design will incorporate a high degree of integration among distribution systems, technical system terminals and building terminals to allow for flexibility, easy installation and safety. Mechanical design also considers the need for high reliability relating to possible system failures, disinfection requirements and the need for backup systems.

Mechanical design will be in compliance with appropriate HVAC, NFPA, and Turkish Standards Institutions (TSE) standards. Technical systems will be centralised in a dedicated area to ensure ease of control and maintenance. Technical components such as the AHU, air intake ducts and exhaust, pipes and water heater, electrical system and medical gases will be located in the hospital to ensure maintenance can take place as required without interfering with Project operation. The recovery systems for the treatment of fresh air will be optimised and low temperature heating systems will be used.

Note: All photos are for the purposes of illustration and not actual/photomontages/CGI. Maps and figures source: Schematic Design, General Report. Doc Code: 0000RRe-0001 SD EN. Dated 28th October 2015

2.7 CONSTRUCTION PHASE

2.7.1 *Overview*

Construction is due to start in in the second quarter of 2016 and will last for approximately three years. (see *Figure 2.7* for the indicative schedule).

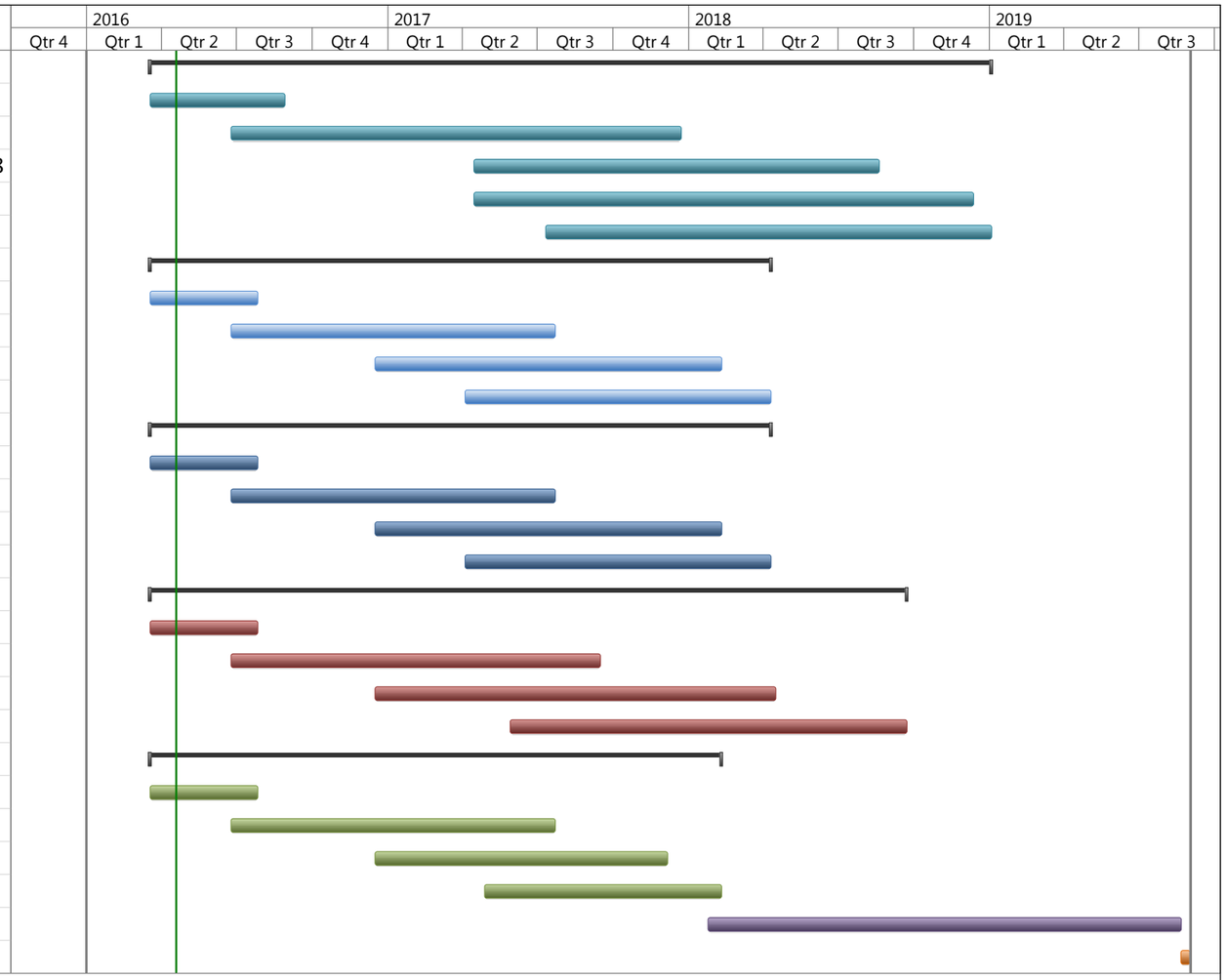
Construction activities commenced in March 2016 and will run for 20 hours per day. Construction is currently only operating during the day through a 10-hour shift. There may be a need to increase construction to two separate shifts of 10 hours each. If this is the case, the will seek the necessary approval from the Gaziantep Directorate for Environment for night time construction activities prior to commencing any night time construction activities.

Key activities and components of construction ie excavation and filling, construction material, traffic, water management and workforce have been provided in detail in *Figure 2.8.*

During construction water will be taken from an existing pipeline, which will be connected in the north west of the site.

Figure 2.7 Indicative Construction Programme

ID	Task Name	Duration	Start	Finish
1	**Towers 1,2,3,4 and Main Hospital- Construction**	**934.2 days**	**Fri 18/03/16**	**Thu 03/01/19**
2	Earth Works	150 days	Fri 18/03/16	Sun 28/08/16
3	Concrete Works	**500 days**	**Fri 24/06/16**	Fri 22/12/17
4	Facade & Roof Works	**450 days**	**Sat 15/04/17**	Sun 19/08/18
5	Finishing Works	**555 days**	**Sat 15/04/17**	Wed 12/12/18
6	Mechanical and Electrical Works	**495 days**	**Tue 11/07/17**	Thu 03/01/19
7	**Forensic Hospital Construction**	**689.6 days**	**Fri 18/03/16**	**Tue 10/04/18**
8	Earth Works	**120 days**	**Fri 18/03/16**	Tue 26/07/16
9	Concrete Works	**360 days**	**Fri 24/06/16**	Sat 22/07/17
10	Finishing Works	**385 days**	**Fri 16/12/16**	Fri 09/02/18
11	Mechanical and Electrical Works	**340 days**	**Tue 04/04/17**	Tue 10/04/18
12	**Rehabilitation Hospital Construction**	**689.6 days**	**Fri 18/03/16**	**Tue 10/04/18**
13	Earth Works	**120 days**	**Fri 18/03/16**	Tue 26/07/16
14	Concrete Works	**360 days**	**Fri 24/06/16**	Sat 22/07/17
15	Finishing Works	**385 days**	**Fri 16/12/16**	Fri 09/02/18
16	Mechanical and Electrical Works	**340 days**	**Tue 04/04/17**	Tue 10/04/18
17	**ISHM BUILDING**	**839.8 days**	**Fri 18/03/16**	**Sat 22/09/18**
18	Earth Works	**120 days**	**Fri 18/03/16**	Tue 26/07/16
19	Concrete Works	**410 days**	**Fri 24/06/16**	Fri 15/09/17
20	Finishing Works	**445 days**	**Fri 16/12/16**	Mon 16/04/18
21	Mechanical and Electrical Works	**440 days**	**Mon 29/05/17**	Sat 22/09/18
22	**Technical Building Construction**	**634.2 days**	**Fri 18/03/16**	**Fri 09/02/18**
23	Earth Works	**120 days**	**Fri 18/03/16**	Tue 26/07/16
24	Concrete Works	**360 days**	**Fri 24/06/16**	Sat 22/07/17
25	Finishing Works	**325 days**	**Fri 16/12/16**	Tue 05/12/17
26	Mechanical and Electrical Works	**263 days**	**Fri 28/04/17**	Fri 09/02/18
27	**Infrastructure and Landscaping**	**525 days**	**Wed 24/01/18**	Wed 21/08/19
28	**Test and Commissioning**	10 days	Wed 21/08/19	Sun 01/09/19

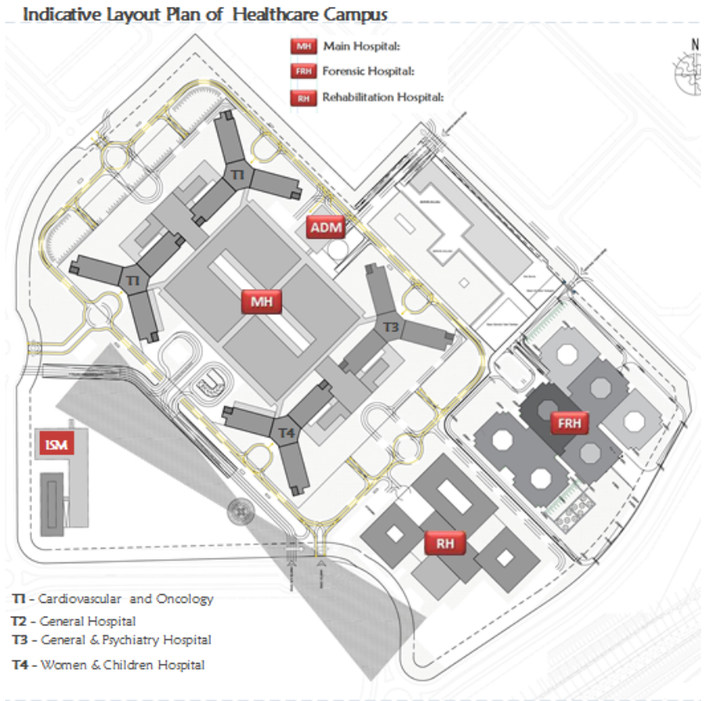


Project: Gaziantep IHC
Date: Tue 19/04/16

Task		Project Summary		Manual Task		Start-only		Deadline	
Split		Inactive Task		Duration-only		Finish-only		Progress	
Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
Summary		Inactive Summary		Manual Summary		External Milestone			

CONSTRUCTION

Construction is due to start in in the second quarter of 2016 and will last for approximately three years.



Construction Material

Construction material will include reinforcement steel and structural steel. All steel moulds, high efficiency deformed bars and building reinforcements will be in accordance with TS-708 and TS-4559 standards. All aggregates used in concrete works will comply with TS-706 and TS-707 standards. Sand and gravel will be of natural origin with strength equal to or greater than the cement. Portland cement will be used for concrete production and will comply with TS-19, TS-23 and TS-24 standards. Aggregate will be obtained from the quaries of Toma Insaat. These are located in Durnalı village and Karpuzkaya village (located 37km and 41km respectively from the Project site).

The concrete used in construction will have a compressive strength of 30 MPa (Grade C30/37). This exceeds the recommendations of 20 MPa for earthquake regions. A concrete grade of C25/30 will be used for foundation rafts where concrete pours will be required to reduce the temperature of fresh concrete. All other structures will use a grade of C35/45.

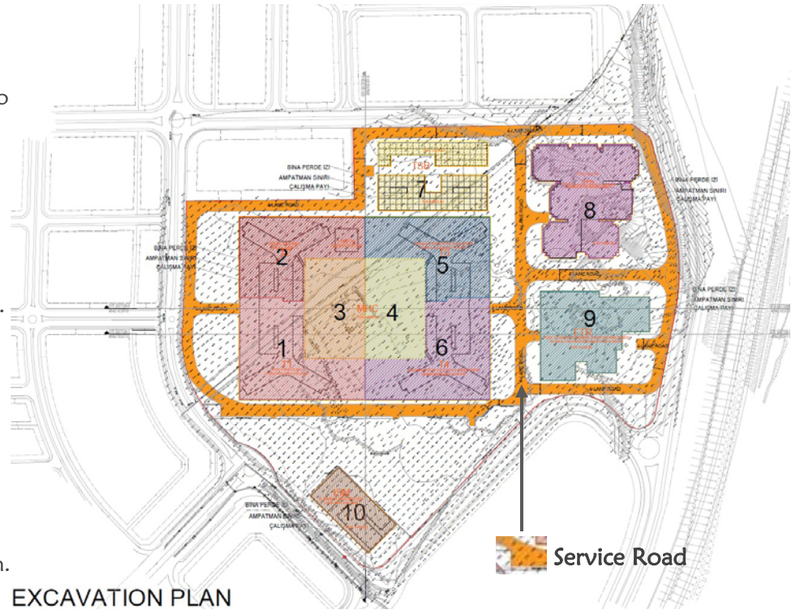
Concrete batching will be undertaken on site, to the east of the accommodation camp . There will be two batching units that are assumed to be operated 10 hours per day, each with a capacity of producing 120 m_3 concrete per hour. Water will be supplied for the batching process, and for cleaning purposes, by tanker. The quantity of concrete produced per day will vary with the types of construction activities carried out. It is estimated that approximately 35,000 m_3/s of concrete will be poured in peak months.

Excavation & Filling

It is anticipated that approximately 645,000 m_3 of excavated material will be generated during construction for the entire Project (approximately 601,000 m_3 has been excavated at the time of writing this report). Excavation works will be phased to maximise efficiency with the Project area being divided into multiple sections that will be excavated in parallel . After removing the surface soft layers, hydraulic excavator hammers will breakdown rock while excavators and loaders will load material onto dumper trucks and transport material to the appropriate stockpile.

Some excavated material will be stored on site and segregated according to best use for backfilling depressed areas or around buildings or for aggregates. All trenches and pits will be excavated, backfilled and compacted before any construction can proceed. The majority of excavated material will be transported from the site at a rate of approximately 3,000 m^3 per day, requiring 200 truck movements per day. At the time of writing, the SPV has negotiated with Gaziantep Metropolitan Municipality for a location approximately 4.2 km from the Project site for the disposal of excavated material. The SPV has obtained an official letter from the Municipality stating approval and location for the disposal of excavated materials.

Blasting will also be required during excavation to break heavy rock. It is estimated that a maximum of approximately 47,000 m_3 (i.e. approximately 10% of the total excavation quantity) will be excavated through blasting between the depth of 4 – 5 m. Excavation will operate from 8.00 am to 17.00 pm and will require the 12 excavators, 16 jackhammers, 16 hydraulic hammers,12 loaders and 40 trucks on site.



EXCAVATION PLAN

Construction Traffic

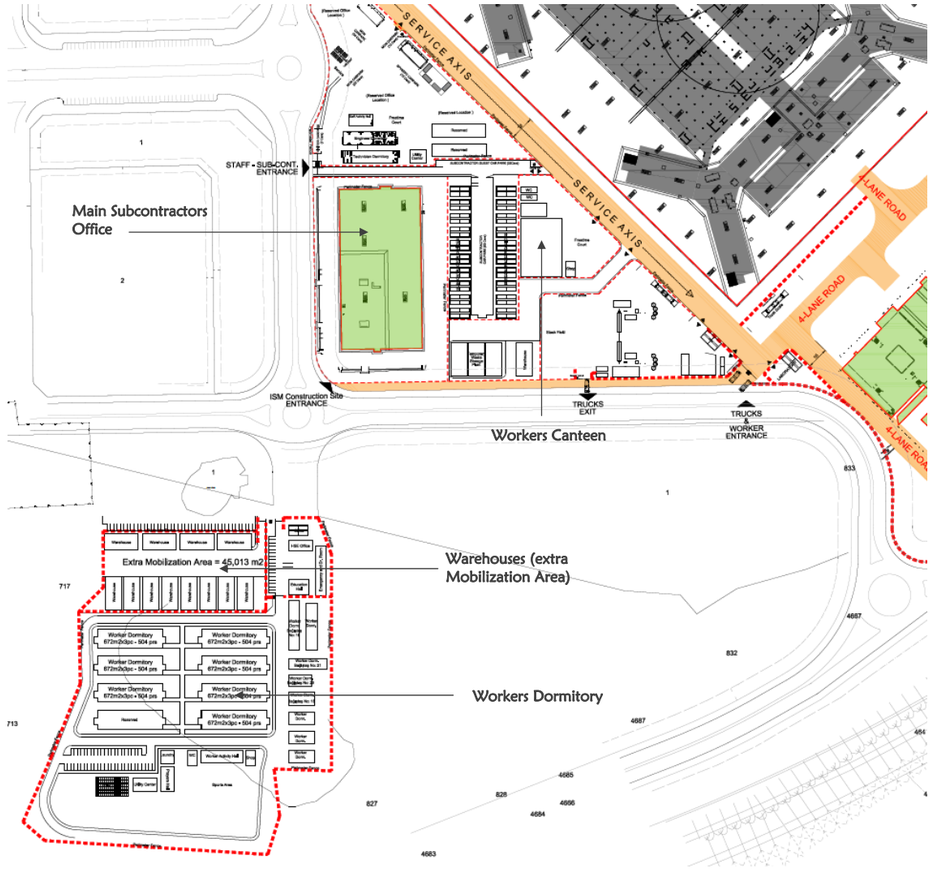
The main access route to and from the site during construction will be via the O-54 Gaziantep ring road. Subcontractor vehicles and workers will enter and leave the site via Gate 1 (via Ozdemir St and 400 St) or Gate 2 (via Cevre Yolu turning onto an unnamed road) shown in adjacent figure. Permanent staff working in site offices during construction will enter and leave the site via Gate 3 (via Ozdemir St and 400 St). During peak construction periods (anticipated to be between the 7th and 32nd month of construction). Security guards will man all three gates to ensure no unauthorised access during construction.

Internal temporary access roads will be constructed on site, including the creation of a perimeter road, which will surround the footprint of buildings, to allow access to all construction areas. In addition, pathways will be constructed in parallel to the perimeter road for personnel movement via foot. All internal temporary access roads will be lit and have appropriate signage in line with Turkish Regulations.

Construction Workforce

The peak construction phase will require a total of 3,008 staff. Construction will operate for 10 hours each day with one daily shift.

- A construction camp for workers will be located in the south of the Project site. This will include the following components;
- Main office module (office building and security point);
- Subcontractors office module (HSE office, emergency health cabin, education hall, office building);
- Engineers and Technicians' accommodation module (dormitories, canteens, activity hall, WC and security point);
- Workers' accommodation module (dormitory, activity hall, utilities, shop and WC);and
- Site utilities module (laboratories, warehouses, temporary waste storage, batching and security points).



Source: A.9.1-2 Direct-Indirect Workforce & Mobilisation

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SAMSUNG SAMSUNG C&T salini impregilo KAYI	A3	Eaton House Wallbrook Court North Hinksey Lane Oxford, OX2 0QS Tel: 01865 38 4800 Fax: 01865 384848		DRAWN: NT/AK	APPROVED: TD	STATUS: Final	2.8 Construction Details	Gaziantep Integrated Healthcare Campus ESIA

Construction activities will take place from Monday to Saturdays with peak travel times between 07.00 - 08.00 and 15.00 - 16.00 for the first shift of the day and between 15.00-16.00 and 23.00-24.00 for the second shift of the day.

HGVs will enter and leave the site continually from 07.00-23.00, peaking during the first shift period.

The anticipated average daily movements during construction are outlined in *Table 2.4*.

Table 2.4 Anticipated Daily Movements during Construction

Type Vehicle	Number (per day)	Construction Phase
HGVs	260	First 6 months (earthworks)
	70	2nd year
Concrete Mixers	90	1st year
Cars (permanent staff)	150	6th - 30th month

2.7.2 Security Arrangements

Site security will be provided by a private security company and split into four zones as set out below.

- Main Entrance/Reception Areas: transition from public zones to restricted access areas.
- Operational Areas: access will be limited to personnel who work there or properly escorted visitors. These areas will be marked and monitored periodically by security guards.
- Security Area: accessed limited to authorised personal and properly escorted visitors. These areas will be marked and monitored continuously 24hrs a day 7 days a week.
- High Security Area: areas where selected personal handle high-value assets and access is limited to authorised, appropriately screened personal and authorise and properly escorted visitors. These areas will be marked and monitored continuously 24hrs a day 7 days a week. Access to these areas will also be recorded and audited.
- Türkiye Odalar ve Borsalar Birliği High School: The school will be separated from the Project site by security panels. There will also be security points with personnel 24 hrs a day, 7 days a week based at the two corners of the school adjacent to the site. The Project will also maintain close contact with the School's management to monitor security concerns.

2.8 MANAGEMENT DURING OPERATION

2.8.1 Management Structure

During operation the SPV will share the management of the Project with the MoH. The MoH will be responsible for providing all clinical staff including doctors, nurses and other support health personnel. The MoH is also responsible for the general management of clinical hospital activities.

All other staff will be provided by the SPV including:

- building and land services;
- extraordinary maintenance and repair;
- management of common services;
- furniture services;
- ground and garden care; and
- other medical support services.

Non-medical services also include pest control, car parking, cleaning, security, laundry, food and waste, information/help desk/reception services and operation of the hospital information management system. The SPV will implement a Patients' Grievance Mechanism for services within its responsibility.

Medical services under SPV responsibility include laboratory, imaging, sterilisation and disinfection. These arrangements will also apply to the High Security Forensic Psychiatric Hospital however the MoJ will be responsible for security provision including guards and officers. The MoHA will also play a role in managing the High Security Forensic Psychiatric Hospital.

2.8.2 Emergency Procedures

An Occupational Health and Safety Plan will be prepared in advance of operation as part of the Environmental and Social Management System (ESMS). This will provide the plan for the prevention of accidents, injuries and illness resulting from foreseeable workplace hazards and risks. The Plan will adhere to the international accredited standard OHSAS 18001 and comply with the guideline of the agency of the Turkish Ministry of Labour and Social Security and will be updated and reviewed at regular intervals.

In addition, an Emergency Preparedness and Response Plan (EPRP) will be prepared as part of the ESMS which will cover unplanned events such as fire, fuel and chemical spills, natural disasters such as flooding and earthquakes and will consider the forensic hospital in detail for all types of incidents, accidents and disasters.

2.8.3 *Security Arrangements*

The SPV is committed to the provision of a medical complex driven with an emphasis on patients' security and safety as well as the security and safety of all visitors and staff, the teachers and students of neighbouring school and the wider community. Site security will be provided by a private company contracted directly to the SPV. Security staff will be robustly vetted and will be provided with adequate training. The full arrangements for security during the operation are still to be developed. The Project will have the full range of electronic security including CCTV, access control system, intrusion detection system and radio frequency identification system. The Project will implement robust procedures on the use of force including, where applicable, on firearms. Security procedures will also include provisions on appropriate conduct towards workers, patients and visitors as well as appropriate emergency preparedness and response.

The MoJ will be responsible for security at the High Security Forensic Hospital and the provision of military police (gendarme), guards and other officers. These arrangements will be confirmed with the MoH and MoJ during Project development. The Forensic Hospital is designed with enclosed corridors leading to an admissions area. Patients will pass through the registration area, which contains storage for personal effects and visitor meeting areas. High security patients will arrive through a central point in the basement and not at ground level to avoid interaction with the general public. Before arriving at the wards, inpatients will follow an admittance procedure, guarded by specially trained nurses. Patients and visitors will not be able to pass to other sections of the Forensic Hospital without being escorted.

Specific arrangements for transporting patients to and from the Forensic Hospital will be finalised with the MoH and MoJ during Project development.

2.8.4 *Operational Traffic*

Access routes to the Project have been divided into different categories according to the user groups, in order to distribute daily traffic. The categories and their access and movements within the site are (shown in *Figure 2.9*

- Emergency: from lower south west road.
- Logistics: from west side road.
- Staff: both from east and west side road.
- Visitors: mainly from the west and north side roads but also distributing alongside the vehicular ring.

The natural ring around the site will connect to the road network within the site. The Main Hospital and Rehabilitation Hospital will be connected via a central road which will be accessible to all users. Control points within the site will be used to ensure emergency vehicle access is prioritised when required.

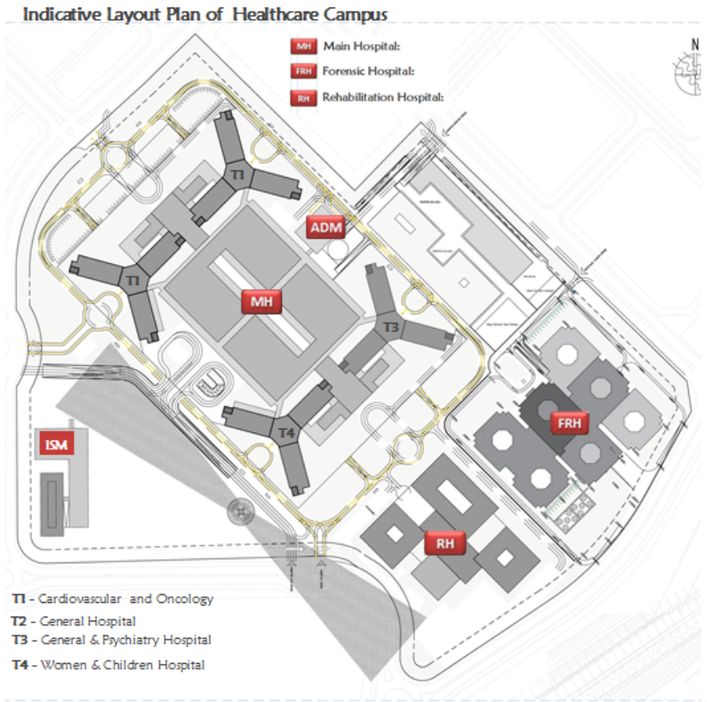
2.8.5 *Operational Workforce*

During operation, the workforce is anticipated to be approximately 6,100, of which approximately 3,600 will be healthcare professionals and 2,500 operational and maintenance staff. Operational and maintenance staff will be recruited specifically for the Project; however, a proportion of healthcare professionals are likely to be transferred by the MoH from other hospitals. According to the Gaziantep Provincial Directorate for Health, there are no plans to close hospital as a result of this Project due to existing pressures on services. Therefore, healthcare professionals may be recruited from other parts of Turkey. It is not possible to indicate the extent of locally recruited healthcare professionals at this stage. As described in *Section 2.8.1*, the MoH will be fully responsible for the recruitment and management of all medical staff.

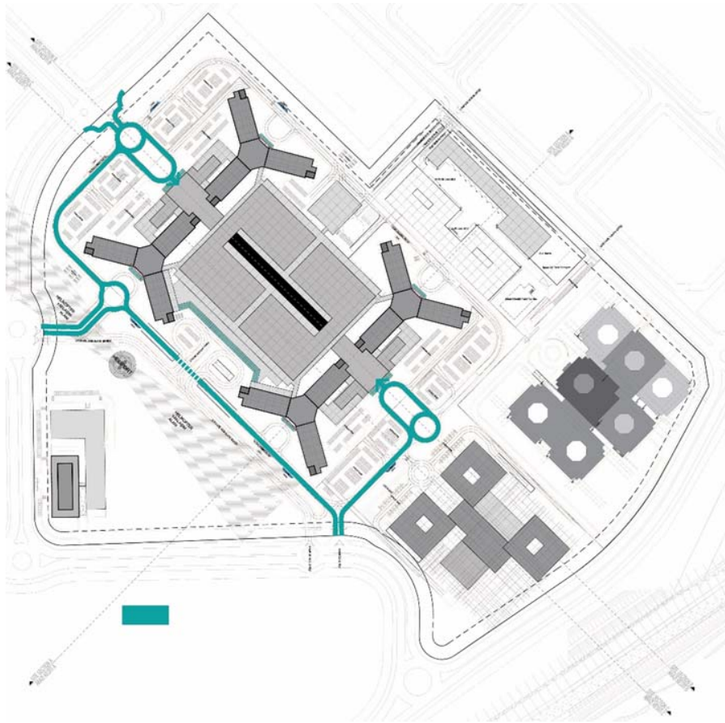
The SPV will be responsible for recruiting all non-clinical staff, of which at least 50 percent will be employed locally.

OPERATIONAL TRAFFIC

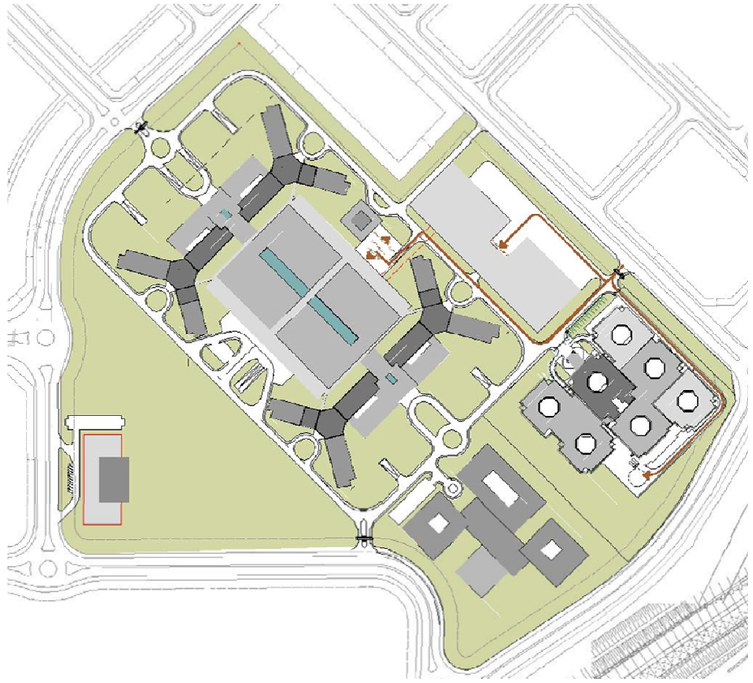
Access routes to the Project have been divided into different categories according to the user groups, in order to distribute daily traffic.



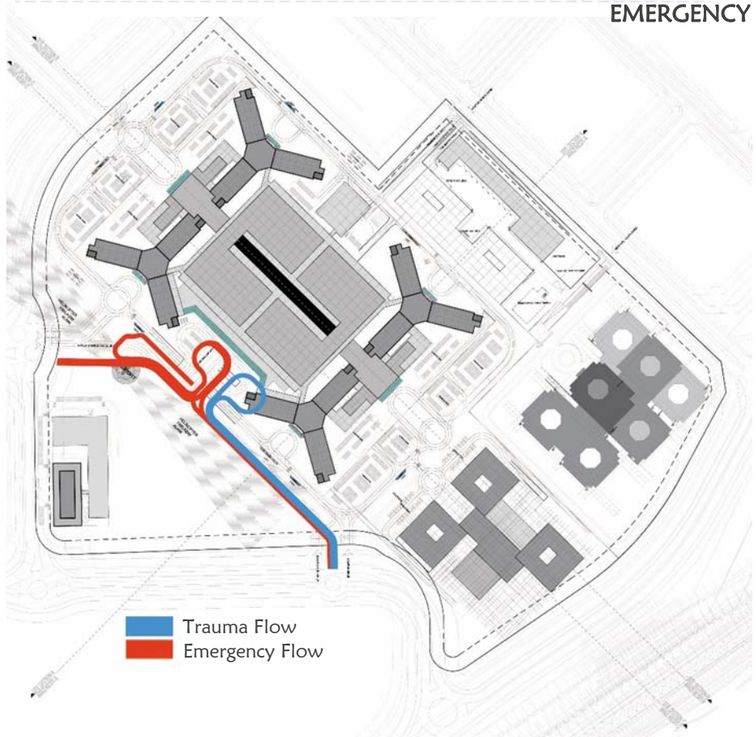
PATIENT



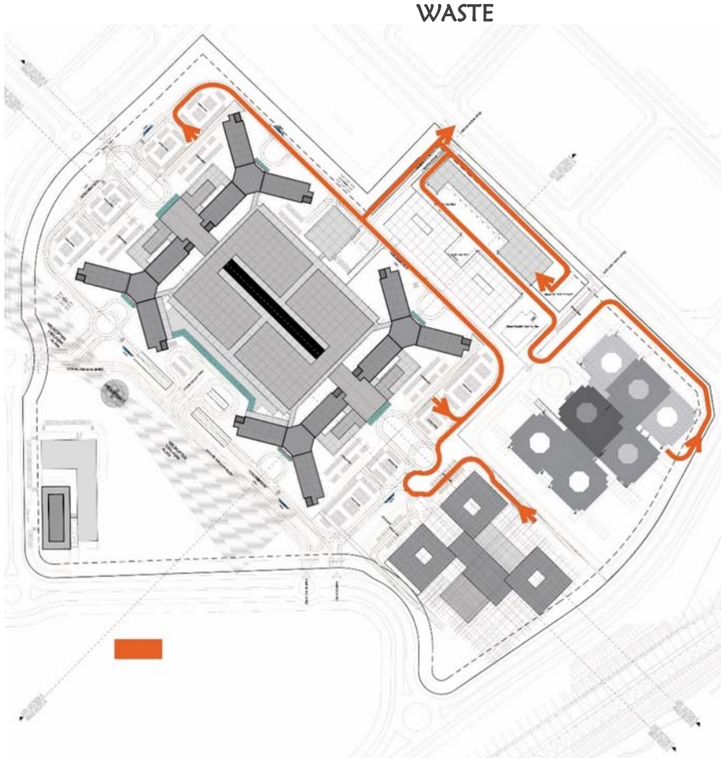
SERVICE



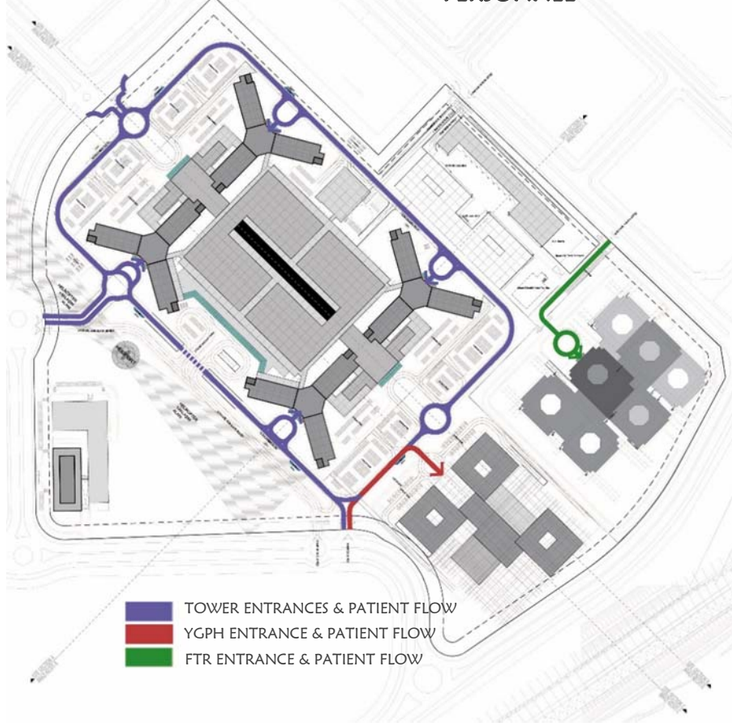
EMERGENCY



WASTE



PERSONNEL



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3 ADMINISTRATIVE FRAMEWORK

3.1 ADMINISTRATIVE FRAMEWORK OVERVIEW

This Chapter provides an overview of the administrative framework and the Standards for the Project. These include:

- Turkish legislative requirements (*Section 3.2*);
- European Directives and International Conventions (*Section 3.3*);
- Programme requirements (eg EBRD Performance Requirements, EIB Environmental and Social Standards, IFC Performance Standards, EHS Guidelines, OECD Common Approaches on Environmental and Social Due Diligence) (*Section 3.4*); and
- Internal Corporate Standards (*Section 3.5*).

This Project is considered to be a Category B project, under the EBRD Performance Requirements. Category B projects or operations are those where "*potential adverse future environmental and/or social impacts that are typically site-specific, and/or readily identified and addressed through mitigation measures*". Environmental and social appraisal requirements vary depending on the project. The SPV have decided to undertake a full ESIA for the Project, which has been accepted by the principal lenders as it goes beyond EBRD requirements.

3.2 TURKISH LEGISLATIVE REQUIREMENTS

3.2.1 *Overview of Key Legislation and Policy Context*

The Environment Law (1) is Turkey's primary framework for environmental legislation and is supported by a series of regulations. Article 10 of the Environment Law sets the framework for the EIA Regulation (2). It is understood that the Project does not fall within the scope (Annex 1 or 2) of the current EIA Regulations and the SPV is engaging with the Ministry of Environment and Urban Planning (MEUP) and other competent authorities to seek their formal opinion and confirmation. As it is understood that the total rated thermal input of all combustion activities within the installation is approximately 57.25 MWth, and concrete batching facility (two plants each with a capacity of producing 120 m^3 per hour) will be undertaken, the Project will be classified as 'Annex 2' projects under the regulation, exceeding the 20

(1) Environment Law (No. 2872), as amended in 2006 (by No. 5491) (Official Gazette Date/Number: 16.08.1983/18132; last amended on 29.05.2013).
(2) EIA Regulation (Official Gazette Date/Number: 25.11.2014/29186).

MW and 100 m^3 per hour limits for tri-generation/boiler capacity and concrete production capacity, respectively and will therefore need a local EIA.

The main Government stakeholders with an interest in the Project include;

- Ministry of Health;
- Ministry of Labour and Social Security;
- Ministry of Environment and Urban Planning;
- Ministry of Forestry and Water Works;
- Ministry of Justice;
- Ministry of Education;
- National Education Directorate of Şahinbey District;
- Gaziantep Governorship;
- The Metropolitan Municipality of Gaziantep;
- Şahinbey and Şehitkamil District Authorities; and
- School Management of the Türkiye Odalar Ve Borsalar Birliği High School.

3.2.2 *National Legislation*

A summary of the national legislation relevant to the Project is detailed in *Volume II, Annex A – Administrative Framework* with the primary legislation of relevance being:

- Environmental Law (No. 2872) as amended in 2006 (by No. 5491) – Official Gazette Date/Number: 16.08.1983/18132; last amended 04.07.2015.

- EIA Regulation – Official Gazette Date/Number: 25.11.2014/29186; last amended 09.02.2016 (1).

- Regulation on Environmental Permits and Licenses – Official Gazette Date/Number 10.09.2014/29115; last amended 12.09.2014.

- Labour Law (No. 4857) - Official Gazette Date/Number: 10.6.2003/25134; last amended on 20.05.2016.

- Occupational Health and Safety Law (No. 6331) - (Official Gazette Date/Number: 30.06.2012/28339; last amended on 11.06.2015.

- Basic Law on Healthcare Services (No. 3359) - Official Gazette Date/Number: 15.05.1987/ 19461; last amended on 07.04.2016.

- Regulation on the Construction of New Healthcare Facilities against Lease and the Renovation of Existing Healthcare Facilities against Operation of Non-Medical Services and Functional Areas of Activity - Official Gazette Date/Number: 22.07.2006/26236; last amended on 22.05.2010.

(1) Note that while this Project does not officially require an EIA in accordance with Turkish regulation, the SPV is in the process of communication with the Ministry of Environment and Urban Planning to obtain an official decision on whether an EIA is required.

- Law on Construction, Renewal and Service Procurement via Public-Private Sector Partnership Model by the Ministry of Health and Amendments of Certain Laws and Decrees (No. 6428) - Official Gazette Date/Number: 09.03.2013/ 28582; last amended on 16.04.2015.

3.3 EUROPEAN DIRECTIVES AND INTERNATIONAL CONVENTIONS

As a Candidate Country for Membership into the European Union, the Project will need to comply with the following European Directives and International Conventions.

Environmental Impact Assessment (EIA) Directive 2011/92/EU, as amended by Directive 2014/52/EU (1);

- The Waste Framework Directive 2008/98/EC;
- The Industrial Emissions Directive 2010/75/EU;
- Directive on Ambient Air Quality and Cleaner Air for Europe 2008/50/EC;
- Directive on the Assessment and Management of Environmental Noise 2002/49/EC;
- The Water Framework Directive 2000/60/EC, as amended;
- Urban Waste Water Treatment Directive 1991 91/271/EEC;
- The Groundwater Directive 2006/118/EC;
- Directive 92/43/EEC on the Conservation of Wild Fauna and Flora, as amended in 1997 and 2007;
- Directive 2009/147/EC on the Conservation of Wild Birds;
- The Convention on Wetlands of International Importance 1971;
- The Aarhus Convention (on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters) 1998; and
- Directive on Freedom of Access to Information on the Environment 2003/4/EC.

(1) The Project would have been covered by Annex II of this EU Directive due to it being an urban development, if the Project was located in the EU. However, this ESIA ensures that the Project will meet all the requirements for this Directive and all public consultation requirements.

In addition, Turkey has ratified the conventions listed below that are of relevance to the Project;

- Kyoto Protocol on the United Nations Framework Convention on Climate Change 1997 (Turkey made the Ratification Accession on 28th May 2009 and it entered into force on 26th August 2009;
- Vienna Convention for the Protection of Ozone Layer 1985 and the Montreal Protocol on Substances that Deplete the Ozone Layer 1987;
- Bern Convention on the Conservation of European Wild life and Natural Habitats 1976;
- CITES Convention on Trade in Endangered Species of Wild Flora and Fauna 1975; and
- Convention on Biodiversity Biological Diversity 1992.

Other pieces of legislation that are specific to health sector developments, and are therefore relevant to this Project include the following:

- Directive 2010/32/EU on Prevention from Sharp Injuries in the Hospital and Healthcare Sector;
- European Blood Directive 2002/98/EC;
- Directive 2002/98/EC Tissue and Cells;
- Directive 2004/23/EC EU directives on pharmaceuticals including Directive 65/65/EEC, Directive 75/318/EEC, Directive 75/319/EEC, Directive 93/41/EEC, Directive 93/42/EEC, Directive 2001/20/EC, Directive 2001/83/EC, and Directive 2005/28/EC;
- Patients' Rights in Cross-Border Healthcare Directive 2011/24/EU;
- Directive 96/29/Euratom - ionizing radiation; and
- Patient's Rights Regulation - Official Gazette Date/Number: 01.08.1998/23420; last amended on 08.05.2014.

A summary of each Directive, and a description of why they are relevant to the Project, is provided in *Volume II, Annex A – Administrative Framework.*

3.4 LENDER REQUIREMENTS

This ESIA has been developed in accordance with recognised international financing requirements, namely the EBRD Performance Requirements, the IFC Performance Standards, EIB Environmental and Social Standards, OECD

Common Approaches [1] on Environmental and Social Due Diligence and the World Bank EHS Guidelines, including those specifically for Health Care Facilities [2].

These are detailed in *Box 3.1*, with additional detail provided in *Volume II, Annex A – Administrative Framework.*

Box 3.1 International Financing Requirements

EBRD Performance Requirements 2008[3]

- PR1. Environmental and Social Appraisal and Management
- PR2. Labour and Working Conditions
- PR3. Pollution Prevention and Abatement
- PR4. Community Health, Safety and Security
- PR5. Land Acquisition, Involuntary Resettlement and Economic Displacement
- PR6. Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PR8. Cultural Heritage
- PR10. Information Disclosure and Stakeholder Engagement
- Sub-sectoral Environmental and Social Guidelines: Health Services and Clinical Waste Disposal

IFC Performance Standards (2012)

- PS1. Assessment and Management of Environmental and Social Risks and Impacts
- PS2. Labour and Working Conditions
- PS3. Resource Efficiency and Pollution Prevention
- PS4. Community Health, Safety and Security
- PS5. Land Acquisition and Involuntary Resettlement
- PS6. Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PS8. Cultural Heritage
- EHS Guidelines for Health Facilities

EIB Environmental and Social Standards (2013)

Standards in relation to:

- Assessment and Management of Environmental and Social Impacts and Risks
- Pollution Prevention and Abatement
- EIB Standards on Biodiversity and Ecosystems
- EIB Climate Related Standards
- Cultural Heritage
- Involuntary Resettlement
- Rights and Interests of Vulnerable Groups
- Labour Standards
- Occupational and public health, safety and security
- Stakeholder Engagement

World Bank Group Environmental, Health and Safety (EHS) Guidelines

(1) The OECD Common Approaches refer to the IFC Performance Standards, specifically requiring that when screening projects for environmental and social due diligence, all eight IFC Performance Standards be benchmarked, particularly where other financial institutions are also applying these same standards, including IFC HSE Guidelines. Therefore, information has been provided on these Standards, rather than the details of the Common Approaches themselves.

(2) http://www.ifc.org/wps/wcm/connect/bc554d80488658b6b6e6f66a6515bb18/Final%2B-%2BHealth%2BCare%2BFacilities.pdf?MOD=AJPERES&id=1323161961169.

[3] Note that PR7 and PS7 relating to Indigenous Peoples and PR9 relating to Financial Intermediaries were not considered relevant to this particular assessment and are therefore not considered.

The World Bank EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). They contain performance levels and measures that are normally acceptable to the IFC (and are hence used as an international benchmark by other Lenders), and that are generally considered to be achievable in new facilities at reasonable costs using existing technology. When the regulations of a host country differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a justification for any proposed alternatives is required.

The EHS Guidelines for Health Care Facilities will be of particular relevance to this Project.

3.5 INTERNAL CORPORATE STANDARDS

The SPV is developing a range of corporate standards to support environmental and social performance. A Health, Safety and Environment Plan (HSE Plan) is also in development. The HSE Plan describes the Management System for health, safety, security and environmental issues. It has been developed in agreement with the Turkish Ministry of Health and incorporates: Turkish HSE requirements such as Workers Health and Job Safety Regulations in Construction Works, published in the Official Gazette No. 28786 (07/10/2013); and is based on the HSE Law No. 6331.

The document outlines roles and responsibilities of key personnel with respect to HSE, including sub-contractors. It also sets out the following:

- protocols for managing HSE and reporting incidents;
- subcontractor minimum HSE requirements;
- performance monitoring;
- induction and training;
- risk assessment and management;
- waste management;
- pollution prevention and spill response;
- environmental monitoring;
- security; and
- disciplinary procedures.

The document contains a detailed risk assessment for preparatory works, excavation, construction of foundations, concrete production, finishing works, MEP installations and risks associated with the surrounding area.

The SPV has also developed a range of Management Plans as part of its internal ESMS. These are provided in *Chapter 7*.

4 STAKEHOLDER ENGAGEMENT

4.1 INTRODUCTION

This chapter describes the stakeholder engagement activities undertaken as part of the ESIA process. It provides a summary of consultation with regulatory authorities, local communities and other key stakeholders; full details are presented in the Stakeholder Engagement Plan (SEP) located in *Volume II, Annex I.* The engagement activities undertaken were designed to share information and knowledge in a timely manner, whilst also seeking to understand and respond to the concerns of potentially impacted or affected stakeholders; building relationships based on trust. For the purposes of this assessment, a stakeholder is defined as 'persons, groups, organisations or communities who may be directly or indirectly affected (positively or negatively) by the Project, or have an interest in it'.

Stakeholder engagement activities for the Project have been planned and implemented in line with the requirements of the EBRD Performance Requirements (PR10), EIB Environmental and Social Standards and IFC Performance Standards (PS1). Stakeholder engagement requirements are also included in the Turkish EIA Regulation (2014) but as the Project does not fall within the scope of current EIA Regulation, stakeholder engagement for the Project is not mandatory under Turkish Law. It is anticipated, however, that the tri-generation and concrete batching plants for the Project will be subject to EIA Regulation; as such they will likely be subject to stakeholder disclosure requirements.

The Project is viewed as a Category B project, as per the definition (1) provided in the ERBD's PR1 (2014) and as such the ESIA and SEP for the Project are '*proportionate to the project's nature, size and location, as well as the characteristics of the potential impacts and risks*' (2). This Project is one of a suite of similar projects being developed across Turkey and therefore interest levels, as well as levels of concern, are potentially higher.

4.2 OVERVIEW OF STAKEHOLDER ENGAGEMENT UNDERTAKEN

4.2.1 Stakeholder Identification and Analysis

Prior to undertaking engagement activities, stakeholders were identified and subsequently categorised according to their interests and interaction with the Project. This analysis was used to ensure engagement activities were tailored appropriately to the needs and interests of different stakeholder groups.

(1) "*where potential adverse future environmental and social impacts are typically site specific and/or readily identified and addressed through mitigation measures*", PR 1, Para 11.
(2) EBRD Performance Requirement 1: Assessment and Management of Environmental and Social Impact and Issues, Paragraph 11.

In order to ensure that the engagement process was as inclusive as possible, the ESIA team carefully identified individuals and groups that could be deemed as 'vulnerable' i.e. those who may find it more difficult to participate and those who may be differentially or disproportionately affected by the Project because of their marginalised or vulnerable status.

The stakeholder analysis also looked to identify those stakeholders that are likely to be affected by Project impacts (actual or perceived) to ensure that the SEP and planned communication are appropriately tailored.

The stakeholders identified are presented in *Table 4.1*. Details of individual stakeholders were compiled in a stakeholder register. This was periodically updated throughout the ESIA engagement process.

Table 4.1 Project Stakeholders

Project Stakeholders	Relevance/ Importance of Stakeholder
National Government Stakeholders	
Ministry of Health (MoH)	The MoH will have primary responsibility for medical service provision during Project operation. They were engaged during the Scoping site visit through meetings with key individuals. They were also engaged on the draft Scoping Report and provided with a copy of the Project Information Document (PID).
Public Health Agency of Turkey	As part of the MoH, this agency will play a role in the provision of health services. They have received copies of the PID and flyer.
Public Hospitals Institution	As part of the MoH, this agency will play a role in the provision of health services. They have received copies of the PID and flyer.
General Directorate of Health Investments	As part of the MoH, this agency will play a role in the provision of health services. They have received copies of the PID and flyer.
Ministry of Environment and Urban Planning (MEUP)	The MEUP has overall responsibility for permitting and the EIA process. This Ministry was engaged throughout the ESIA process through meetings and presentation of Project information. They have received copies of the PID and flyer.
Ministry of Forestry and Water Works, Ministry of Labour and Social Security,	These Ministries may have specific interest in issues relating to water, ecology and labour and working conditions. They have received copies of the PID and flyer.
Ministry of Justice (MoJ)	The Ministry of Justice will have responsibility for the high security forensic unit with the Ministry of Health and SPV. The MoJ will be engaged once Project operational planning commences to agree management and security arrangements between the SPV and MoH.
Local/ Provincial Government Stakeholders	
Gaziantep Governorship Provincial Directorate of Health Services	This Agency plays an important role in terms of the healthcare provision in Gaziantep and in the management and coordination of clinical staff. Meetings were held with the Agency during the Scoping site visit and discussions were held regarding the Scoping Report and draft ESIA report. They have also received copies of the PID and flyer.
The Metropolitan Municipality of Gaziantep	The Municipality and relevant departments were engaged during the Scoping site visit and throughout the ESIA by the SPV. They were also engaged as part of the baseline studies and they have received the PID and flyers.

Project Stakeholders	Relevance/ Importance of Stakeholder
Şahinbey and Şehitkamil District Authorities	The Project is located in Şahinbey District however people in Şehitkamil District will also use the proposed healthcare campus and so both District authorities are important Project stakeholders. Şahinbey District was engaged during the Scoping site visit and during baseline data collection. Both Districts have received PID and flyers.
Community Stakeholders	
Surrounding neighbourhoods in Şahinbey District	Surrounding neighbourhoods will more likely experience impacts related to traffic and noise during construction and other impacts relating to health, safety and security. Mukhtars (elected neighbourhood leaders) have been identified and engaged during the Scoping site visit and during feedback on the draft Scoping report. Residents were engaged through focus group discussions. Participants in focus group discussions received PID and flyers and these were also distributed to Muhtars, local businesses and residents met in the street and parks in Akkent and Karataş due to their proximity to the Project. PID and flyers were also distributed in the same way in other neighbourhoods. Public meetings advertised in one local and one national newspaper were held in Gaziantep on the draft Scoping report and draft ESIA report to seek feedback on the proposed management and mitigation measures.
Local schools and other key facilities close to the Project	It is already known that Türkiye Odalar ve Borsalar Birliği Fen Lisesi High School is located adjacent to the site. The school and other facilities are sensitive receptors to the Project and have raised concerns during engagement on the Scoping Report. Additional engagement was undertaken on the draft ESIA report outlining mitigation measures and to seek their feedback.
Residents	Local residents in identified neighbourhoods have already been engaged through public consultation meetings on the draft Scoping and ESIA reports and through focus group discussions. Additional engagement shall be undertaken by the SPV through awareness campaigns on health and safety and on the grievance mechanism.
Syrian refugees	Syrian refugees are considered a vulnerable group in terms of gaining employment with the Project and in the use of the Healthcare Campus services. They have been part of broader neighbourhood focus groups and two separate focus groups with men and women were held during engagement on the draft ESIA report.
Vulnerable groups	In addition to Syrian refugees, vulnerable people. The ESIA has identified vulnerable groups as those registered with disabilities, the elderly and women and women-headed households, particularly in Karatas and Akkent
NGOs, Associations and Others	
Turkish Medical Association	The Turkish Medical Association has been vocal regarding other health PPP projects. They have received materials including the PID and flyer.
Trade Union of Public Employees in Health and Social Services	The Trade Union of Public Employees in Health and Social Services provides support to medical staff and has an interest in the Project. A meeting was arranged to discuss the Project and Scoping Report and obtain baseline data.
Trade Union of Health Workers	This union also has an interest in the Project with respect to healthcare workers affected. They have received engagement materials including the PID and flyer.

Project Stakeholders	Relevance/ Importance of Stakeholder
Siğinmacilar ve Göçmenlerle Dayanişma Derneği (SGDD)	SGDD is the Association for Solidarity with Asylum Seekers and Migrants, providing support for Syrian refugees. The NGO was engaged during baseline data collection and on the draft ESIA report.
Other Associations / NGOs	NGOs and other interest groups and associations have been identified and have received engagement materials including the PID and flyer.
Project Staff	Project staff, including contract staff during construction and MoH staff during operation have an interest in the management of the Project, particularly with respect to occupational health and safety and security issues.

4.2.2 *Stakeholder Engagement Activities*

Stakeholder engagement activities throughout the ESIA are summarised below and a full list of meetings is presented in *Table 4.2*.

Scoping Engagement

Stakeholder engagement was commenced by the ESIA project team during the Scoping site visit in April 2015, although discussions with various Government departments have been ongoing since Project inception (1).

During the Scoping site visit, meetings were held with the Ministry of Health, Gaziantep Metropolitan Municipality and Şahinbey District Municipality, along with the Provincial Directorate of Health and the Muhtar of Guneş neighbourhood. These meetings aimed to:

- introduce the Project, the ESIA and proposed stakeholder engagement process;
- introduce the ESIA team;
- obtain an initial understanding of the Project area including healthcare development and urban planning in Şahinbey District;
- gather any existing reports, plans and data to support the impact assessment; and
- gain an initial understanding of the perceptions and any concerns about the Project.

Scoping Report Engagement

Further stakeholder engagement meetings were held in July 2015 to:

- introduce the Project to stakeholders and inform them of the ESIA process;

(1) This has included the Ministry of Health, Gaziantep Metropolitan Municipality and Şahinbey District Municipality.

- present the findings of the Scoping Report;
- discuss potential environmental and social impacts associated with the Project and potential options for their mitigation and management;
- identify and discuss any issues of concern;
- explain the grievance process for the Project inform stakeholders that the Project will establish a grievance procedure; and
- provide stakeholders with an opportunity to ask questions.

As part of this process a public meeting was held at the Provincial Directorate of Health and was attended by 52 participants. The meeting was announced twice [1] in both a national newspaper (*Hürriyet Daily News*) and a local newspaper (*The Güneş*). Project Information Documents (PIDs), flyers and comment forms were made available during the meeting.

Meetings were also organised with Muhtars and community members from the following neighbourhoods:

- Akkent;
- Karataş;
- Guneş;
- 75 Yil;
- Dumlupınar;
- Bağlarbaşi village; and
- Kahvelipınar.

Focus group discussions were arranged, along with key informant interviews at local schools, health sector NGOs and local authorities, to obtain baseline data and discuss the Project. Further meetings were also held with the Association for Solidarity with Asylum Seekers and Migrants and several departments of Gaziantep Metropolitan Municipality to obtain data to support baseline studies and provide an update on the progress of the Project.

At all of the meetings, details of the Project were presented and stakeholders were invited to ask questions and comment on potential impacts and mitigation measures. Project Information Documents and flyers translated into Turkish were left will all stakeholders as well as comment / feedback forms. These documents included Project contact details to allow stakeholders to submit any further comments after the meetings. In addition to handing them out during meetings, these documents were sent to approximately 200 stakeholders including Government Ministries, NGOs and Associations in Gaziantep, Istanbul and Ankara. The full list of stakeholders receiving

(1) These announcements were two weeks before the meeting and repeated one week later.

documentation is presented in Stakeholder Engagement Plan (*Volume II, Annex I*).

Draft ESIA Engagement

Stakeholder engagement on the draft ESIA report was undertaken in November 2015 to:

- introduce the Project to stakeholders and inform them of the ESIA process;
- present the findings of the draft ESIA Report;
- discuss potential environmental and social impacts associated with the Project and seek feedback on proposed management and mitigation/enhancement measures;
- identify and discuss any issues of concern;
- explain the grievance mechanism for the Project; and
- provide stakeholders with an opportunity to ask questions.

The meeting was held at the Provincial Directorate of Health and was attended by 52 participants. The meeting was also announced in both a national newspaper (*Hürriyet Daily News*) and a local newspaper (*The Güneş*). Unlike the public meeting on the draft Scoping report, this meeting focused on each of the identified impacts associated with the Project and the proposed management and mitigation/enhancement measures in order to seek feedback.

An additional meeting was held with Türkiye Odalar ve Borsalar Birliği Fen Lisesi High School, which is adjacent to the Project site. This provided an opportunity for the school to raise any concerns and comment on specific mitigation measures relating to the impacts they may experience.

Focus group discussion meetings were also held with Syrian refugees (one with men and one with women) to understand any vulnerabilities around employment and using hospital services. Options for engaging with Syrians using the Healthcare Campus were also discussed with the Association for Solidarity with Asylum Seekers and Migrants (SGDD).

Table 4.2 Stakeholder Engagement Undertaken During the ESIA

Meeting	Location	Date
Director and Deputy Director of the Provincial Directorate of Health	Provincial Directorate of Health, Gaziantep	22/04/2015
Mayor and Deputy Mayor of Şahinbey District Municipality.	Şahinbey District Municipality Office	22/04/2015
Officers of Gaziantep Metropolitan Municipality including: Transportation Planning Unit	Gaziantep Metropolitan Municipality Office	23/04/2015

Meeting	Location	Date
Manager; Transportation Planning Department Manager; Zoning Department Manager; City Planner; UKOME (Transportation Coordination Directorate) Manager; and Head of Environmental Protection and Control Department		
Muhtar of Güneş Neighbourhood.	Muhtar Office, Güneş	23/04/2015
General public meeting (attended by 28 men and 24 women)	Provincial Directorate of Health, Gaziantep	03/07/2015
Gaziantep Metropolitan Municipality Meetings including: Transportation Planning Manager; Waste Management Manager; Environmental Engineer; Wastewater Management Expert; and Planning Department	Gaziantep Metropolitan Municipality offices.	03/07/2015
Akkent Neighbourhood Muhtar	Akkent Muhtar's office	06/07/2015
Akkent Neighbourhood Men FGD	Akkent, Gaziantep	06/07/2015
School Vice Principal, Türkiye Odalar Ve Borsalar Birliği Fen Lisesi High School	Bağlarbaşı Anatolian High School, Gaziantep	06/07/2015
Programme Officer, Association for Solidarity with Asylum Seekers and Migrants (SGDD)	SGDD Office, Gaziantep	06/07/2015
Karatas Neighbourhood Muhtar	Karatas Muhtar's Office	06/07/2015
Karatas Neighbourhood Men FGD	Karatas, Gaziantep	06/07/2015
Karatas Neighbourhood Small business KII	Karatas, Gaziantep	06/07/2015
School Principal, Glulşen Batar Anatolian High School	Karatas, Gaziantep	06/07/2015
75 YIL Neighbourhood Muhtar	Y5 YIL Muhtar's office	07/07/2015
75 YIL Neighbourhood Men FGD	75 YIL, Gaziante	07/07/2015
75 YIL Neighbourhood Women FGD	75 YIL, Gaziantep	07/07/2015
Association Coordinator, Association of Family Physicians	AFP Office, Gaziantep	07/07/2015
Guneş Neighbourhood Muhtar	Guneş Muhtar's Office	07/07/2015
Representative, Union of Healthcare Service Workers	Union Office, Gaziantep	07/07/2015
Dumlupinar Neighbourhood Men FGD and Muhtar	Dumlupinar Muhtar's Office	07/07/2015
Dumlupinar Mahalle Women FGD	Dumlupinar Cultural Centre, Gaziantep	07/07/2015
Muhtar, Bağlarbaşi village	Bağlarbaşi Muhtar's Office	07/07/2015
Association of Turkish Women – Gaziantep Branch	Gaziantep Branch	07/07/2015
Kahvelipinar Neighbourhood Muhtar	Kahvelipinar Muhtar's Office	08/07/2015
Akkent Neighbourhood local businesses including: • Real estate agencies; and • Local shops.	Akkent, Gaziantep	08/07/2015
Programme Officer and Nurse, Association for Solidarity with Asylum Seekers and Migrants (SGDD)	SGDD Office, Gaziantep	23/11/2015
Syrian men and women focus groups	SGDD Office, Gaziantep	23/11/2015
School Principal, Türkiye Odalar Ve Borsalar Birliği (TOBB) Fen Lisesi	TOBB Premises, Akkent, Gaziantep	24/11/2015
General public meeting (attended by 33 men and 19 women)	Provincial Directorate of Health, Gaziantep	24/11/2015

4.3 OUTCOMES OF ENGAGEMENT

The response to the Project has, on the whole, been very positive with strong support expressed in all the meetings held. The women consulted expressed their hopes for a better healthcare service for children in a cleaner environment. However, they also expressed concerns about potential poor treatment from medical staff, which some have experienced to date. This feedback has been considered in the ESIA under patient rights in *Volume II, Annex B.* The SEP also includes a Patient Advisory Liaison Services mechanism during operation to obtain feedback and address concerns about patient care and bedside manner (see *Volume II, Annex I*). Most stakeholders felt that the hospital will be a source of employment and that it will be easier to access than other hospitals in Gaziantep, providing a wider range of services.

The main concerns regarding the Project were raised by the Türkiye Odalar Ve Borsalar Birliği High School located adjacent to the Project site. The location and environment of the school is considered to be a very important factor for parents when deciding where to register their children. A hospital would normally be a positive factor for parents however the presence of other facilities such as the high security forensic unit was identified as a potential source of concern for some parents. This issue was raised by the School Vice Principal in July 2015 and again by the School Principal in November 2015. Parents were not available to cross check this information. Concerns about how the Project will manage health and safety during construction, particularly security of the construction site (in terms of access), and noise and dust impacts were also raised by the School. These issues have been considered in the ESIA under several impacts in *Volume II, Annex B* including:

- risk of accidents due to trespassing on site;
- traffic related impacts;
- disturbance due to dust and noise;
- conflict with security providers;
- interactions with workers; and
- security management.

The School was made aware of the grievance mechanism and has the contact details of the EPC Project Manager on site to raise any further concerns during construction. It was suggested that formal and regular meetings with the hospital management would be helpful in reassuring parents and teachers once the Project is operational.

Specific measures for engaging with the School during construction and operation have been included in the SEP.

During the two public meetings, stakeholders also had questions about the specific plans for the Project. These included:

- whether solar or other renewable energy sources had been considered to power the facility and the reuse of waste water for the irrigation of green areas;
- the construction schedule and when the start of operation was planned;
- the justification for the chosen site rather than the first alternative;
- requests for further details on storm water drainage and management during construction;
- the terms of the contract between the SPV and the government, particularly with regards to the arrangement in place on termination of the 28-year contract;
- the revenue share to the SPV; and
- management arrangements for the Project and relationship with the Municipality.

Other issues that emerged during engagement included:

- the availability of public transport to the hospital;
- a request for seminars that women could attend on birth control, psychology, child development, etc;
- the Guneş Muhtar suggested that the SPV should consult the Muhtars when hiring workers; and
- the fact that women can find it difficult to complain about medical staff, even when comment boxes are available and that this should be considered when planning engagement activities during hospital operation [(1)].

These issues have been considered in the ESIA, particularly in the Technical Annexes of *Volume II* (see *Annexes B, E, F and G*) and the SEP in *Annex I*. The SPV have also included solar panels the revised schematic design to support energy requirements. The minutes of the public meetings are presented in the SEP, along with an overview of engagement during the operation of the healthcare campus. Methods for engagement during Project operation are outlined in *Volume II, Annex I*.

(1) It should be noted that men also expressed dissatisfaction with healthcare services, however women were more vocal about their difficulties in raising any grievance with medical staff.

4.4 GRIEVANCE MECHANISM

A grievance mechanism for the ESIA has been established to respond to and resolve concerns expressed by stakeholders. Grievances may take the form of specific complaints or concerns or perceived incidents and impacts. The process involves the following steps:

- record the grievance;
- acknowledge the grievance;
- investigate the grievance;
- develop a response;
- communicate the response and establish agreement on next steps; and
- close-out process.

Full details of the grievance mechanism for the Project are provided in the SEP. The SPV will also establish a mechanism for engagement and feedback for users of the healthcare facility during operation.

The following feedback channels have been available to stakeholders throughout the ESIA process:

- Public meetings;
- Focus group discussions and key informant interviews;
- Telephone to SPV Chief Operating Officer: +90 212 2846080/1
- In writing to SPV at the following address:
- *Esentepe Mah. Atom Sok. No: 18*
  King Plaza Gültepe/Sisli/ISTANBUL; and
- E-mail to spv@gaziantepspv.com

5 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT METHODOLOGY

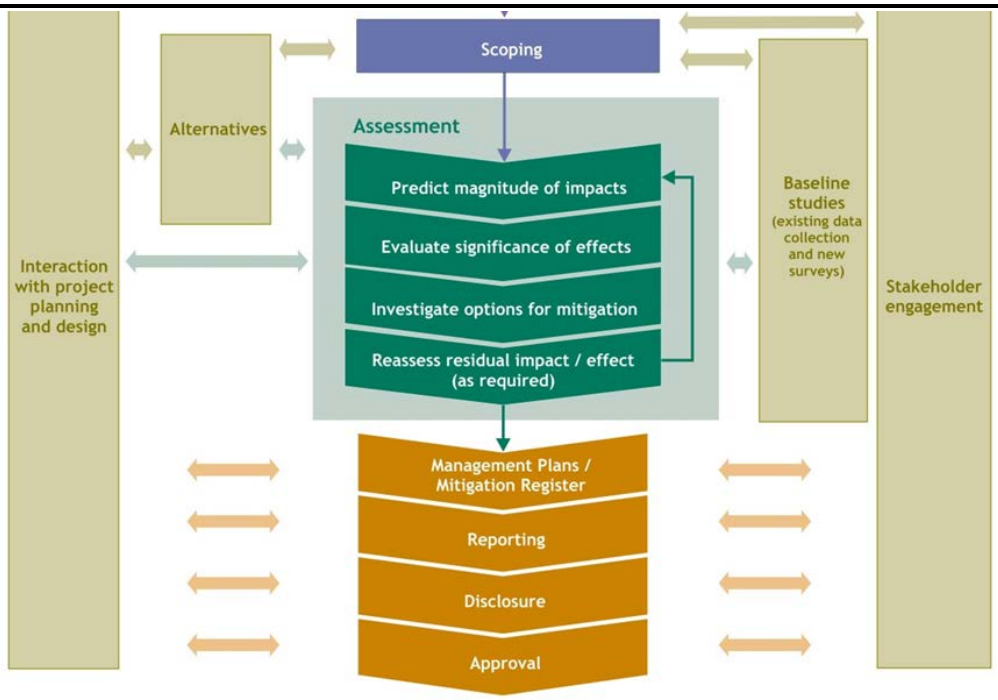
5.1 INTRODUCTION

This Chapter describes the methodology that has been followed throughout this ESIA. The key objectives of the ESIA are to assess the potential environmental and social impacts associated with the construction and operation of the Project, and to identify measures that can be adopted to avoid, minimise or offset adverse impacts and enhance beneficial impacts.

5.2 OVERVIEW OF THE ESIA PROCESS

The key stages for this ESIA process are highlighted in *Figure 5.1*.

Figure 5.1 Overview of the ESIA Process



5.2.1 Scoping

The aim of the scoping process was to identify the effects that have the potential to be significant and to exclude (scope out) from the assessment those effects that are unlikely to be significant. During the scoping phase a summary of high level baseline information was provided, key potential environmental and social impacts and sensitive receptors and resources were identified, the impact assessment methodology was defined and the Terms of Reference (ToR) for the ESIA were developed. Issues that were raised by stakeholders during the scoping phase were taken into account in the ESIA ToR.

5.3 BASELINE STUDIES

The baseline describes the existing environmental and social conditions of the Project Area of Influence (refer to *Section 5.4.3* for further detail). The baseline forms the background against which potential Project impacts are evaluated. Primary and secondary environmental and social data were collected in order to enhance understanding of the receiving environments. The baselines for each assessment topic is contained in the specialist Annexes in *Volume II* of this report.

5.4 SCOPE OF THE ESIA

5.4.1 General Considerations

During the impact assessment phase, the ways in which the Project will interact with the environmental and social environment to produce impacts to receptor have been assessed. This involved a number of stages as set out below.

5.4.2 Technical Scope

This assessment has been developed to satisfy lender requirements and relevant Turkish, European and international directives and conventions as described in *Volume I, Chapter 3*. In the context of this Project, this has required an assessment of the following topics:

- socio-economic environment;
- air quality;
- noise;
- waste;
- traffic;
- water resources; and
- geology and soils.

A cultural heritage survey was conducted during the Scoping phase of the assessment. This survey did not find any cultural or archaeological sites or items of cultural significance. Therefore, this aspect was scoped out for further assessment. A Chance Finds Procedure has been included in this report as an *Appendix B1* to the *Annex B, Volume II*.

A flora and fauna survey was also undertaken during Scoping. The survey found that the Project site supports largely modified habitats on the edge of Gaziantep city and species populations are dominated by common and widespread species. It was identified that the effects of the Project on biodiversity would be limited and therefore this topic was scoped out for further assessment. Although flora and fauna assessments were scoped out of the ESIA study, specific mitigation measures have been incorporated into the ESMP (*Chapter 7*) and the study is summarised in *Chapter 6*.

5.4.3 *Spatial Scope/Area of Influence*

The Area of Influence or Study Area takes into account:

- the physical extent of the Project activities including the construction and operation phases, the main buildings, tri-generation system, waste disposal, concrete batching plant, associated traffic, worker accommodation, security and water requirements and other utilities (refer to *Section 2* for further details on the Project description); and

- the nature of the affected resource, the source of impact and the manner in which the resultant impact is likely to be propagated beyond the physical extent of the Project activities.

5.4.4 *Temporal Scope*

The assessment considers the construction and operation of the Project. The construction is planned to start in the second quarter of 2016 and will last for approximately three years. The SPV will be responsible for managing the Project for 25 years.

The Project is intended to be a permanent installation therefore decommissioning was not considered within the scope of this assessment. In the event that the Project will be decommissioned, a separate environmental and social impact assessment of this phase will be undertaken closer to the time required.

5.5 *STAKEHOLDER ENGAGEMENT*

Periodic engagement has been undertaken with stakeholders throughout the ESIA process and stakeholders' views were incorporated into the assessment process. The engagement process conformed to lender requirements as listed in *Section 3.4* and is described in more detail in *Annex I*. The stakeholder engagement plan developed for the Project provides a list of stakeholders that were consulted throughout the ESIA process.

5.6 *ASSESSMENT OF IMPACTS*

5.6.1 *Introduction*

The aim of the scoping process was to identify the effects that have the potential to be significant and to exclude (scope out) from the assessment those effects that are unlikely to be significant. This process took into account the mitigation measures that are an integral part of the Project (eg good construction working practice). Where there is uncertainty or explicit stakeholder concern about the likely significance of effects these have been carried forward from scoping and included in the assessment.

The assessment methodology is set out in *Figure 5.2*. This is based on ERM's global standard for completing impact assessments (the 'IA Standard'). The overall objectives of the IA Standard are to ensure that ERM IA's:

- follow the same principal approach;
- capture ERM's best practices;
- use the same key terminology; and
- are presented in the same principal format.

Further to the methodology presented in *Figure 5.2,* as appropriate, more detailed methodology and significance criteria are set out in the assessment technical Annexes in *Volume II*.

An activity or impact may result in a variety of types of effects. In identifying these, the ESIA takes into account their nature, duration and other factors, as defined in *Table 5.1*. These are the definitions used within the assessment of environmental and social health effects.

1. Identify Impact

The scoping process identifies the potentially most important/ significant impacts and effects for the assessment to address. This is done through a combination of:

- looking at the nature of the project activities and the impacts they will give rise to;
- looking at the project's environmental and social setting and its aspects which are likely to be most sensitive/vulnerable to impacts from the project;
- applying professional understanding gained from the evidence base; and
- considering inputs from stakeholders through consultation.

Decisions are then made on which impacts and effects to assess or to prioritise in the assessment (scoping in and scoping out) and how to assess them (proposed methodology).

2. Predict Magnitude

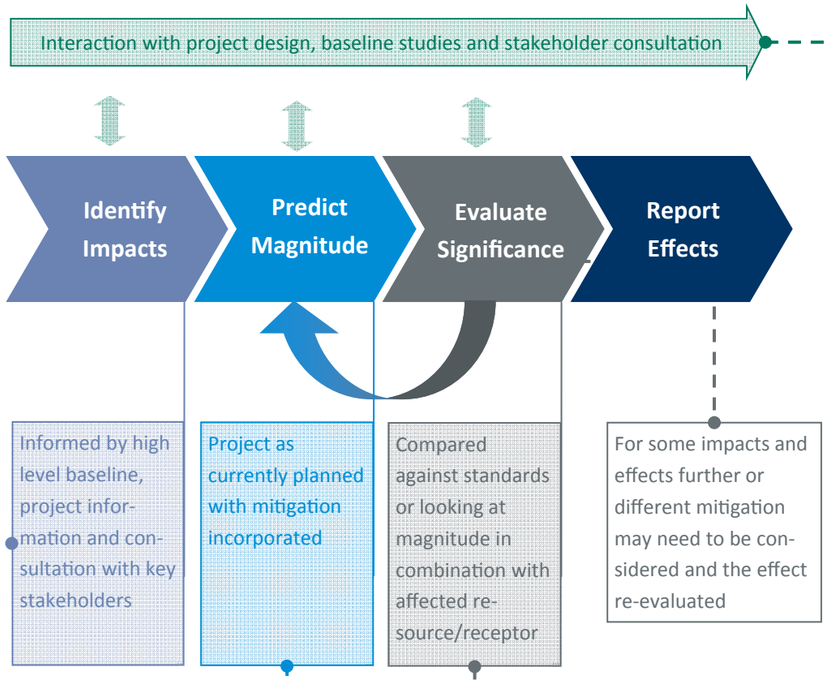
The project's impacts are quantified in terms of, for example:

- change in noise levels at sensitive receptors;
- dust exposure to nearby sensitive receptors including residents, and the nearby TOBB High Schools and
- waste generation.

In predicting magnitude the effect of all the project mitigation in place is taken into account. For some impacts, especially noise and air pollution, significance can be assessed directly against numerical criteria and standards. For exceedances further mitigation must be incorporated by the Project to reduce the magnitude of the impact (and significance of its effect).

For other impacts nominal levels of magnitude (eg small, medium, large) may be adopted based on widely recognised factors such as: the nature of a change (what is affected and how); its size, scale or intensity; its geographical extent and distribution; its duration, frequency, reversibility.

Some activities will result in changes to the environment that may be immeasurable or undetectable or within the range of normal natural variation. Such changes will be assessed as having no impact or to be of negligible magnitude and will not lead to significant effects.



Describe Baseline

Baseline data are collected to better understand the potentially most important impacts and effects identified in scoping. Baseline data may quantify existing exposure levels (eg for noise and air pollution), identify sensitive receptors such as residents, nearby school.

Where a baseline aspect cannot be quantified then nominal levels of importance, quality or value (low, medium, high) are assigned based on widely accepted criteria in fields such as ecology, cultural heritage, landscape and socioeconomic assessment. Levels of sensitivity may also be assigned in a similar way, but noting that sensitivity is a characteristic linked to how a receptor responds to an impact (and the magnitude of that impact). For example a dolphin population may be of high importance (protected), highly sensitive to loss of food sources, moderately sensitive to seismic noise and of low sensitivity to vessel movements.

3. Evaluate Significance

In evaluating significance, the ESIA process is seeking to inform regulators and stakeholders about the effects of the Project in a way that helps them make decisions on whether to approve and allows them to develop suitable conditions to attach to an approval. The evaluation of significance should ideally demonstrate legal compliance at least (eg compliance with quantified standards, avoidance of effects on legally protected resources).

In the absence of quantified standards, impacts/effects can be evaluated through considering the magnitude of an impact in combination with the importance/quality/value (and sometimes sensitivity) of the receptor or resource that is affected. Moderate or major impacts/effects may warrant re-examination to see if an impact magnitude can be reduced further. Different mitigation options may be examined and the reasons for selecting one and rejecting others explained. Some impacts/effects that cannot be adequately mitigated may need to be addressed through the consideration of offsets or compensation. The evaluation process may go through more than one iteration of working with project design to develop suitable mitigation and re-evaluating impacts and effects.

		Sensitivity/Vulnerability/Importance of Resource/Receptor		
		Low	Medium	High
Magnitude of Impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

While the above provides a general framework for identifying impacts and assessing effects, in practice the approaches and criteria applied across different environmental and social topics vary.

Figure 5.2 ESIA Methodology

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

ERM

Gaziantep Integrated Healthcare Campus

Table 5.1 Nature and Duration of Effects

Positive or beneficial effects: effects which are considered to present an improvement to the existing conditions or to introduce a new desirable factor versus	
Negative or adverse effects: effects that are considered to result in deterioration in existing conditions or to introduce a new undesirable factor	
Site-specific effects: effects that result from a geographically localised impact and which are significant primarily at a neighbourhood or district level.	**Wider effects:** effects that are individually significant at a regional level, but which may not be significant locally.
Temporary effects: effects that generally persist for a limited period only, due for example to particular construction activities (eg noise and vibration from construction) and which are reversible.	**Permanent effects**: effects resulting from an irreversible change to the baseline environment (eg loss/gain of habitat).
Shorter-term effects are predicted to last only for the duration of the activity giving rise to the impact (eg earthworks causing dust to be mobilised).	**Longer-term effects** are predicted to continue through operation or beyond the cessation of the activity giving rise to the impacts concerned but will cease in time.
Continuous effects occur continuously or frequently.	**Intermittent effects** are occasional or occur only under specific planned circumstances (eg during commissioning or annual maintenance).
Direct effects: effects that arise from the impact of activities that form an integral part of the Project (eg new infrastructure).	**Indirect or induced effects**: effects that arise from the impact of activities not explicitly forming part of the Project.
Cumulative effects: effects that result from incremental changes caused by other past, present or reasonably foreseeable development together with those from the Project.	
Routine effects resulting from planned activities in the construction and operation of the Project	**Unplanned effects** resulting from unplanned activities in the construction and operation of the Project.

5.6.2 Prediction of Magnitude

The magnitude of each impact falls into one of the following designations: *negligible, small, medium* or *large*. The magnitude encompasses various possible dimensions of the predicted impact, such as:

- extent (ie local, regional or international);
- duration (ie temporary, short-term, long-term or permanent);
- scale or size (no fixed designations);
- frequency (no fixed designations); and
- likelihood, for unplanned events only (ie unlikely, possible, likely).

Each ESIA topic area (eg noise, social etc) adopts a different methodology for defining the magnitude of change however, the designations used are consistent. For example, for readily quantifiable impacts, such as noise, numerical values are used to define its size, whilst for other topics, eg social impacts, a more qualitative classification is necessary.

In the case of positive impacts, no magnitude is assigned.

5.6.3 *Sensitivity of Resources and Receptors*

The sensitivity (or vulnerability / importance) of the impacted resource or receptor is also defined using one of the followings designations: *low, medium* or *high*. As per the magnitude rating, the definition for each designation varies on a resource/receptor basis. Where the resource is physical (for example, a water body) its quality, sensitivity to change, and importance (on a local, national and international scale) are considered. Where the resource/receptor is biological or cultural, its importance (local, regional, national or international) and its sensitivity to the specific type of impact are considered. Where the receptor is human, the vulnerability of the individual, community or wider societal group is considered. The sensitivity definition for each resource / receptor is defined in more detail in the individual topic assessment chapters.

5.6.4 *Evaluation of Significance*

Once the magnitude of the impact and sensitivity of the resource/receptor has been characterised, the impact significance is assigned using the significance matrix presented in *Figure 5.2*.

Table 5.2 provides context for what the various impact significance ratings signify.

Table 5.2 Context of Impact Significance

Significance Designation	Significance Context
Negligible	A resource/receptor (including people) will essentially not be affected in any way by a particular activity or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations.
Minor	A resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently small (with or without mitigation) and/or the resource/receptor is of low sensitivity/ vulnerability/ importance. In either case, the magnitude should be well within applicable standards.
Moderate	Has an impact magnitude that is within applicable standards, but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit.
Major	An accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors.
Positive	There will be a beneficial impact to a resource/receptor. (note: no magnitude is assigned for positive impacts).

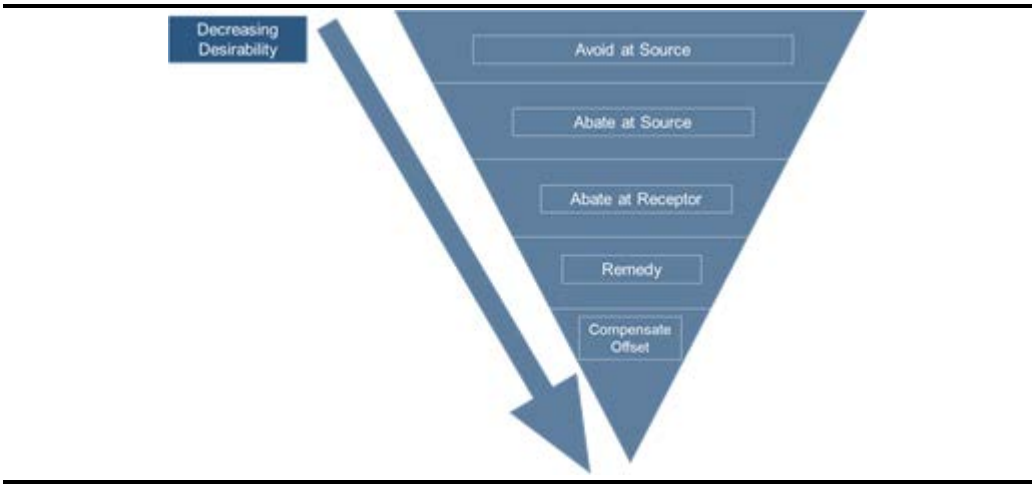
5.6.5 *Identification of Mitigation Measures*

Where significant impacts are identified (ie those with a minor, moderate or major rating), mitigation measures are developed to find practical ways of addressing negative impacts and enhancing positive impacts. The key objective is to mitigate impacts to a level that is as low as reasonably possible (ALARP).

A hierarchy of mitigation options is considered, with avoidance at the source of the impact as a priority and compensatory measures or offsets to reduce the impact significance as a last resort. The Mitigation Hierarchy that is utilised is presented in *Figure 5.3*.

In keeping with the Mitigation Hierarchy, the priority for the mitigation prescribed, is to first apply measures to the source of the impact (i.e., to avoid or reduce the magnitude of the impacts from the associated Project activity), and then to address the resultant effect to the resource/receptor via abatement or compensatory measures or offsets (i.e. to reduce the significance of the effect once all reasonably practicable mitigations have been applied to reduce the impact magnitude).

Figure 5.3 *Mitigation Hierarchy*



It should be noted that embedded controls and mitigation (ie physical or procedural controls that are planned as part of the Project design and are not added in response to an impact significance assignment), are considered as part of the Project (ie prior to the impact assessment stage of the ESIA Process). Accordingly, they are not described as mitigation measures in the individual topic assessment annexes, but are described and incorporated into the impact assessment.

5.6.6 *Assessment of Residual Impact*

Following the identification of (additional) mitigation measures, impacts are re-assessed to determine their residual impact. This is essentially a repeat of the impact assessment steps discussed above, albeit with a consideration of the assumed implementation of the mitigation measures.

5.7 ALTERNATIVES

Lenders require project alternatives to be considered and the rational for selecting the particular way forward to be documented. As outlined in *Chapter* 2, the Project site was initially identified by Gaziantep Municipality and Ministry of Health in Osmangazi, in Şehitkamil District. In 2014 the Ministry of Health, jointly with Gaziantep Municipality decided to move the Project location to Akkent in Şahinbey District. This site was chosen to align with the proposed new developments in Şahinbey District and the resultant opportunities created by a planned large-scale urban development in the area. The Project will benefit from the access road network into central Gaziantep and around the city, its proximity to the airport and the additional infrastructure such as water and electricity provision that is planned as a part of the new development.

Schematic design alternatives were also considered by the SPV to comply with MoH expectations.

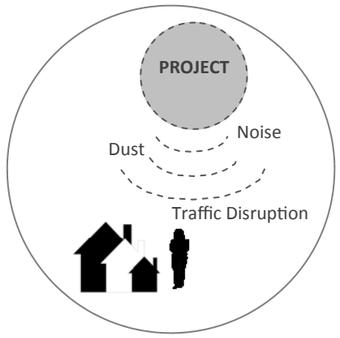
5.8 ASSESSMENT OF CUMULATIVE IMPACTS

The assessment of cumulative effects is an integral part of the ESIA process and ensures that all aspects of potential effects from the Project have been addressed. Cumulative effects result from incremental changes caused by other past, present or reasonably foreseeable development together with those from the Project. In most instances past and present development will have been captured in the baseline for the Project (eg through noise measurements, traffic counts) and the normal practice of 'adding' impacts from the Project to the baseline will assess the cumulative effect. ERM's Cumulative Impact Assessment methodology is presented in *Figure 5.4*.

The cumulative assessment approach is based on a consideration of the approval status or existence of the 'other' activity and the nature of information available to aid in predicting the magnitude of impact from the other activity.

Cumulative Impacts Assessment (Methodology

Cumulative Impacts Assessment seeks to determine the effect of the Project together with the other planned and proposed projects changes and, where appropriate, provide an assessment of the likely significance of any changes. Within the assessment of cumulative effects it is necessary to consider intra and inter-project effects as described in the illustration.

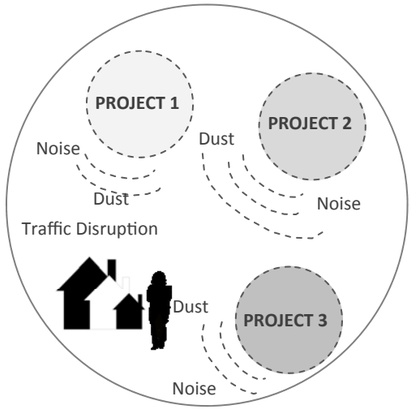


Intra-project effects

Intra-project effects occur where a single receptor is affected by more than one source of impact arising from different aspects of a proposed development. An example of an intra-project effect would be where a local resident is affected by dust, noise and traffic disruption during the construction of a scheme, with the result being a greater nuisance than each individual effect alone.

Inter-project effects

Inter-project effects occur as a result a number of developments. An effect of minor (or moderate) significance from the Project alone could become an effect of greater significance when considered with other planned or proposed projects.



Step 1: Identifying Receptors and Resources

The first stage of the assessment has been to systematically identify which receptors and resources could be cumulatively affected by the Project together with other planned and proposed projects. The objective of this stage of the process is to produce a list of resources and receptors for which cumulative effects will be assessed and managed.

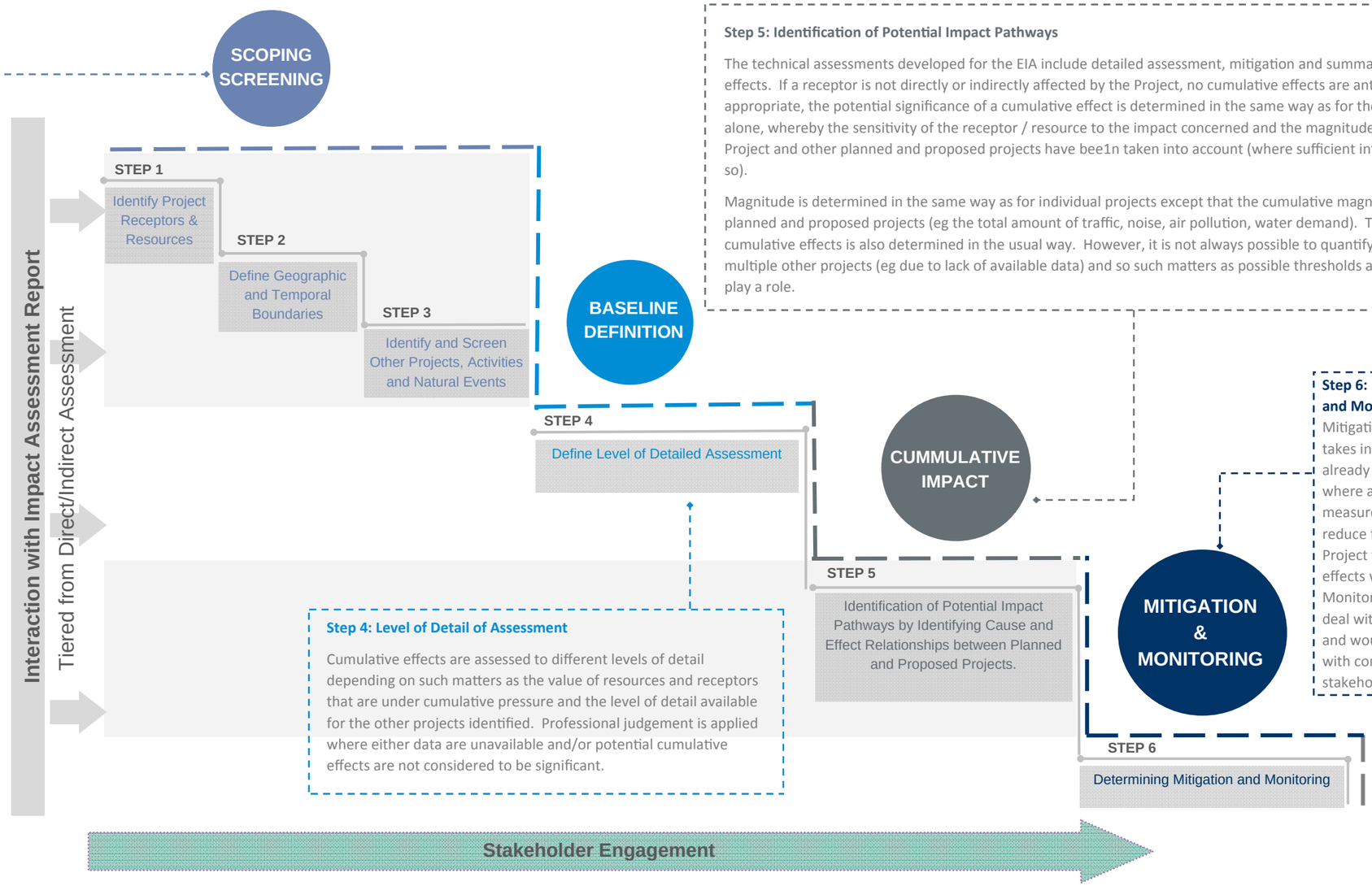
Step 2: Defining Geographic/Temporal Boundaries

To set the geographical boundaries for the assessment, the geographic areas occupied by Project resources and receptors have been considered. The geographical area of influence for a particular resource/receptor varies depending on the nature of the change that may arise from an activity and the type of effect being considered.

Temporal boundaries include the complete lifecycle of the Project. The temporal boundary is used to compare the timing of construction and operation of the other projects, activities, and identify whether these are likely to coincide in time with effects from the Project.

Step 3: Screening

This step involves identifying developments, activities and natural events that could have likely significant effects that might overlap in time or space with those of the Project on valued resources and receptors.



Step 4: Level of Detail of Assessment

Cumulative effects are assessed to different levels of detail depending on such matters as the value of resources and receptors that are under cumulative pressure and the level of detail available for the other projects identified. Professional judgement is applied where either data are unavailable and/or potential cumulative effects are not considered to be significant.

Step 5: Identification of Potential Impact Pathways

The technical assessments developed for the EIA include detailed assessment, mitigation and summaries of any residual effects. If a receptor is not directly or indirectly affected by the Project, no cumulative effects are anticipated. Where appropriate, the potential significance of a cumulative effect is determined in the same way as for the effects of the Project alone, whereby the sensitivity of the receptor / resource to the impact concerned and the magnitude of the impacts from the Project and other planned and proposed projects have bee1n taken into account (where sufficient information is available to do so).

Magnitude is determined in the same way as for individual projects except that the cumulative magnitude is the sum of all planned and proposed projects (eg the total amount of traffic, noise, air pollution, water demand). The likely significance of cumulative effects is also determined in the usual way. However, it is not always possible to quantify the magnitudes of multiple other projects (eg due to lack of available data) and so such matters as possible thresholds and qualitative assessment play a role.

Step 6: Determining Mitigation and Monitoring

Mitigation for cumulative effects takes into account mitigation already identified in the EIA and where appropriate, additional measures have been identified to reduce the contribution of the Project to significant cumulative effects where practicable. Monitoring may be suggested to deal with uncertainty in conclusions and would be discussed and agreed with consultees and other stakeholders.

Figure 5.4 Cumulative Methodology

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

Gaziantep Integrated Healthcare Campus

5.9 MANAGEMENT PLANS

Following the assessment of impacts, management plans are developed for each topic area eg air quality management plan, noise management plan, social management plan, etc. These will be developed by the SPV and will set out how the mitigation measures will be put into practice, monitored and upheld. This includes defining the responsibility, timing and reporting requirements associated with each measure.

5.10 DISCLOSURE

This ESIA report will be disclosed to interested stakeholders for at least 28 days to allow enough time for comment. The ESIA report will be disclosed on the SPV, EIB and EBRD websites from August 2016.

5.11 ASSUMPTIONS AND TECHNICAL DIFFICULTIES

Every effort has been made to obtain data concerning the existing environment and to accurately predict the effects of the Project. The Project-specific aspects of this ESIA have drawn upon existing literature, Project-specific documentation, personal communication with consultees, stakeholders and local experts.

Assumptions adopted in the evaluation of effects are reported in the relevant chapters. However, these assumptions are often implicit, relying on expert judgement. Where technical deficiencies are known, or it has been necessary to make assumptions, these are documented.

The ESIA has been undertaken during the design phase of the Project and therefore some of the technical aspects of the Project have yet to be determined. Should a change in design of the Project occur with potential effects to the environment or society then stakeholders will be consulted and amendment(s) to the ESIA prepared as deemed appropriate.

6 SUMMARY OF IMPACTS

6.1 INTRODUCTION

This chapter provides a summary of the impacts identified during the ESIA study for the construction and operation of the Project. The methodology used to identify and assess impacts is described in detail in *Volume I*, *Chapter 5* of the ESIA. Additional detail is provided on each topic in *Volume II*.

Chapter 7 incorporates all of the mitigation measures associated with all identified impacts including major, moderate, minor and negligible impacts.

6.2 SCOPING REPORT

A Scoping Report was issued in July 2015, setting out the terms of reference for the ESIA study. The terms of reference specified that the following issues would be included in the scope of the study:

- economic and physical displacement;
- employment and benefits;
- influx associated with project workers;
- infectious disease control;
- patients' rights;
- community health, safety and security;
- labour and working conditions;
- access to services;
- vulnerable groups;
- air quality;
- noise and vibration;
- water resources;
- geology and soils;
- traffic; and
- waste.

All of these issues are described in this chapter. The Scoping study also incorporated an assessment of cultural heritage and fauna and flora. An archaeological site survey found that there were no archaeological remains or items of cultural significance on site. Cultural heritage was therefore scoped out the ESIA studies. However, the scoping report did recommend implementation of a Chance Finds Procedure in the event that unexpected remains are encountered during the construction process. An example Chance Find Procedure is provided as *Appendix B1* in *Volume II,* and the SPV have a Chance Finds Management Plan in place.

A fauna and flora assessment found that the Project site supports largely modified habitats on the edge of the City, and that species populations are dominated by common and widespread species. The site does not provide any significant ecosystem services for local neighbourhoods or for the Project.

During construction, the existing habitats supported by the Project site will be lost. The majority of the habitats which will be lost have already been modified, however a small area of semi-natural steppe habitat will be lost. No threatened or protected species were recorded during the ecological field survey undertaken during scoping, although globally vulnerable spur-thighed tortoise (*Testudo graeca*) is reported to occur on site. The effects of the Project on the spur-thighed tortoise will be limited to the Project footprint, and it is likely that they can be appropriately managed through standard good practice mitigation measures, following the mitigation hierarchy. Mitigation measures are outlined in the ESMMP.

Further details on cultural heritage and fauna and flora assessments can be found in the Gaziantep IHC Scoping Report (July 2015).

6.3 SOCIAL ASSESSMENT

6.3.1 Introduction

The full Social Impact Assessment is presented in *Volume II, Annex B* of this ESIA Report. The Social impact assessment presents a detailed description of the socio-economic environment, significant major, moderate and positive impacts and mitigation measures. The sections below summarise the findings of the Social Impact Assessment.

6.3.2 Summary of Baseline Findings

The Project is situated in Şahinbey District, one of nine districts in Gaziantep Province, on the southern margins of Gaziantep city in southeast Turkey. The Project Site is surrounded by several urban neighbourhoods including Akkent, Karataş, Guneş, 75 Yil, Dumlupınar, Kahvelipınar, and Mavikent. Bağlarbaşi village, south of the Project Site is a rural neighbourhood.

Surrounding neighborhoods have varying characteristics. Akkent and Karataş are relatively new urban developments of apartment blocks and amenities including shops and parks and a largely middle class demographic with a relatively large retired-age population. Other neighbourhoods are older and more established with a largely working class demographic and a wider age range. Kahvelipinar is an industrial centre for cloth and processing of nuts. Bağlarbaşi is a small village. All neighbourhoods have a significant Syrian refugee population.

Gaziantep Province is located at the crossroads of the South Eastern and Mediterranean Regions of Turkey, making it ideally situated to become a significant industrial and commercial centre. The main investment sectors include transportation/communication, manufacturing, education, agriculture and energy. The regional unemployment rate is 8 %; however, youth unemployment is as high as 16.5 %. Anecdotal evidence suggests that many Syrian refugees obtain employment, however many work informally or illegally in factories and other industries are earning below the minimum wage.

In terms of governance, the Metropolitan and District Municipalities are the main points where decisions are made but they will consult the relevant Muhtars on a regular basis to discuss development issues and priorities. The District governorship will also meet with the Muhtars every 2-3 months and it is through this forum that they were informed about the Project. Local Muhtars in the Study Area explained that people will come to them for smaller issues and concerns and they will take the relevant issue to either the District or Metropolitan Municipality, as appropriate.

Education attainment among women is lower and as a result, women have lower income earning capacity and are also busy with domestic duties in addition to income generating activities. Therefore, women may be particularly hard to reach when engaging on the Project and additional effort must be made through construction and operation to engage with women, particularly as women have expressed their dissatisfaction with the behaviour of medical facility staff if they attend for treatment. Syrian refugees also expressed dissatisfaction with existing healthcare services and the behaviour of staff. They also struggle to access translators.

6.3.3 *Summary of Significant Construction Impacts*

This section summarises all identified social impacts. Major impacts were not identified. The full assessment of impacts is detailed in *Volume II, Annex B.*

Employment Opportunities and Skills Enhancement

The SPV has estimated that the construction phase of the Project will provide jobs for up to 3,008 workers during peak construction. The total number of jobs will be between 3,500 – 4,000 inclusive of indirect employment in administrative, cleaning and catering. From month 10 to month 32 there will be over 1,000 construction workers on site. It is forecasted that half of these positions will be available for unskilled and semi-skilled workers from within Gaziantep province (as the SPV has committed to recruiting 50% of the workforce from within the province). Those who secure jobs will have access to a regular income during their employment and the opportunity to develop new skills and work experience. Measures for women to gain access have been specified in the ESMMP. This will result in a **positive** impact.

Loss of Jobs

At the end of construction, contracts with companies and their workers will terminate. Construction contracts are relatively short-term in nature and the employment period for individual workers may not all extend throughout the construction period. On completion of the works, contracted construction staff will need to find alternative employment. For those already working in the industry, this will be standard practice and as such their level of vulnerability is assessed as low as they have a high ability to adapt. For unskilled workers, who may be working for construction contractors for the first time, the situation may be more difficult. Multiplier benefits associated with the construction employment (creating additional direct, indirect and induced jobs) will also cease at the end of construction.

The vulnerability of these workers is considered to be low, but the number of people impacted is sizeable (up to 3,008 workers during peak construction) and therefore a medium magnitude is assigned, resulting in a residual impact of **minor** significance.

Local and National Economy

During construction, the Project will need to procure goods and services. These will include catering and construction materials such as concrete, which will be produced at local concrete batching plants. The SPV will look to procure locally, where possible; as will be detailed in the Local Content Policy. The presence of a large construction workforce will further increase the demand for local goods and services and so the Project is expected to have a **positive** impact on local businesses and the local economy in Gaziantep.

Additionally, revenue will be generated from taxes on income and for goods and services procured in Turkey (VAT), and duty on imported products. This will result in a **positive** impact on the national economy.

Traffic Related Impacts

During the first six months to one year of construction, up to 510 vehicles are expected to be on site each day including 200 HGVs, 90 cement mixers, 70 trucks and 150 cars. This will reduce in year two once earthworks are complete and concrete mixers are no longer required; down to 220. Accordingly, there is the potential for traffic accidents to occur which could lead to injury or fatalities to other road users and pedestrians. However, with the Traffic Management Plan in place, the magnitude of this impact is considered to be small. Akkent and Karataş neighbourhoods have a high number of retired residents; many young families with children also live in the area. The Türkiye Odalar Ve Borsalar Birliği (TOBB) High School is adjacent to the Project site and commenced operation in September 2015 with 200 boarders on site from spring 2016. The vulnerability of these local residents to such impacts is considered to be medium, which results in a residual impact of **minor** significance.

Risk of Accidents Due to Trespassing On Site

The TOBB High School adjacent to the Project site will have 600 students with a dormitory for 200 boarders. The school expressed concern about the risk of students (or other members of the public) trespassing on the site, resulting in an injury or fatality. Due to the proximity of the high school, the SPV will ensure that the site is fenced and patrolled by security to prohibit access. The SPV will also meet directly with students and teachers of TOBB High School to discuss health and safety issues associated with the construction phase. Vulnerability is considered to be medium due to the age of the students (under 18) and the perception of this risk by members of the school community, however with access prohibited the residual impact is of **negligible** significance.

Conflicts with Security Providers

Security personnel will be required throughout the duration of the construction period to ensure the security of staff and equipment at the Project site and the worker camp. The use of disproportionate force by security personnel in the event of any incident or the inappropriate behaviour of security personnel towards local residents and / or students attending TOBB High School may lead to grievances or injury if there is any physical confrontation. Although, there is no real history of violence or negative interactions between security and local populations in Gaziantep and the SPV will implement a Security Plan to manage security services. The Project will also align with the requirements of ERBD PR 2 (1), EIB Environmental and Social Standard 9 (2) and agree to a standard of practice and behaviour for the security personnel, guided by the principal of proportionality and GIIP (such as the Voluntary Principles on Security and Human Rights (3), the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials (4) and the UN Code of Conduct for Law Enforcement Officials (5)), in terms of hiring, rules of conduct, training, equipping and monitoring of such personnel.

Given the legal framework management measures in place, the magnitude of this impact is expected to be negligible. The vulnerability of local residents is considered to be medium, considering the proportion of refugees, more elderly residents, young families and local schools. This results in a residual impact of **negligible** significance.

Interactions with Workers during Construction

The Project is not expected to result in any significant opportunistic, indirect influx to the study area however up to 50% of the workforce may be employed from outside Gaziantep province. Many of these will be housed in the designated workers' camp immediately south of the Project site and the

(1) ERBD Performance Requirement 2: Labour and Working Conditions (2014)
(2) EIB Environmental and Social Standard 9: Occupational and Public Health, Safety and Security (2013)
(3) http://www.voluntaryprinciples.org/
(4) http://www.ohchr.org/EN/ProfessionalInterest/Pages/UseOfForceAndFirearms.aspx
(5) http://www.ohchr.org/EN/ProfessionalInterest/Pages/LawEnforcementOfficials.aspx

presence of external construction workers will lead to likely interactions with local residents. Focus group meetings in Akkent highlighted that local residents believe the crime rate in the neighbourhood as high, largely due to the presence of construction workers residing in construction camps. General health and safety concerns were not found to be significant during focus group discussions. During a meeting with the TOBB High School in November, concern was also expressed about construction workers using school facilities such as the prayer room and school canteen.

The SPV will develop a strict Workforce Code of Conduct for construction workers, governing their behaviour and interactions with local communities. In addition, the SPV will also develop a Camp Management Plan for those living on site. These measures will align with EBRD PR2, EIB Environmental and Social Standards 8 [(1)] and 9 and IFC PS 2. With effective implementation of these measures, the magnitude of any impact from harassment or crime is considered to be small. The vulnerability of local residents is considered to be medium because of the number of retired people living in the neighbourhood. This results in potential impacts of **minor** significance.

Occupational Health and Safety Risks

Construction workers on the Project will be exposed to hazards typical of civil construction facilities, such as vehicles and driving, working at height, manual handling, and contact with hazardous material, noise and vibration, amongst others. The Project is required to comply with national labour, social security and occupational health and safety laws as well as the Core 8 Standards of the ILO convention, EBRD PR 2, and EIB Environmental and Social Standards 8 and 9 and IFC PS 2. The SPV will have a robust Occupational Health and Safety Management Plan in place for the construction phase. The Plan will include control measures for the hazards identified. These are to comprise specific training and Personal Protective Equipment requirements, the management and reporting of occupational incidents, illnesses and injuries and emergency response protocols. The SPV will ensure that its agreements with contractors make explicit reference to the need to abide by Turkish Law and ILO conventions in relation to labour and welfare standards, and freedom of association. These measures will also be applied to Syrian refugees legally eligible for employment who have residency status.

With these measures in place, the magnitude of this impact is assessed as small. The vulnerability of workers is assessed as low to medium (with contract workers identified as potentially more vulnerable than permanent workers). This results in a residual impact of **minor** significance.

Worker Accommodation Camp

The Project will construct a workers' camp on site for up to 3,668 construction workers which will have 9 dormitories able to house up to 32 engineers, 108 technicians and 3,528 workers. Workers' living conditions will comply with

(1) EIB Environmental and Social Standard 8: Labour Standards (2013)

Turkish law and the performance requirements of EBRD (PR 2) and IFC (PS 2) as well as the joint EBRD / IFC Workers' Accommodation: Processes and Standards Guidance Note (2009). The Camp Management Plan will include a Workforce Code of Conduct, reference to the Project's Occupational Health and Safety Management Plan and provisions for induction and training. With these measures in place, the impact magnitude is assessed as negligible and the vulnerability of workers is assessed as low, which results in a residual impact of **negligible** significance.

6.3.4 *Summary of Potential Impacts during Operation*

Health Impacts

The Gaziantep IHC Project is being designed to be a state of the art medical facility which will improve health care services for those living in Gaziantep Province and nearby surroundings. It is part of the Turkish Health Transformation Program (HTP) which aims to see shortened hospital stays, a reduced number of patient transfers, a decrease in the number of hospital infections and improved patient safety and satisfaction. Improved access to healthcare services in Gaziantep is the primary significant **positive** impact of the Project.

Employment and the Local Economy

During operation of the Gaziantep IHC Project, there is expected to be a workforce of up to 6,100 personnel, of whom 3,600 will be healthcare professionals and up to 2,500 operational and maintenance staff. The MoH will be responsible for assigning doctors, nurses and other clinical staff to the campus, but the SPV has committed to employing 70% of all operational and maintenance staff from within the Gaziantep Province. Those who secure jobs will have access to a regular income during their employment.

As Syrian refugees are considered a vulnerable group with respect to employment, the SPV will ensure that they only recruit refugees who have an official residency permit and identity card. They will not be paid less than other staff for doing the same job and will not be recruited informally.

In addition to direct employment within the IHC, there will likely be a boost in trade for local businesses (such as shops and restaurants) due to the increased footfall onto the campus each day.

Direct, indirect and induced jobs created by the Project, as well as the boost to the local economy, is a significant **positive** impact of the Project.

Patients' Rights

Patient rights and safety will be the joint responsibility of the MoH and the SPV. The MoH will be responsible for medical services, whilst the SPV will be responsible for auxiliary services and day-to-day activities (including

protection of patient information). The SPV will ensure that policies and procedures are written and implemented regarding the rights of patients and their families for the services that fall within the responsibility of the SPV. Policies and procedures will be implemented that describe how patients' health information is protected and how breaches of confidentiality are dealt with. The SPV will implement a Patients' Grievance Mechanism which focuses on the services it is responsible for, such as data management and auxiliary services. All staff will be trained with regards to the rights of patients and their families.

With these controls and procedures in place, the magnitude of any impact related to patient rights is considered to be negligible. The vulnerability of receptors is assessed as medium, which results in a residual impact of **negligible** significance.

Traffic Related Accidents and Injury

It was estimated that there will be 52,920 daily users with the peak hour between 08.00 – 09.00. During the peak hour, there will be a maximum two-way flow of 5,147 cars contributing to local traffic loads.

The SPV will develop a Health Campus Internal Traffic Management Plan for the IHC in consultation with local authorities in order to manage traffic within the Project site. Ongoing stakeholder engagement will also assess how project-related traffic is affecting traffic more broadly within Gaziantep. The results of these studies will feed into the Health Campus Internal Traffic Management Plan and adjustments made as necessary. With these measures in place, the magnitude of traffic impact to health and safety is considered to be small. The vulnerability of local residents to such impacts is considered to be medium, which results in a residual impact of **minor** significance based on a worst case scenario.

Security Management

During operation, the Gaziantep IHC will maintain a safe and secure environment for patients, families, staff, visitors and the local community. It contains a high security forensic hospital, which will be kept secure and monitored at all times under the joint responsibility of the MoJ and MoH.

The SPV, together with the MoJ and MoH, will develop a Security Policy and Plan for the IHC, which will detail the company's position and measures to address the use of force, training, equipping and monitoring security guards as well as investigating reports of unlawful behaviour and preventing recurrence. All security personnel from private companies will be trained and will operate in accordance with the following international codes of conduct:

- International Code of Conduct for Private Security Providers [(1);]
- Voluntary Principles on Security and Human Rights [(1)];

(1) http://www.icoca.ch/en/the_icoc

- UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials [2]; and
- UN Code of Conduct for Law Enforcement [3] .

With these measures in place, the magnitude of impacts related to security is considered to be negligible. The vulnerability of receptors is assessed as medium due to the concerns raised about this aspect, which results in a residual impact of **negligible** significance.

Exposure to Infections/Diseases

In the absence of appropriate management, there is an eminent risk of exposure to general infections, blood-borne pathogens [4], and other potential infectious materials within the health campus, leading to extremely adverse impacts on human and environmental health. However, a number of measures have been incorporated into the Project design to appropriately manage the risk of transferring infectious diseases. For example, there will be an Infection Control Programme for the IHC and robust waste management and hazardous material management.

With these measures in place, the magnitude of impacts related to exposure to infections/diseases is considered to be small. The vulnerability of receptors is assessed as medium, which results in a residual impact of **minor** significance.

Exposure to Hazardous Materials, Waste and Radiation

During operation of the IHC it will be important that appropriate systems are in place to manage risks faced by workers who may be exposed to hazardous materials, waste and radiation.

The Project's design will ensure that equipment installed in the IHC appropriately manages Waste Anaesthetic Gases (WAGs). In addition, the MoH and SPV will have a comprehensive plan to control radiation exposure, as outlined in the World Bank Group EHS Guidelines for Health Care Facilities. International safety standards and guidelines regarding radiation will be followed and exposure controlled to internationally recommended limits [5].

All details regarding the protection of workers' health and safety will be detailed in the Occupational Health and Safety Plan for the Project, aligning with the BS OHSAS 18001 framework.

With the effective implementation of these measures and regular audits, the magnitude of impacts related to exposure to hazardous materials, wastes and

(1) http://www.voluntaryprinciples.org/for-companies/
(2) http://www.ohchr.org/EN/ProfessionalInterest/Pages/UseOfForceAndFirearms.aspx
(3) http://www.ohchr.org/EN/ProfessionalInterest/Pages/LawEnforcementOfficials.aspx
(4) Pathogenic microorganisms that are present in human blood and can cause disease in humans, including human immunodeficiency virus (HIV), hepatitis B virus (HIB), and hepatitis C virus (HCV).
(5) For example: IAEA standards http://www-pub.iaea.org/MTCD/publications/PDF/Pub1192_Web.pdf and ACGIH (2005) and International Commission for Non-Ionizing Radiation (ICNIRP).

radiation is considered to be small. The vulnerability of receptors is assessed as medium, which results in a residual impact of **negligible** significance.

Emergency Events: Fire

As described in *Chapter 2*, the IHC has been designed in accordance with the Turkish Regulation on the Protection of Buildings from Fire (Official Gazette Date/No: 19.12.2007/26735); the technical specification from the MoH also contained specific requirements related to fire protection which have all been incorporated into the Project's design.

The SPV will also ensure that fire safety is incorporated into the organisation-wide protocols and department manuals and establish a Life and Fire Safety Master Plan. The SPV will also develop and implement a policy and plan to limit smoking, implement an Emergency Preparedness and Response Plan and undertake a third party life and fire safety audit.

With the implementation of these measures, the magnitude of any impact related to fire is considered to be small. The vulnerability of receptors is assessed as medium, which results in a residual impact of **minor** significance.

6.3.5 Mitigation Measures

No additional mitigation measures are required above those embedded into the Project design or committed to by the SPV. Details on the embedded mitigation are provided in *Chapter 7 (Environmental and Social Management Plans)* and in *Volume II, Annex B*.

6.3.6 Residual Impacts

A summary of the residual impacts is provided below.

Table 6.1 Summary of Residual Impacts

Impact	Residual Significance Rating
Construction Impacts	
Loss of jobs associated with existing concrete batching plant	Negligible
Loss of jobs at the end of construction	Minor
Direct employment opportunities and skills enhancement	Positive
Local and national economy	Positive
Traffic related impacts	Minor
Risk of accidents due to trespassing on site	Negligible
Conflict with security providers	Negligible
Interactions with workers	Minor
Occupational health and safety risks	Minor
Worker accommodation camp	Negligible
Operation Impacts	
Health impacts	Positive
Employment and local economy	Positive
Patient rights	Negligible
Traffic related accidents and injury	Minor

Impact	Residual Significance Rating
Security management	Negligible
Exposure to infections/diseases	Minor
Exposure to hazardous materials, waste and radiation	Negligible
Emergency events: fire	Minor

6.4 AIR QUALITY ASSESSMENT

6.4.1 Introduction

The full Air Quality Impact Assessment (AQIA) is presented in *Volume II, Annex C* of this ESIA Report. The AQIA presents a detailed description of the air quality environment, significant impacts and mitigation measures. The sections below summarise the findings of the AQIA.

6.4.2 Summary of Baseline Findings

Climate Conditions

Gaziantep is located at the junction of South-eastern Anatolian Region and Mediterranean Region; therefore, the city experiences both continental and Mediterranean climates, with hot, dry summers and mild to cold, wet winters. Most of the rainfall in the city occurs in the winter and spring. The climate of the city is classified as arid and semi-arid by different classification methods.

The prevailing wind direction in the area south-westerly - During spring, summer and autumn, the most common wind directions are westerly, north-westerly and south westerly. From November to February the prevailing wind changes to colder easterly and north- easterly directions.

Air Quality

Air quality monitoring data undertaken by local authorities was gathered for 2009 - 2014 for particulate matter (PM_{10}). The data show that within Gaziantep, the monitored annual and daily maximum PM_{10} concentrations have exceeded the Turkish and EU air quality Limit Values for the past six years, which is considered to be as a result of natural background dust sources. Natural wind-borne background dust originates from the arid environment and desert dust storms [(1)].

A short-term programme of nitrogen dioxide (NO_2) monitoring was commissioned in August 2015 for a period of three consecutive months at 12 locations, to establish the existing baseline conditions at the Project Site, since no data were available. The monitoring locations were therefore chosen to reflect where potential impacts from both operational road traffic and on-site plant during operation were considered most likely to occur, in order to establish a robust baseline.

(1) Bayram H et al. (2015) 'Effects of Desert Dust Storms and Meteorological Variables on Emergency Room Visits and Hospitalization Due to COPD in South East Turkey'

Based on the ambient air quality monitoring data collected for the Project, it is considered that the site location is an undegraded airshed for NO_2, as the ambient concentrations are below the relevant standards at each site for each period. For PM_{10} however, ambient concentrations recorded in the centre of Gaziantep are consistently above the Turkish and EU air quality Limit Values.

Whilst the Gaziantep urban background monitoring site location is not considered to be representative of conditions at the Project Site, the data are useful to understand the wider air quality environment. As the predominant source of the elevated concentrations at the monitoring station is likely to be attributed to natural wind-borne dust sources, it is considered likely that PM_{10} concentrations at the Project Site will be of a similar order of magnitude ie above the Turkish and EU Limit values, and therefore the airshed for PM_{10} (and $PM_{2.5}$) is classified as degraded.

Sensitive Receptors

The key human receptors within the Study Area are the developed residential areas and the educational and recreational facilities that surround the Project Site. There are large numbers of high-density existing residential properties located to the west of the site and to the south of the site, beyond the Otoyol-54 (O-54) motorway. Recreational and educational facilities are also located to the west and on the site boundary. As part of the wider master plan for the area, proposed residential units will surround the hospital site. The hospital itself will be a key receptor due to the constant presence of vulnerable individuals. There are no ecologically sensitive sites surrounding the Project Site.

6.4.3 *Summary of Significant Construction Impacts*

Construction Dust

Emissions of dust will arise from the Project during construction, primarily as a result of earth moving activities, exposure of bare ground, stockpiling of material, the passage of vehicles over open ground and the on-site concrete batching plant.

The unpaved road network used across the Project Site prior to works completion, is likely to be constructed from a mixture of rocks, stone, gravel, sand and silt, and can be particularly dusty when disturbed by vehicle movements. Whilst less of an issue during winter months, any moisture in the material, or applied by water sprays, rapidly evaporates during periods of high temperatures and low moisture content in the air. When the surface is disturbed little or no moisture is therefore available to fix fine particulates and reduce the generation of dust. The elevated wind speeds occurring in the region together with the absence of natural barriers at the Project Site further increase the high potential for dust generation and its ability to travel considerable distances.

The duration of the impact will continue for the duration of the construction phase, lasting approximately three years. The climatic conditions within the Project area are also considered to promote dust-generation for a large proportion of the year. Therefore, exposure to dust generating activities and associated dust emissions are likely to occur intermittently over the duration of the Project construction.

On this basis, dust emissions have the potential to result in impacts of a **major** significance for the sensitive receptors found within 200 m of the source, without the application of mitigation. All other receptors are considered to be at distances between 200 m and 500 m and greater away from the source and therefore have the potential to experience impacts of **minor** significance, again without the application of mitigation.

Given the existing high concentrations of PM_{10} recorded in Gaziantep, which consistently exceeds both Turkish and EU Limit Values, it is expected that dust suppression mitigation measures (including on-site PM_{10} monitoring) will be embedded into the Project Design and employed at the site during construction, to ensure impacts during construction are reduced to **minor** significance at worst.

Impacts from Construction Traffic Emissions

The potential effect of the movement of construction vehicles to and from the Project Site upon local air quality has been assessed using the detailed air dispersion model, ADMS-Roads.

The impact assessment predicts that there will be no exceedances of any of the Turkish or EU ambient air quality Limit Values for the pollutants of concern (NO_2, PM_{10} and $PM_{2.5}$) from vehicles during the construction phase at existing sensitive receptors.

The significance of NO_2 impact during construction of the Project is considered to be negligible in-line with IFC criteria. Furthermore, whilst PM_{10} concentrations are likely to already exceed the Turkish and EU air quality Limit Values at the Project Site, the significance of the PM_{10} and $PM_{2.5}$ impacts from vehicles during construction of the Project are also considered to be **negligible**.

An assessment of the potential greenhouse gas emissions associated with the movement of construction vehicles during construction of the Project has also been undertaken. Based on the limited data available regarding vehicle movements, the following indicative emission totals were calculated: -

- Year 1 of construction– 512 t of CO_2 associated with the vehicle movements; and

- Year 2 of construction onwards – 414 t of CO_2 associated with the vehicle movements.

Once further detailed information is available on the estimated vehicle kilometres travelled by construction related traffic and personnel on-site during the construction phase, this indicative assessment of CO_2 emissions can be updated to reflect the exact scenario.

6.4.4 *Summary of Significant Operational Impacts*

Impacts from Tri-generation Plant and Boiler Stack Emissions

The operational impacts of the plant were assessed using the detailed dispersion model, AERMOD. The modelling indicated that impacts associated with the base case design of the tri-generation plan and the boilers had the potential to cause exceedances of the Turkish and EU air quality Limit Values for NO_2 (major adverse impacts). As a result, the design of the tri-generation plant and boilers, in particular the stack parameters and emissions characteristics have been modified in order to reduce the predicted impacts.

Three modified designs were assessed, taking into account a number of different design changes (both in-isolation and in-combination) and the selected design enables the reduction of predicted impacts to as low as reasonably practicable.

In order to result in **negligible** impacts, the following mitigation/variations to the design of the base case were recommended and subsequently incorporated into the design: increased stack height (45m); use of combined stacks for the tri-generation plant and boiler plant; and reduction of the NO_x emission concentration of the tri-generation plant from 500 mg /Nm^3 to 100 mg /Nm^3.

The results of the preferred and final design model run, referred to as 'Mitigated Design Three', are set out in *Table 6.2* below. Full details of the additional two modelling scenarios can be found in *Appendix C2 Detailed Dispersion Modelling for Plant Emissions*.

Table 6.2 Impacts to NO_2 Concentrations from Trigeneration Plant (Preferred Design (Mitigated Design 3))

Standard	*Averaging period*	*AQS (µg/m³)*	*PC (µg/m³)*	*PC/ AQS*	*Baseline (µg/m³)*	*PEC (µg/m³)*	*PEC/ AQS*	*Magnitude*	*Significance*
	Mitigated Design 3 - Ground and Elevated Level Receptors								
Turkey	1 hour (not to be exceeded > 18 times in one year)	200 (+100 µg/m³ reducing to zero 1.1.2014-1.1.2024)	25.3	13%	36.2	61	31%	Negligible	Negligible
	annual mean	40 (+20 µg/m³ reducing to zero 1.1.2014-1.1.2024)	1.16	2.9%	18.1	19.3	48%	Negligible	Negligible

Standard	Averaging period	AQS (µg/m³)	PC (µg/m³)	PC/ AQS	Baseline (µg/m³)	PEC (µg/m³)	PEC/ AQS	Magnitude	Significance
EU	1 hour maximum	200	25.3	13%	36.2	61	31%	Negligible	Negligible
	annual mean	40	1.16	2.9%	18.1	19.3	48%	Negligible	Negligible

Calculations for the annual emissions of carbon dioxide (CO_2) have also been undertaken using emission factors based on the provided energy demand. Natural gas is used on-site to fuel the tri-generation plant providing heating, cooling and power, together with the on-site boiler providing hot water.

Assuming a conservative approach of a 30 MW supply from the grid for 24 hours a day, 365 days per year, the estimated annual electricity usage will be 262,800 MWh. Using a specific emission factor for electricity generation in Turkey of 0.605 tCO_2 / MWh(1), equating to a total of 158,994 tonnes of CO_2 per year.

The total volume of natural gas to be consumed by the Project is estimated to be 7,800 m^3/h (2). Using an emission factor for natural gas combustion of 2.0291 kg CO_2/m^3 (3), the emissions associated with natural gas usage at the Project equates to a total of 138,644 tonnes of CO_2 per year.

Impacts from Road Traffic Emissions

The potential effect of the movement of road traffic to and from the Project Site during the operational phase upon local air quality has been assessed using the detailed air dispersion model, ADMS-Roads.

The impact assessment predicts that there will be no exceedances of any of the Turkish or EU ambient air quality Limit Values for the pollutants of concern (NO_2, PM_{10} and $PM_{2.5}$) from vehicles during the operational phase at either existing or potential future sensitive receptor locations.

The greatest impact in annual mean NO_2 concentrations at an existing sensitive receptor is predicted to occur on the Site Access Road. The greatest impact in 1 hour NO_2 concentrations at an existing sensitive receptor will occur on the western side of the O-54 Link Road. With regards to assessment against IFC criteria, the worst-case PC/AQS at both existing receptors is predicted to be less than 25% criterion and therefore the significance of the annual mean and 1 hour NO_2 impacts during operation of the Project are considered to be **negligible**.

Furthermore, whilst PM_{10} concentrations are likely to already exceed the Turkish and EU air quality Limit Values at the Project Site, the significance of the PM_{10} and $PM_{2.5}$ impacts from vehicles during operation of the Project are

(1) EBRD 2009. Electricity Emission Factors Review, November 2009.
(2) Information supplied by the SPV on 30th June 2016
(3) DECC 2015, Greenhouse gas reporting - Conversion factors 2015, Department of Energy and Climate Change, January 2015.

also considered to be **negligible**. Results for the predicted NO_2 concentrations, which is the primary pollutant of concern with regards to the operational Project, are summarised in *Table 6.3*.

Table 6.3 Traffic Impact on NO_2 Concentrations during Operation

Operational Phase Scenario								
Standard	*Averaging period*	*AQS (µg/m³)*	*PC (µg/m³)*	*PC/ AQS*	*PEC (µg/m³)*	*PEC/ AQS*	*Magnitude*	*Significance*
Site Access Road – north side (existing)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	17.6	8.79%	56.6	28%	Negligible	Negligible
	annual mean	40	3.52	8.79%	22.0	55%	Negligible	Negligible
400th Street – north side (existing)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	9.45	4.73%	57.0	28%	Negligible	Negligible
	annual mean	40	1.01	2.53%	20.4	51%	Negligible	Negligible
400th Street – south side (existing)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	9.51	4.75%	52.8	26%	Negligible	Negligible
	annual mean	40	0.937	2.34%	20.2	50%	Negligible	Negligible
O-54 Link Road – west side (existing)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	18.6	9.29%	71.1	36%	Negligible	Negligible
	annual mean	40	2.10	5.25%	22.0	55%	Negligible	Negligible
O-54 Link Road – east side (proposed)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	15.4	7.72%	68.5	34%	Negligible	Negligible
	annual mean	40	4.68	11.7%	26.9	67%	Negligible	Negligible
Site Access Road – south side (proposed)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	15.7	7.84%	61.5	31%	Negligible	Negligible
	annual mean	40	5.26	13.1%	25.3	63%	Negligible	Negligible
Site Access Road– north side (proposed)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	16.5	8.26%	63.8	32%	Negligible	Negligible
	annual mean	40	3.70	9.26%	24.4	61%	Negligible	Negligible
Ozdemir Street – west side (proposed)								
Turkey / EU	1 hour (not to be exceeded > 18 times in one year)	200	7.64	3.82%	51.7	26%	Negligible	Negligible
	annual mean	40	1.90	4.74%	21.9	55%	Negligible	Negligible

Calculations for the emissions of CO_2 have also been undertaken for the operational traffic accessing the site, using general emission factors assuming 4.73 tonnes CO_2 equivalent /vehicle/year [(1)]. A total of 40,489 vehicles per day (two-way) are predicted to access the Gaziantep IHC when operational, which equates to a total of 191,513 tonnes of CO_2 per year [(2)].

In-combination Operational Impacts

The impacts associated with road traffic and the operation of the tri-generation and boiler plant will overlap to some extent and therefore were considered in combination with each other.

The emissions from the tri-generation plant and the boiler plant have the greatest overlap with road traffic at receptors alongside the Site Access Road to the west. There are however no predicted exceedances of the Turkish or EU air quality Limit Values for NO_2 annual mean and 1 hour mean, and the in-combination impacts are considered to be **negligible**.

During the operational phase of Gaziantep IHC, the annual emissions of CO_2 based on electricity supply, gas supply and the predicted vehicle movements accessing the site over the course of one year, results in 489,151 tonnes of CO_2 per year. In 2013, Turkey's reported CO_2 emissions from fuel combustion [(3)] were 283.8 Mt CO_2 ie 283,800,000 tonnes of CO_2. The calculated emissions from the operation of Gaziantep IHC therefore equate to <1% of this national total. EBRD guidance on assessment of GHG emissions also defines a series of categories and thresholds for different project types .This suggests the operation of the Project is classified as having a **Medium-High** magnitude description, which is in-line with the listed example sector categories, including district heating and small generation plants.

6.4.5 *Mitigation Measures*

Details on the embedded mitigation and additional mitigation measures are provided in *Chapter 7 (Environmental and Social Management Plans)* and in *Volume II, Annex C*.

On the basis of the major impacts associated with the predicted operational tri-generation and boiler plant base design, redesign of the tri-generation and boiler plant was undertaken to mitigate these impacts.

The following mitigation/variations to the design of the base case were therefore recommended and subsequently incorporated into the design to result in negligible impacts:

(1) https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references <<accessed 21st June 2016>>
(2) 40489 vehicles x 4.73 tonnes CO_2 equivalent per vehicle per year
(3) IEA, 2015. CO2 Emissions From Fuel Combustion – Highlights. Table 1World CO_2 emissions from Fuel Combustion and Kyoto Protocol first commitment period targets, International Energy Agency. Available at https://www.iea.org/publications/freepublications/pub

- increased stack height (45 m);
- use of combined stacks for the Tri-generation Plant and Boiler Plant; and
- reduction of the NOx emission concentration of the Tri-generation Plant from 500 mg /Nm^3 to 100 mg /Nm^3.

6.4.6 *Residual Impacts*

The impact of construction will be reduced to **minor** significance at worst, with the full application of embedded mitigation into the Project Design.

The original design of the tri-generation plant and boiler plant resulted in major impacts, however with the implementation of the suggested mitigated and variation to the design, the residual impacts from during operation of the Project will be **negligible**.

The impact of traffic related emissions will be **negligible**.

6.5 *NOISE AND VIBRATION ASSESSMENT*

6.5.1 *Introduction*

The full Noise and Vibration Impact Assessment (NVIA) is presented in *Volume II*, *Annex D* of this ESIA Report. The Noise impact assessment presents a detailed description of the existing acoustic environment, significant impacts and mitigation measures. The sections below summarise the findings of the NVIA.

6.5.2 *Summary of Baseline Findings and Sensitive Receptors*

Long term unattended noise monitoring was conducted at three locations (R1, R2 and R3). Noise impacts were also considered at an additional two locations (R4 and R5). At the time of the survey, noise measurements were not undertaken at R4 and R5, since the noise levels at that time were not representative of normal noise conditions due to noise from the construction site. These are illustrated in *Figure 6.1*. *Table 6.2* summarises the results of the measurements recorded at the three long term noise monitoring locations based on the IFC day and night time period definition.

Figure 6.1 Locations of Sensitive Receptors

Table 6.4 Long Term Unattended Noise Monitoring Results

Measurement Location	Type of Receptor	Period (T)	Measurement Parameter, dB(A)				
			LAeq	LA90	LA10	LAmin	LAmax
R1	Residential	Daytime	58	45	60	38	89
		Night time	44	35	46	31	74
R2	Residential	Daytime	62	45	59	40	100
		Night time	45	43	46	42	68
R3	Residential	Daytime	60	48	62	40	93
		Night time	54	37	57	27	93
Period T = 15 hours for Daytime and 9 hours for Night time.							

Daytime ambient (LAeq) noise levels are higher than the night time levels due mainly to the higher level of human activity. At the measurement location R1 and R2, during the first day of the baseline, construction activities significantly influenced the daytime levels. At these locations traffic noise and daily human activities were audible on both days, during the daytime. At the measurement location R3 construction activities were not audible; the acoustic environment was composed of traffic noise and daily human activities.

6.5.3 *Summary of Significant Construction Impacts*

During construction activities with potentially significant noise sources include earthworks, blasting and construction traffic. Impacts associated with daytime and evening construction activities will be **negligible** on residential receptors (R1, R2, R3 and R5) and of **major** significance for the school (R4). However, if night time construction is required, emissions from the construction activities are expected to generate noise impacts to the residential receptors. These impacts are predicted to be of **major** significance at receptors R2, R4 and R5, **moderate** significance at receptor R1 and **minor** significance at receptor R3. These are summarised in *Table 6.3*.

Table 6.5 Construction Impact Significance

Receptors		Construction			Noise Assessment Criterion			Noise Assessment Criterion			Impact Significance		
		Excavation Works	Building Construction										
ID	**Type of Receptor**	**PNL LAeq Day**	**PNL LAeq Evening**	**PNL LAeq Night**	**Daytime**	**Evening time**	**Night time**	**Daytime**	**Evening time**	**Night time**	**Daytime**	**Evening time**	**Night time**
R1	Residential	58	54	54	65	60	55	-	-		Negligible	Negligible	Moderate
R2	Residential	61	57	57	65	60	55	-	-	2	Negligible	Negligible	Major
R3	Residential	54	50	50	65	60	55	-	-	**-**	Negligible	Negligible	Minor
R4	School/ Residential	68	64	64	60	60	55	8	4	**9**	Major	Major	Major
R5	Residential	63	59	59	65	60	55	-	-	4	Negligible	Negligible	Major

6.5.4 *Mitigation Measures*

Details on the embedded mitigation and additional mitigation measures are provided in *Chapter 7 (Environmental and Social Management Plans)* and in *Volume II, Annex D*.

6.5.5 *Residual Impacts*

The residual effects of traffic noise during operation are expected to produce a **moderate** to **major** noise impact at receptors along the road network that will be used for the hospital's operation.

Construction

With the successful implementation of a comprehensive noise control management plan during construction and with monitoring to check its effectiveness, some night work, if required can proceed and residual impacts can be reduced to **minor**.

Vibration

With the adoption of the mitigation measures, damage to buildings due to vibration levels is highly unlikely.

Blasting

Providing the calculated allowed maximum instantaneous charge will be used residual effects of **negligible** significance will remain.

Traffic

During daytime, predicted noise levels will not exceed 60 dB(A) at any existing or future receptor along IHC street and will not exceed 55 dB(A) during evening time. Therefore, an impact of **negligible** significance is anticipated during the day and evening due to traffic noise during construction. If construction activities are required during night time, predicted noise levels will not exceed 55 dB(A) at any existing or future receptor along IHC street; however, existing receptors along IHC Street are located within the distance zones where the predicted noise level is higher than 50 dB(A). Since the construction period is longer than six months, an impact of **minor** significance it would be anticipated due to construction traffic noise during night time.

6.5.6 *Operation*

Operation of the Hospital

Noise impact of **negligible** significance is expected from the operation of the hospital.

Operation Traffic

Existing receptors along IHC Street are located within the moderate or major impact distance zones, where the predicted noise level is higher than 65 dB(A) for day time and 60 dB(A) for evening time. It is anticipated that noise levels from traffic noise will increase more than 3 dB(A) during day and evening time, causing noise impacts of **moderate** to **major** significance at all existing and future receptors along IHC Street within a distance of 60 metres from the edge of the road.

The predictions show that along O-54 connection street to the junction, existing receptors are located within the distance zones where the noise level is higher than 65 dB(A) and as such, an impact of **moderate** to **major** significance it is anticipated at the existing and future receptors within a distance along O-54 connection street within a distance of 65 metres.

Along 400th Street, there are existing receptors within a distance that a **major** impact is predicted for day time. However, the predicted levels should not exceed existing levels by 3 dB(A), since the increase of the traffic flow is 81%. An impact of **minor** significance is anticipated at all existing and future receptors along 400th Street.

Existing receptors along Ozdemir Street (inside the settlement area) are located within a distance where the noise levels will be lower than 55 dB(A), therefore an impact of **minor** significance it is anticipated to occur within a distance of 307metres from the road. Since traffic flow will increase by 100% during day time, it is anticipated to cause an impact of **moderate** to **major** significance to future developments within a distance of 70 metres from Ozdemir Street (inside the settlement area). It is not known if there will be any residential development along Ozdemir Street (outside the settlement area), but if so an impact of **moderate** to **major** significance it is anticipated within a distance of 190 metres.

Along O-54 Eastbound, existing residential receptors are not located within a distance of 410 metres from the road. The traffic flow is expected to increase by more than 100%. As such, an impact of **moderate** to **major** significance it is anticipated at future residential developments within a distance of 200 metres.

Existing receptors along O-54 Westbound are located within a distance where the predicted level is higher than 65 dB(A). In addition, the traffic flow will increase by 100%. An impact of **moderate** to **major** significance it is anticipated at existing and future residential developments within a distance of 125 metres from the road.

6.6 WASTE ASSESSMENT

6.6.1 Introduction

The full Waste impact assessment is presented in *Volume II, Annex E* of this ESIA Report. The Waste impact assessment presents a detailed description of the existing waste management practices in the area, significant impacts and mitigation measures. The sections below summarise the findings of the Waste impact assessment.

6.6.2 Summary of Baseline Findings

Overview of Waste Generation in Gaziantep Province

The types of waste together with the volume, rates (to the extent at which information is available) and disposal locations in Gaziantep Province are set out in *Volume II, Annex E.*

Waste Disposal and Treatment in Gaziantep Province

The waste treatment facilities for the management of the waste streams generated in the Gaziantep Province and its vicinity are listed in *Table 6.4* and described in detail in *Volume II, Annex E.*

Table 6.6 Waste Treatment Facilities

Treatment Facility
Solid waste – non-hazardous
Gaziantep Solid Waste Disposal Facility
Medical waste
Medical Waste Sterilisation Facility
Excavation wastes
Designated Disposal Area for Excavation Wastes
Hazardous waste, packaging waste, waste mineral oils, waste batteries and accumulators, waste vegetable oil, end-of-life tyres, waste electrical and electronic equipment
Recycling and Hazardous Waste Treatment Facilities
Domestic wastewater
Wastewater Treatment Facility

6.6.3 Summary of Significant Construction Impacts

Solid Waste Generation

Solid wastes likely to be generated during construction will include excavation waste, sanitary and domestic wastes from site offices and kitchens, construction related wastes such as scrap materials, packaging and pallets from deliveries, tyres and similar.

Given the amount of the excavated materials to be generated (645,000 m^3) and the large workforce generating domestic waste, it is likely that the magnitude of impacts to the environment, workers and community will be large. However, with the incorporated mitigation measures that will be part of the Project design (eg compliance with existing regulations), the impact is considered to be of **minor** significance.

Accidental Spills, Contaminated Soils and Hazardous Wastes

Contaminated soils may be generated during the construction phase through spills of hazardous chemicals. In addition, other hazardous wastes such as contaminated/oily fabrics, contaminated packaging materials, used chemicals and similar will be generated. Any oil and/or chemical spills and other hazardous wastes generated during construction activities may create adverse health and safety impacts to the workers as well as environmental impacts (ie to soil).

In case such impacts occur, the sensitivity of any receptor (eg soil, workers) would be potentially high, and the magnitude of impacts could be large depending on the size of the spill, the environment where the spill has occurred and the response time to the incident. Contaminated soils, if generated, will be disposed of in line with the Turkish Regulation on Soil Pollution Control and Point Source Contaminated Sites. Additionally, suitably sized impervious bunds or other containment will be installed where hazardous materials are handled (such as fuel storage and loading areas, concrete mixing, hazardous material storage area). Impacts of **minor** significance are therefore predicted.

Special Wastes

Special wastes likely to be generated during construction include waste mineral oils, waste vegetable oils, batteries and accumulators, waste electrical and electronic equipment.

The sensitivity of any receptor (eg soil, workers) that would be exposed to this waste in the event of an incident would be potentially high, and the magnitude of impacts could be considered as large depending on the properties and volume of wastes. All types of waste will be segregated according to their category and will be disposed of at relevant licensed facilities in accordance with regulatory requirements. Also, record keeping on waste generation, storage and transportation to third party waste management facilities will be maintained according to national legislation. Impacts of **minor** significance are therefore predicted to occur.

Domestic Wastewater

Domestic wastewater will be generated during the construction phase from the work areas and accommodation camps. Improper discharge of domestic wastewater can have significant impacts on the soil, surface waters and the

local environment potentially resulting in health impacts and nuisance. The Project design will include the collection of domestic wastewater from site offices and accommodation camps in impermeable septic tanks which will be emptied by trucks periodically. Domestic wastewater generated during construction from the temporary site offices and the worker camp area will be discharged to the municipal sewerage system and ultimately sent to Gaziantep Central WWTP. An application (dated 06.04.2016) was submitted to GASKİ to obtain permission to discharge of wastewater to the sewerage pipeline during construction. GASKİ has verbally approved this, however, granted a 6 month temporary approval on 22.07.2016 (ie. Wastewater Connection Permit). Six months is the period anticipated for completing the construction of these mobilization facilities in their entirety. The letter confirmed that a permanent permit will be granted after completion of construction of mobilization facilities.

Impermeable septic tanks will also be installed at the construction site for workers' daily use at the mobile WC units, which will be emptied periodically by vacuum trucks and discharged to the City's sewerage network.

Gaziantep water treatment facility has a capacity to treat 400,000 m^3/day and is currently treating 300,000 m^3/day and therefore has the capacity to manage additional domestic wastewater during construction. Therefore, impacts of **minor** significance are predicted.

Medical Wastes

It is likely that there will be a site clinic at the construction site where medical waste will be generated as a result of first aid activities, minor cuts, etc. Although generation of medical waste is expected to be in small amounts, significant impacts might occur such as transmission of infectious diseases, if these wastes are not managed properly. Therefore, medical wastes will not be mixed with other types of wastes and will be collected separately, transported via licensed haulers and disposed of at licensed facilities according to the provisions of the Turkish Medical Waste Control Regulation. As a result, impacts of **minor** significance are predicted.

6.6.4 *Summary of Significant Operation Impacts*

Healthcare Wastes

Healthcare wastes (particularly medical wastes, infectious waste, pathological waste and sharps) may cause extremely adverse impacts on human and environmental health if not managed properly.

There will be a substantial amount of medical waste (1,556 kg/day) generated during the operation of the Project. There is a Medical Waste Sterilisation Facility in Gaziantep where medical wastes generated by the Project will be sent for treatment. Medical waste generation is expected to increase the current treated medical waste amount in this facility by 0.3%, which will remain within the treatment capacity of the facility and therefore is expected

to have capacity to accept and treat healthcare wastes generated by the Project. Prior to the commencing of hospital operations, the SPV will ask for an official letter from the municipality confirming approval for the disposal of medical wastes.

In addition to medical wastes, there will be the generation of pharmaceutical waste, genotoxic/cyctotoxic wastes, chemical wastes, waste with high content of heavy metals and pressurized containers (regarded as hazardous wastes). In addition to the above mentioned waste types, there will be generation of radioactive wastes that will originate from activities such as organ imaging, tumor localization, radiotherapy, and research / clinical laboratory procedures, among others, and may include glassware, syringes, solutions, and excreta from treated patients.

With the appropriate embedded mitigation measures incorporated in the Project design to manage healthcare waste appropriately the impacts resulting from healthcare wastes during operation of the Project will be of **minor** significance.

Domestic Waste and Domestic Wastewater

Domestic waste will be generated during the operation due to daily activities (eg from offices, kitchen, cafeteria, etc.). The domestic waste that will be generated in the hospital is estimated to be 4,400 kg/day which is a negligible increase on the 1,300 tons/day of solid waste that is currently disposed of at the Gaziantep Solid Waste Disposal Facility. If the domestic wastes are not handled in an appropriate manner, the magnitude of impact on the environment and local population will be large.

Domestic wastewater generated during operation will contain a variety of pathogens, organic pollutants, nitrogen, phosphorous and suspended solids due to its sewage content. Water consumption during operation is estimated to be 3,000 m^3/day. All the water consumed is assumed to be converted into wastewater. If not managed properly, discharge of untreated domestic wastewater can have large impact on the water supplies and the local population.

A wastewater treatment plant is not planned as part of the Project and domestic wastewater will be discharged to the sewerage line that is connected to the Gaziantep Central WWTP. Prior to the commencing of hospital operations, the necessary permits and protocols will be maintained for connection to the municipal sewer system. Gaziantep Central WWTP has a capacity to treat 400,000 m^3/day and is currently treating 300,000 m^3/day. The resulting wastewater from Project operation increases the current treated amount by 1%. It can therefore be concluded that it will remain within the treatment capacity of the plant. Therefore, the impacts will be of **minor** significance.

Contaminated Wastewater

Contaminated wastewater may result from discharges from medical wards and operating theatres (eg body fluids and excreta, anatomical waste), laboratories (eg microbiological cultures, stocks of infectious agents), pharmaceutical and chemical stores; cleaning activities (eg waste storage rooms), and x-ray development facilities. Wastewater may also result from treatment disposal technologies and techniques, including autoclaving, microwave irradiation and chemical disinfection.

With the appropriate embedded mitigation measures incorporated in the Project design to manage contaminated wastewater impacts of **minor** significance are expected.

Special Wastes

Special wastes likely to be generated during operation include waste mineral oils, waste vegetable oils, batteries and accumulators, waste electrical and electronic equipment. Improper handling and disposal of these wastes may give rise to adverse impacts to human and environmental health due to the properties of these wastes (eg hazardous, toxic). In the event these wastes are not managed in an appropriate manner, the magnitude of impacts could be considered as medium depending on the properties and volume of wastes.

Embedded mitigation includes the segregation of all types of waste will be segregated according to their category, which will then be disposed of at relevant licensed facilities in accordance with regulatory requirements. Record keeping with regard to waste generation, storage and transportation to third party waste management facilities will be maintained according to national legislation. Impacts of **minor** significance are therefore predicted to occur.

6.6.5 Mitigation Measures

Details on the embedded and additional mitigation measures are provided in *Chapter 7 (Environmental and Social Management Plans)* and in *Volume II, Annex E*.

6.6.6 Residual Impacts

With the implementation of the mitigation measures and considering that there are relevant waste handling facilities and companies in Gaziantep, the residual impacts are estimated to be of **negligible** significance**.**

6.7 TRAFFIC ASSESSMENT

6.7.1 Introduction

The full Traffic impact assessment is presented in *Volume II, Annex F* of this ESIA Report. The Traffic impact assessment presents a detailed description of the road and transport network, significant impacts and mitigation measures. The sections below summarise the findings of the Traffic impact assessment.

6.7.2 Summary of Baseline Findings

Gaziantep Province is accessible from other cities by several public transport alternatives. These include intercity buses, railway connections and flights to and from Gaziantep International Airport. In addition, the neighbourhoods of Gaziantep province are accessible by different means of public transport alternatives. There are buses, tram lines and an aerial cableway connection within Gaziantep Province.

In terms of the existing road network, Gaziantep is accessible from surrounding cities (Osmaniye from the west, Kilis from the south, Kahramanmaraş from the north and Şanlıurfa from the east). Urban development in the city of Gaziantep is concentrated in Şehitkamil District and Şahinbey District (where the Project Site is located). There are 314 km of state highways, 148 km of motorways and 187 km of provincial roads (which makes 649 km in total) within the administrative borders of Gaziantep.

Main Roads to the Project Site

The Project Site and the City centre are connected by three routes:

- From the City centre via Özdemir Street which runs in a north-south direction and is currently being expanded from two lanes to six. The Project Site is accessible by following Özdemir Street until the clover leaf junction and turning left from Özdemir Street. The Project Site is located approximately 80 m away from the clover leaf junction.

- From Gaziantep University, following University Boulevard and Halep Boulevard, turning left until reaching the clover leaf junction then turning left from the junction. The road network around the Project Site is shown in *Figure 6.2*.

- From the west via 400th Street (2x2 lanes). This street is connected to University Boulevard and City centre through 216th street and 10th Street, respectively.

The Project Site is accessible from the airport along the Gaziantep-Kilis Motorway (D850) and then following the Gaziantep Motorway (O-54).

Figure 6.2 Main Roads to the Project Site

Additional details on the conditions of roads and public transport services is provided in *Annex F.*

6.7.3 Potential Impacts during Construction

During construction, in the worst case scenario, where it is assumed that excavation trucks, concrete mixers, trucks for materials and staff cars will operate at the same time, the daily traffic generation resulting from the construction activities will be 510 vehicles. It is stated by the SPV that the construction activities will run for a maximum of 20 hours per day, which results in an hourly traffic generation of 26 vehicles. The traffic count suggests that the baseline traffic flow at the closest junction to the Project site during morning, noon and evening peak hours are 4,187, 2,640 and 2,994, respectively. To this end, it can be concluded that the construction traffic, will cause a maximum of 1 % increase in the existing traffic conditions in the region.

The road network in the vicinity of the Project site is currently being further developed (eg. expansion of Özdemir Street and the construction of other new roads). Based on this, these roads are considered to have a good capacity to absorb temporary increases in traffic during the construction phase. Therefore, the sensitivity of the existing residential areas and schools along the roads to these changes in traffic is taken as low. Taking into account of the low increase in the baseline traffic levels in the area (ie approximately 1%), the magnitude of impact is expected to be small in terms of traffic increase. As such, the impacts would be of negligible significance in terms of the capacity of the road network.

6.7.4 *Potential Impacts during Operation*

The magnitude of change in traffic flows along roads around the IHC indicates that it is large (52,920 two-way vehicle movements, an increase of over 50%) in road traffic but still within the design capacity of the transport system. It should be noted that this is a worst case assumption that does not consider the use of the public transport network.

The sensitivity of the receptors should be considered as low to medium considering that a wide road network will be developed in the area. As such, the impacts would be of **moderate** to **major** significance in which is based on a worst case scenario transport by private care with limited/no travel by public transport.

The Interim TIS evaluated the design of the health campus site and the identified entrances and exits for different types of users. It was concluded in the Interim TIS that there might be need for additional arrangements in the conditions of the entrance and exit roads to the campus, particularly related with the emergency users. These conditions will be further evaluated in the final TIS and final TIS will ensure that the internal road network is designed to minimise congestion, queuing and idling vehicles, ensure that public footpaths and walkways are adequate and the entrances/exits will be designed appropriately, in particular in relation to emergency users.

6.7.5 *Mitigation Measures*

Construction mitigation measures include:

- implementation of a Traffic Management Plan for construction with measures for internal traffic management, off-site traffic management, adequate signals and route management;
- the development of a Health Campus Internal Traffic Management Plan for operation;
- cooperation with the Transport Coordination Centre of Gaziantep Metropolitan Municipality;
- road maintenance will be undertaken to manage any physical damage to roads as a result of the Project activities;
- the SPV will undertake a safety awareness campaign to inform key stakeholders (such as school children and their families as well as local community members) about potential traffic impacts and traffic safety. This will be done through leaflets, public announcements and seminars; and

- ongoing stakeholder engagement and dialogue with Municipalities, Muhtars, local residents and TOBB High School.

6.7.6 *Residual Impacts*

The proposed new road developments in and around Akkent will ensure that:

- the increase in traffic during construction and operation will remain within the design capacity for the existing road network;
- the road network around the Project site will be further developed; and
- there will be public transportation alternatives to reach the IHC site.

In addition, the design of the health campus has been optimised to minimise congestion, queuing and idling vehicles. However, even with these developments and the proposed mitigation measures in place, it is expected that the impacts will only be lowered to **moderate** significance, particularly for the operation phase.

6.8 *WATER RESOURCES ASSESSMENT*

6.8.1 *Introduction*

The full Water Resources impact assessment is presented in *Volume II*, *Annex G* of this ESIA Report. The Water Resources impact assessment presents a detailed description of the hydrological environment, significant impacts and mitigation measures. The sections below summarise the findings of the Water Resources impact assessment.

6.8.2 *Summary of Baseline Findings*

Surface Water Resources

Gaziantep is located between the Euphrates-Tigris basin, the Ceyhan basin and the Orontes basin and the three major rivers that run through the province are the Euphrates River, the Ceyhan River and the Orontes River.

The Euphrates-Tigris (Fırat-Dicle) basin is the largest in Turkey with a catchment area of around 185,000 km^2, approximately 24% of Turkey's surface area. The catchment areas of Ceyhan and Orontes (Asi) basins are approximately 22,000 km^2 and 7,800 km^2 comprising 2.8% and 1% of the country's surface area, respectively.

There are six major permanent creeks in Gaziantep Province. There are also nearby seasonal creeks; the Sacır Creek, which is the main creek, as well as Kanlidere Creek, Kahvelipinar Creek, Boz Creek and Edenbogazi Creek. The Sacır Creek collects storm water run-off and conveys it into collectors which direct the water to a wastewater treatment plant located to the south of

Gaziantep. As noted in *Annex G – Water Resources*, a daily average wastewater flow of 300,000 m^3 has been effectively treated in Gaziantep Central Wastewater Treatment Plant (i.e. meeting the discharge criteria) and the effluent stream discharged into Sacır Creek.

Surface Water Quality

Surface water quality in Turkey is classified into one of four categories: Class I: High quality water; Class II: Less polluted water; Class III: Polluted water; and Class IV: Highly polluted water. All surface water sources have Class I and II water quality based on average annual nitrate concentrations for the year 2012; however, these water sources are not located close to the Project site. (The closest is located 7 km away.) There are no surface water features within the Project site however, perched water was observed in a number of holes, accumulated on impermeable layers near the surface.

Groundwater Resources

State Hydraulic Works (DSI) surveys revealed that the Araban and Yavuzeli plains, as well as Nurdağı and İslahiye plains have sufficient groundwater supply for economic development. These plains range from between 40 to 70 km from the Project Site.
Within the vicinity of the Project Site, there are 20 groundwater sites:

- six in Dumlupinar providing potable water;
- one in Güneş providing potable water;
- seven in Akkent providing potable water; and
- six in Yeşilkent providing water for irrigation purposes.

Groundwater wells closest to the Project have depths ranging between 100 m to 450 m within a 1,250 m radius around the Site. Information from DSI provides details of a well inside the Project Site with a depth of 110 m and a static head of 33 m. Based on information provided by the SPV, this well was not used during the operations of the former Municipal concrete crushing plant on the Project Site as it failed to provide groundwater.

There are no groundwater protection zones around the Project site based on the review of 1/100,000 scaled Gaziantep Province Environmental Plan and 1/25,000 scaled Gaziantep Metropolitan Municipality Master Zoning Plan.

6.8.3 *Summary of Significant Construction Impacts*

Run-off from Construction Site

During construction, activities associated with soil movement during excavations, as well as exposed and stockpiled soil could give rise to suspended sediment in water runoff from the Project Site. Exposed soils that are dampened to reduce dust generation could also produce surface runoff as well as water used to wash the wheels of construction vehicles. Run-off during construction will be exacerbated during rainfall events. Without

appropriate management, these activities have the potential to impact the quality of nearby surface waters through increased suspended solids and bottom siltation.

In addition, whilst GASKİ's official view is that water could runoff the site without specific drainage during construction, the SPV plans to implement site drainage so that runoff will be collected and discharged from the southwest of site to the storm water collection line. With these measures in place the impacts on surface water resources are expected to be **negligible.**

There are no surface water bodies adjacent to the Project Site. The closest creek to the Project Site is the Boz Creek which is seasonal and located at a distance of approximately 400 m northeast.

Boz Creek is classified as low sensitivity because it has little or no community use. Considering that site drainage will be implemented at the Project Site and discharged into the municipal sewer line, no direct discharges to Boz Creek are expected to occur. As such the impact would be of **negligible** significance.

Contamination of Surface and Groundwater

Poor storage and handling of hazardous materials (fuel oil and/or lubricants) as well as construction materials (liquid cement, lime) may lead to contamination of surface and groundwater. Spills may also occur from the refuelling of equipment onsite during construction. The volumes are likely to be small and isolated but there is the potential to impact the quality of nearby surface waters. Whilst the vulnerability of Boz Creek (the closest water course) is assessed as being low, it will be important that the risk of any potential contamination is appropriately managed.

The SPV does not plan to abstract groundwater during construction and the groundwater is in a deep aquifer, so its sensitivity is considered low. The potential for groundwater to be contaminated during construction is assessed as low; the aquifers are deep and the magnitude of any impact considered small as volumes of any spills are likely to be small and isolated. The impact is considered to be of **negligible** significance.

The potential for surface water to be contaminated during construction is also assessed as low; the closest creek, Boz Creek, is assessed as having low sensitivity and the magnitude of any impact is considered small with any spills likely to be small and isolated, as a result of the management measures (as described previously) being in place. The impact is therefore considered to be of **negligible** significance.

Flood Risk

Based on recent information obtained from the SPV, there is a storm water collection system only at the southwest of the Project Site. GASKI has reported that the municipal storm water collection system around the Project

Site will be constructed prior to operation of the Project. Considering that there is an existing system at the southwest of the Project Site no significant impacts are expected. An official approval letter from GASKI was received by the SPV on 13.06.2016.

6.8.4 Summary of Significant Operation Impacts

Contamination of Surface and Groundwater

Poor storage and handling of hazardous materials may lead to contamination of surface and groundwater. Accidental spills may also contaminate surface soils which could subsequently contaminate surface water. Sensitivity may be high depending on the amount of contamination.

Considering the handling procedures and emergency response measures that are planned to be implemented by the SPV, the potential for adverse impacts on groundwater quality from accidental spills is assumed to be low; the aquifers are deep and the magnitude of any impact considered to be small. Similarly, the sensitivity of Boz Creek is low and the magnitude of any impact likely to be small. Therefore, the impacts are predicted to be **negligible**.

Flood Risk

The impacts are expected to be the same as during construction (see above).

6.8.5 Mitigation Measures

Details on the embedded and additional mitigation measures are provided in *Chapter 7 (Environmental and Social Management Plans)* and in *Volume II, Annex G*.

6.8.6 Residual Impacts

With the implementation of the mitigation measures outlined above, no residual impacts are expected during construction or operation.

6.9 GEOLOGY AND SOILS ASSESSMENT

6.9.1 Introduction

The full Geology and Soils impact assessment is presented in *Volume II, Annex H* of this ESIA Report. The Geology and Soils impact assessment presents a detailed description of the socio-economic environment, significant impacts and mitigation measures. The sections below summarise the findings of the Geology and Soils impact assessment.

6.9.2 *Summary of Baseline Findings*

Geological Features

Soil Investigation studies within the Project Site identified that the geological upper unit consists of top soil ranging in thickness between 0.5 and 3.0 m and fill material was present in some areas with a thickness of 10 m.

The geological unit observed below the top and fill material (and also noted to be extruding on the site surface) was basalt containing decomposed tuffite. This is identified as the Yavuzeli Basalt (Ty) upper Eocene-aged young unit (Decomposed Tuffite and Basalt). This unit was seen to be continuous between a depth of 21 m and 31 m during the site investigations. As basalt is the dominant unit in the subsoil, liquefaction is not seen as a potential problem. As the unit is basalt there is no potential of subsiding, swelling and collapsing. Structural elements such as fissures, fractures and cracks, which were observed in some places in the rock unit, were noted to be discontinuous and irregular. Also, since the ground is mainly a competent rock unit, consolidation settlement is not expected.

Geological layers were also distinguished in the Geophysical Surveys conducted at the Project Site. The following results were obtained for the site units:

- The Project Site is defined as 'Very steady' in terms of resistance.
- The Project Site is defined as 'Medium' compression based on the information on the resistance and durability of the rock unit.
- The basalt unit at the Project Site is defined to be 'Loose' at certain levels and 'Steady Rock' at certain levels.
- Ground density of Yavuzeli Basalt (Ty) upper Eocene-aged young unit (Basalt) is defined as 'Medium-High'.

Based on the above findings, the ground classification of the Project Site, according to TS EN 1998 – 1 (Eurocode 8) and for all MASW [(1)] points is defined as Class B – Very tight sand, gravel or very hard clay.

Seismic and Liquefaction Risks in the Region

Turkey represents a region where the Arabian platform and Asian platform collide, which resulted in development of an asymmetric tectonic drift system. It is characterized in a structure family where the major and largest ones in this tectonic system are represented with strike slip faults.

The Major fault zones causing the dynamic behaviour in Turkey are the North Anatolia Fault Zone (NAFZ) and the East Anatolia Fault Zone (EAFZ).

1) Multi-channel Analysis of Surface Waves

Gaziantep Province is located within the influence zone of the seismically active EAFZ. On the other hand, the fault that influences the structural evolution of the Gaziantep Basin is the Dead Sea Fault Zone (DSFZ) which is an active left lateral fault zone, approximately 1,000 km in length. The closest earthquake risk regions around the Gaziantep Central District are the Eastern Anatolia faults area located along Oludeniz, Reyhanli, Kirikhan, İslahiye, Turkoglu, Kahramanmaraş, Golbası and Adiyaman.

Since 2003, seismic activities on the EAFZ have increased, along with associated damage. Due to the seismic gap located on the nearest seismic EAFZ, (named Türkoğlu), the city of Gaziantep has not experienced intensive earthquakes for more than a century [(1)]. The distance of the Project Site to the Turkoglu seismic gap is 60 km.

The most recent major earthquake in the region occurred on 8th January, 2015 in Nurdağı, Durmuşlar Village with a magnitude of 4.6 Mw, 8 km below the surface level. According to press announcements made by the Turkish Republic Prime Ministry Disaster and Emergency Management Presidency, no injuries were recorded and no severe damage to buildings occurred.

Seismicity and Earthquake Hazard (Risk) Analysis of the Project Site

A Seismic Hazard (Risk) Analysis Study was conducted in June 2015 for the buildings footprints within the Project Site. The results of this Analysis for the Project Site can be summarised as:

- the Project Site is approximately 50 km east of the active EAFZ,
- the greatest earthquake intensity in the region is found to be at least 50-60 km away from the Project Site and this means the significance of earthquake risk is lower at the Project Site,
- the highest earthquake magnitude that could be observed in the region is predicted to be 6.5 Mw,
- the soil profile of the Project site is classified as C-B Class which is defined as "*very dense soil and soft rock*",
- spectral acceleration, velocity and displacement values for the study area are defined in the Soil Investigation Report and they will be complied with during the Project design studies, and
- natural disasters such as landslides, rock falls, avalanche and flooding are not expected at the Project Site.

(1) Gullu H., Ansal A.M. and Ozbay A. (2008). Seismic hazard studies for Gaziantep city in South Anatolia of Turkey. Nat Hazards, 44: 19 – 50

6.9.3 *Summary of Significant Construction Impacts*

Impacts Relating to Geology and Seismic Risks

In the event of an earthquake during construction, significant impacts on the environment as well as on the community and workers' health and safety may arise following accidents, spills, fire, etc. related to the seismic incident. During all construction works within the Project Site, the Regulation on Buildings to be Built in Seismic Zones (Official Gazette date/no: 06.03.2007/26454) will be complied with. Based on this, the risks are considered to be as low as technically and financially feasible. Therefore, the magnitude of impact can be considered between negligible to small. Since the Project site lies within the 3rd degree seismic zone, the Project site sensitivity is medium and the impact related to geology and seismic risks is found to vary between **negligible** and **small**. In addition, it is important to note that slope stability will be ensured during excavation works on the Project Site and necessary safety measures will be taken to minimize impacts relating to soil stability and excavation.

Impacts on Soils

Temporary use of land for construction, if not properly managed can lead to impacts on soil quality as a result of events such as compaction and accidental spills of liquid cement (excluding hazardous material spills). Construction activities and storage of construction equipment and materials on soils also have the potential to affect soil through spills of hazardous material such as oils, fuel or other materials (i.e. during fuel loading for machinery operating at the site). These aspects will be managed through the following mitigation measures that are embedded in the Project design:

- All contractors will be required to adopt good construction site practices for the protection of soils and to follow the General IFC EHS Guidelines.
- Provisions will be taken for the protection of newly exposed soil surfaces from rainfall and wind erosion such as silt fences.
- The use of cement and wet concrete in or close to any exposed areas will be carefully controlled.
- Fuels, oils and chemicals will be stored on an impervious base protected by bunds of 110% of capacity of the largest tank/container. Drip trays will be used for fuelling mobile equipment. Any spillages from handling fuel and liquids will be immediately contained on site. The contaminated soil will be removed from the site for suitable treatment and disposal in an appropriately licensed disposal site.
- Spoil and other surplus material arising from construction works which is classed as 'acceptable fill' will, wherever practicable, be recovered and used in the construction works. Relevant authorities will be consulted

regarding this on a case by case basis to ensure the re-use of waste materials is acceptable. In addition, surplus construction material will be made available to third parties for reuse on local development projects if it cannot be utilised on site.

The vulnerability of soil is considered low since there is no agricultural activity in the Project Site. Provided that the good construction practices and above-mentioned embedded measures are applied to provide protection against soil the magnitude of the impacts is considered small. Therefore, the resulting impacts are expected to be **negligible**.

6.9.4 *Summary of Significant Operation Impacts*

Impacts Relating to Geology and Seismic Risks

In the event of an earthquake during operation, significant impacts may arise following accidents, spills, fire, etc. related to the seismic incident. The necessary design steps will be followed during operation and compliance with regulatory requirements are met, the impact related to geology and seismic risks is found to vary between **negligible** and **small**.

Impacts on Soils

During operation, soils could become contaminated from accidental spills of hazardous materials, accidental leakage from underground pipes used for sanitary wastewater discharges. There are specific measures embedded in the design of the Project:

- Fuels, oils and chemicals will be stored on an impervious base protected by bunds of 110% of capacity of the largest container. Drip trays will be used for fuelling 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 in an appropriately licensed disposal site.

The Project lies on land with no agricultural activity; therefore, the sensitivity is defined as low. The magnitude of the impacts are considered small considering the above mentioned practices that will be applied during operation. Consequently, the impacts are classified as **negligible**.

6.9.5 *Mitigation Measures*

Details on the embedded and additional mitigation measures are provided in *Chapter 7 (Environmental and Social Management Plans)* and in *Volume II, Annex H*.

6.9.6 *Residual Impacts*

With the implementation of mitigation measures mentioned above, no significant residual impacts are expected during construction or operation.

6.10 CUMULATIVE IMPACTS

This section summarises the expected cumulative impacts associated with the Project. These are also outlined in the separate Technical Annexes of *Volume II* of this Report. In summary, cumulative impacts are expected from traffic and the presence of construction workers in Akkent neighbourhood. However, due to the limited information on residential and commercial development activities, cumulative impacts will need to be monitored as the Project progresses. No cumulative impacts are expected to result from waste and noise. Cumulative impacts are also not expected to occur to water resources or geology / soils.

6.10.1 *Interactions with Workers during Construction*

Local residents are already sensitive to the presence of construction workers in Akkent neighbourhood, with perceived levels of crime associated with their presence. Sensitivity will increase with the introduction of an additional construction workforce into the area and there is a risk of negative interactions experienced by local residents.

It is not possible to quantify the extent or number of construction workers already residing or working within Akkent neighbourhood nor is it possible to provide detail on where they are being, or will be, housed.

Due to the levels of uncertainty about the existing or future construction workforce in Akkent, the extent of any cumulative impact related to workers is not possible to assess at this time. However, it is determined that the measures being put in place to manage the Project's workforce (including the Workforce Code of Conduct, Camp Management Plan, and Grievance Mechanism) are appropriate measures to respond to these potentially cumulative impacts.

6.10.2 *Traffic*

In addition to the construction traffic to be generated by the Project, it is expected that increased construction activities in the region will result in additional traffic generation. The details of this additional traffic are currently unknown. Based on face-to-face meeting conducted with the mayor of Şahinbey Municipality, there is no clear plan on when this area will be developed. Thus, it is assumed that the road network will continue to remain within its design carrying capacity with good capacity to absorb additional traffic increases.

Due to the fact that the area around the Project site is under development, it is likely that there will be residential/commercial developments in the coming years. However, the timing of these developments is not clear at this stage and it is not possible to undertake a cumulative impact assessment. Once

these developments are completed, they will also generate traffic in addition to the health campus traffic.

7 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

7.1 INTRODUCTION

In order to ensure that the social and environmental issues identified during the assessment, are effectively managed, a series of environmental and social management and monitoring plans (ESMMPs or 'management plans') will be developed. These plans will outline appropriate mitigation and management measures that are needed to ensure acceptable levels of environmental and social performance, through both construction and operation.

This chapter sets out the key elements of the management plans in the form of an over-arching framework ESMMP, in a tabular format, as well as the general approach to management and monitoring and the guiding principles used in the development of the plans.

The SPV, with their contractor, are expected to use this chapter and the ESMMP framework as a basis for developing the detailed policies and plans that will be required from the start of construction. The ESMMP framework identifies the following key management plans and documents, which should be developed as a minimum:

- Air Quality Management Plan (AQMP);
- Camp Management Plan;
- Chance Finds Procedure;
- Construction Management Plan (CMP);
- Emergency Preparedness and Response Plan (EPRP);
- Hazardous Material Handling Procedure;Hazardous Material Management Plan;
- Health Campus Internal Traffic Management Plan;
- Healthcare Waste Management System;
- Human Resources Policy;
- Noise and Vibration Management Plan;
- Occupational Health and Safety (OHS) Management Plan;
- Patients' Rights Charter;
- Security Policy and Plan;
- Stakeholder Engagement Plan (SEP);
- Stakeholder Grievance Mechanism;
- Traffic Management Plan;
- Waste Management Plan;
- Worker Grievance Mechanism; and
- Workforce Code of Conduct.

The management plans developed for the Project will be practical and fully integrated into the SPV's Environmental and Social Management System (ESMS) once developed. This will ensure alignment with corporate policies and procedures. The system will need to be fully integrated to enable the

plans to be effective (i.e. covering environment, health, safety and security in an integrated manner). The plans will be 'living documents' that are regularly reviewed and updated as necessary. The SPV is in the process of putting their ESMS in place and expect to have all the relevant mitigation measures for construction in place by the end of 2016. *Box 7.1* lists all the Management Plans currently developed and being implemented by the SPV.

Box 7.1 Developed Management Plans

The SPV is putting together the Management Plans and other documentation as part of its ESMS to guide environmental and social performance throughout the life of the Project. The management plans, procedures and other documents already developed and being implemented by the SPV are listed below:

- Health and Safety Management Plan
- Emergency Preparedness and Response Plan
- Subcontractor Contact Details, Health Safety and Environment Documentation and Occupational Health and Safety Authorisation Follow-up Chart
- Environmental Leakage Management
- Workers' Accommodation Facility Control List
- Air Quality Control Monitoring Plan
- Gaziantep IHC Environmental Monitoring Report Format
- Gaziantep IHC Environmental Monitoring Follow-up Chart
- Noise Control and Monitoring Plan
- HR Management Plan
- Grievance Register and Follow-up Chart
- Grievance Management Plan
- Protection and Security Plan
- Traffic Management Plan
- Archeological Chance Finds Management Procedure
- Accidents Prior Notification Form
- Accident / Incident Investigation Procedure
- HSE Award System Implementation Procedure
- First Aid Procedure
- Corporate Social Responsibility Policy
- Human Rights Policy
- Human Resources Policy
- Employee Grievance Form
- Questionnaire for Employee Satisfaction
- Employee's Satisfaction Procedure
- HSE Management Handbook
- List of Waste Types and Method of Disposal
- Waste Management Procedure
- HSE and Quality Policies
- Safety Instructions for Storage, Transportation and Usage of Hazardous Materials
- Annual Training Plan
- Contractor's Written Contract regarding the Legislation on Occupational Health and Safety and Social Security
- Environmental Health and Safety CVs and Certificates
- Induction Presentation

The SPV will have ultimate responsibility for implementing the management plans and for ensuring, via contract conditions, that the EPC JV and the EPC Subcontractor are obliged to implement all mitigation measures relevant to

their activities. The institutional arrangements for implementing the ESMS will be finalised by the SPV.

7.2 APPROACH TO MANAGEMENT AND MONITORING PLANS

The management plans for the Project will be developed to align with national regulatory requirements and Good International Industry Practice (GIIP), including that set out by IFC, EBRD, EIB, World Bank Group and EU Directives. The plans should incorporate the following components:

- **Activity**: a short description of the activity that is expected to result in significance impacts/risks.
- **Issue / Risk**: an overview of the issue or risk that needs appropriate mitigation and/or management.
- **Action / Mitigation Measure**: a description of the mitigation/management measures that will be implemented to manage each significant impact/risk.
- **Performance Measure**: measurable indicators for each significant impact that provide an indication of the extent to which actions have been implemented and desired outcomes achieved.
- **Responsibility**: the party responsible for implementing the action.
- **Phase / Stage**: the Project phase or stage that the impact and mitigation measure is applicable, i.e. pre-construction, construction, operation and or decommissioning.

7.3 GUIDING PRINCIPLES

Guiding Principles used in the development of the management plans for the Project are presented below.

7.3.1 *Planning and Risk Identification*

- Compliance with the laws and regulations of IFC, EBRD, EIB, World Bank Group, EU Directives and Turkey.
- Completion of pre-construction / works surveys proposed in the ESMPs prior to the commencement of any works and activities.

7.3.2 *Management and Control*

- Commitment to the mitigation hierarchy in *Figure 7.1*, regarding the potential issues and risks from the Project.

- Commitment to regular reporting and the completion of corrective actions (where required) under the responsibility of EHS Management.

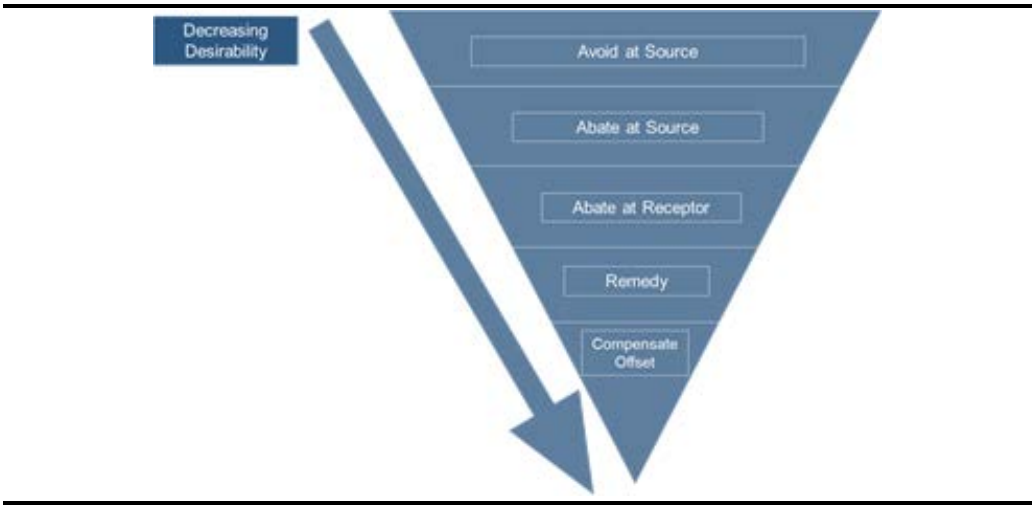
- Application of relevant and appropriate design standards and controls.

- Use of competent and qualified staff (including sub-contractors) to undertake actions, each of whom will have the required level of responsibility and resources.

- Commitment to the provision of advance training for all works staff (including sub-contractors) as part of their induction and also in advance of all works.

- Being prepared for emergency incidents and having adequate response plans in place (including health, safety, environment and community response).

Figure 7.1 Mitigation Hierarchy



7.3.3 Monitoring and Improvement

- Commitment to regular monitoring and verification of the implementation of the management plans and the undertaking of remedial actions where needed. Monitoring and verification will be reported and made available for inspection upon request.

- All incidents will be reported and corrective actions will be taken as necessary according to management plan recommendations and SPVs procedures. This will enable and facilitate a process of continuous improvement.

- All grievances received will be addressed and investigated. The EHS Management will be responsible for closing out all grievances.

7.3.4 *Ownership and Maintenance*

The SPV will have ultimate responsibility for implementing the management plans and for ensuring, via contract conditions, that the EPC JV Contractor is obliged to implement all mitigation measures relevant to their activities.

The management plans will be live, working documents and as such will require periodic review and updates if there are:

- changes or updates to Turkish legislation or regulations;
- changes to the Project's social or environmental impact profile as a result of Project expansion, or other aspects with the potential for significant impacts on the environment or communities;
- changes or updates to IFC Performance Standards, EBRD Performance Requirements, EIB Environmental and Social Standards, IFC Performance Standards, World Bank EHS Guidelines; and
- lessons learned from incidents, non-compliances, audits or grievances.

7.4 *ESMMP FRAMEWORK*

The framework ESMMP is presented in *Table 7.2* and includes mitigation, enhancement and management measures related to each of the impacts summarised in *Chapter 6* and detailed in *Volume II* of this report.

Table 7.1 ESMMP Table

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
Socio-Economics					
Loss of jobs	At the end of construction, contracts with companies and their workers will terminate. Construction contracts are relatively short-term in nature and the employment period for individual workers may not all extend throughout the construction period. On completion of the construction works, contractors will need to find alternative employment. Unskilled workers who may be working for construction contractors for the first time, the situation may be more difficult. The loss of income will increase the economic vulnerability of their households if alternative income streams are not found.	Embedded Measures: • ***Human Resources Policy:*** Clear contracting of workers and details about their contract period so that they can prepare appropriately for termination of their employment. Workers will also have the opportunity to receive certification during their employment, which will assist in future job prospects. • ***Grievance Mechanism:*** This will be implemented for all workers who will be made aware of the mechanism.	• Presence of appropriate policies, plans and procedures • Engagement minutes and materials from meetings with staff. • Evidence of contracts which clearly stipulate legal rights under Turkish law. • Number of grievances reported and dealt with according to grievance mechanism. • Number of reference letters issued.	EPC JV/EPC Subcontractor Human Resources Manager	Construction
Job Creation	The SPV has estimated that the construction phase of the Project will provide direct jobs for up to 3,008 workers during peak construction. The total number of jobs will be between 3,500 – 4,000 inclusive of indirect employment in administrative, cleaning and catering. From month 10 to	***Embedded Measures*** • ***Human Resources Policy:*** the policy will be developed in line with EBRD PR 2, EIB Labour Standards and IFC PS 2. The Policy will outline clear commitments to the principles of equal opportunities and anti-discrimination. Measures will be incorporated opposing all types of discrimination regardless of race, religion or belief, gender, disability, age, nationality, sexual orientation or ethnicity. The Policy will embed the 4 Core ILO Standards with respect to child labour, forced labour, equal opportunity and freedom of association.	• Number grievances submitted by workers. • Audit of staff records payrolls. • Recruitment records, including gender, age, ethnicity, disabilities etc. and number of	EPC JV/EPC Subcontractor Human Resources Manager during construction SPV Human Resources	Construction and Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
	month 32 it is estimated that there will be over 1,000 construction workers on site. The majority of these positions will be available for unskilled and semi-skilled workers.	The Human Resources Policy will also specify workers' rights with respect to overtime, general working conditions and will be applicable to third party and contract staff. Measures must protect part time staff, contract staff and permanent direct staff with respect to hours, fair pay and payment on time. ***Stakeholder Enagement:*** Local residents will be kept informed of recruitment opportunities during construction via public announcements through radio and newspapers and through notices with local Muhtars. Additional information will be provided to healthcare centre and social centre noticeboards and training centres providing courses for women in local neighbourhoods to reach out to women who use these services. Information shall also be given to SGDD to raise awareness of opportunities for Syrian refugees	staff per contract type (eg contractor, full time, part time etc). • Timesheets or registers of staff signing in/out. • Record of how applicants were informed of opportunities.	Manager during operation	
Traffic related impacts	During the first four months to one year of construction, up to 510 vehicles are expected to be on site each day including 200 HGVs, 70 trucks, 90 cement mixers and 150 cars. This will reduce in year two once earthworks are complete and concrete mixers are no longer required; down to 220. Accordingly, this will generate additional traffic load on the existing road network near the Project site and increase the potential for traffic accidents to occur, which could lead to injury or fatalities to other road users and pedestrians.	***Embedded Measures*** • ***Traffic Management Plan:*** This will include measures dealing with construction traffic calming, vehicle safety, driver and passenger behaviour, hours of operation, rest periods and accident reporting and investigations etc. Measures will also be in place to ensure that Project drivers are qualified, trained to drive safely and have the required licenses. There will be requirements regarding speed limits and road usage for all company vehicles and contractor vehicles using access roads; also, a vehicle maintenance programme to ensure that vehicles are consistently roadworthy. This will be implemented in collaboration with the revelant authorities. • ***Emergency Preparedness and Response Plan (EPRP):*** This will include measures and procedures to manage any traffic accidents. It will also incorporate an incident investigation procedure in the event that any transport related incident occurs, which will require root cause analysis of any traffic incidents. The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed. • ***Stakeholder Engagement Plan:*** This plan will incorporate the details of an awareness-raising campaign, that has a specific focus on the TOBB High School (students, teachers and the Parent-Teacher association) and local residents. It will start prior to the commencement of construction activities and continue throughout the construction phase of work. During this campaign, site safety and security, road safety, potential impacts and risks and Project-	• Presence of appropriate policies, plans and procedures. • Number of traffic related accidents and incidents. • Number of grievances submitted by local residents. • Records of an awareness campaign including engagement materials, minutes and reports.	EPC JV/EPC Subcontractor Health and Safety Officer EPC JV/EPC Subcontractor Construction Site Manager	Construction Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
		related road usage will be discussed and the grievance mechanism explained. This campaign should continue into the operational phase of the Project.			
Health and safety impacts associated with trespassing	The high school adjacent to the Project site (Türkiye Odalar ve Borsalar Birliği Fen Lisesi) will have 600 students with a dormitory for 200 boarders. The school expressed concern about the risk of students (or other members of the public) trespassing on to the site and incurring an injury or fatality.	***Embedded Measures*** • ***Construction Management Plan:*** This will include requirements for the management and maintenance of the perimeter fence, including along the entire length of the school site boundary to prevent entry onto the site. • ***Awareness Raising:*** The SPV will also meet directly with students and teachers of TOBB High School to discuss health and safety issues associated with the construction phase. • ***Security Policy and Plan:*** This will include provisions for security personnel patrolling the perimeter fence to avoid trespassers during construction.	• Presence of appropriate policies, plans and procedures • Number of incidents recorded due to trespass on site • Records of engagement including materials and minutes.	EPC JV/EPC Subcontractor Health and Safety Manager	Construction
Interaction with workers	Construction workforce will require accommodation on or close to the Project site. Many will be housed in the designated workers' camp immediately south of the Project site. Local residents are already sensitive to the presence of construction workers for other developments in Akkent neighbourhood.	• ***Workforce Code of Conduct:*** This will prescribe expected behaviour and govern interactions with local communities. It will include a disciplinary procedure and workers will be made aware of the grievance mechanism for local stakeholders, explaining that stakeholders have the right to register a grievance through a formal procedure. • ***Camp Management Plan:*** This plan will include provisions for induction and training and include the workforce Code of Conduct for the Project. The camp will be closed to non-residents and be fully self-contained, providing lodging, catering and recreational facilities. • ***Grievance Mechanism:*** Local communities will be made aware of the Project's grievance mechanism as part of ongoing stakeholder engagement, as detailed in the SEP. • All measures will be in place before workers move to the camp. ***Additional Mitigation Measures*** • The SPV will undertake an awareness-raising campaign to inform local residents and TOBB High School of the new workers arriving on site. They shall be informed about the number of workers on site, the Workforce Code of Conduct and other measures workers are expected to adhere to. Information will be passed to the Muhtar and leaflets distributed.	• Presence of appropriate policies, plans and procedures • Availability of training materials and induction programmes • Records of those receiving training and materials • Records of engagement with TOBB High School and local residents. • Grievance records.	EPC JV/EPC Subcontractor Human Resources Manager EPC JV/EPC Subcontractor Contractor Manager Contractor Supervisors EPC JV/EPC Subcontractor Construction Camp Manager	Construction

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
Worker accommodation	The Project will construct a workers' camp just south of the Project site to accommodate capacity for up to 644 construction workers which will have dormitories for 32 engineers, 108 technicians and 504 workers. Workers' living conditions must comply with Turkish law and performance requirements of EBRD (PR 2) and IFC (PS 2) to ensure on-site living conditions provide adequate sanitary and waste management and the provision of potable water.	***Embedded Measures*** • ***Camp Management Plan:*** This plan will align with the 'Workers' Accommodation: Processes and Standards—A Guidance Note by IFC and the EBRD', ensuring adherence to international standards for a clean and safe environment including adequate sanitary and waste management and the provision of potable water; minimum space for each worker, laundry, cooking facilities; and the provision of first aid, medical facilities, heating and ventilation.	• Presence of appropriate policies, plans and procedures. • Number of staff grievances in relation to the camp. • Number of recorded illnesses or accidents at the camp. • Regular drinking water analysis. •	EPC JV/EPC Subcontractor Health and Safety Manager On-site medical doctor EPC JV/EPC Subcontractor Camp Manager	Construction
Labour and working conditions for construction workers	Construction workers on the Project will be exposed to risks typical of civil construction facilities, such as working at height, manual handling, and contact with hazardous material, noise and vibration, amongst others. In the absence of appropriate standards, the health and safety of workers would not be adequately protected. Impacts could be of major significance with the potential for injury or fatalities.	***Embedded Measures*** • ***Occupational Health and Safety (OHS) Management Plan:*** This plan will be in accordance with OHSAS 18001 and be based on the identification and management of key hazards to which workers are exposed, and with the objective of ensuring that employees do not come to any harm. The Plan will outline measures to prevent accidents, injury, illness and disease. It will include provisions for documenting and reporting on occupational accidents, illness / disease and incidents. • ***Emergency Preparedness and Response Plan (EPRP):*** This plan outlines measures and procedures to manage any traffic and transport related emergencies. It will also include measures to address accident and injury. The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed. • ***Human Resources Policy:*** This policy will detail the training requirements for all workers. In addition, it will include provisions for contracting of workers. Contracts will clearly detail workers' rights and following the conclusion of their employment each worker will be provided with a reference letter setting out their role in the Project and the skills they have used/obtained.	• Presence of appropriate policies, plans and procedures. • Number of construction workers receiving training. • Number of lost man-hours. • Number of accidents, injuries and fatalities. • Number of near misses. • Appropriate warning signs erected. • Records of engagement with staff. • Number of	EPC JV/EPC Subcontractor Construction Site Manager EPC JV/EPC Subcontractor Health and Safety Manager	Construction

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
			grievances submitted by staff.		
International standards of quality and patient safety during operation	The IHC must maintain a safe and secure environment for patients, families, staff, visitors and the local community. The following could cause significant risks without appropriate mitigation and management: • Exposure to infections/disease • Exposure to hazardous materials, waste and radiation • Security, particularly with regard to the high security forensic hospital • Storage, handling, and presence of chemicals, pressurized gases, boards, plastics, and other flammable substrates	***Embedded Measures*** • Infection prevention/control and management of hazardous materials, waste and radiation involve individuals in multiple departments and services, e.g. clinical departments, facility maintenance, food services, house-keeping, laboratory, pharmacy and sterilization services. Measures are incorporated in the Project design to appropriately manage these risk. • ***Security Policy and Plan:*** This plan will detail the company's position and measures to address the use of force, training, equipping and monitoring security guards as well as investigating reports of unlawful behaviour and preventing recurrence. This will be applicable to the security hired by the SPV and not applicable to to security personnel of the MoJ. • ***Annual organisational self-assessment audits:*** the key principles of these assessments are outlined in IFC's 'A Self-Assessment Guide for Health Care Organizations', which focuses on five key areas: • Governance and Leadership; • Ethics and Patient Rights; • Quality Measurement and Improvement; • Patient Safety; and • Facility Safety and Emergency Management. • ***Stakeholder Engagement Plan (SEP):*** The SPV will discuss with the MoH the option of applying international hospital management benchmarks such as Joint Commission International (JCI) Accreditation to ensure best international practice. An Action Plan will then be developed to achieve this objective.	• Presence of appropriate policies, plans and procedures'. • Records of induction for security personnel. • Completion of organisational self-assessment audits annually. • Adherence with or exceedance of applied international hospital management benchmarks.	Patient rights and safety will be the joint responsibility of the MoH and the SPV. The MoH will be responsible for medical services, whilst the Gaziantep IHC will be responsible for auxiliary services and day-to-day activities (including protection of patient information).	Operation
Facility safety and emergency management during operation	The IHC must maintain a safe and secure environment for patients, families, staff, visitors and the local community. Appropriate measures must be in place to mitigate risks during unforeseen, accidental and emergency situations, especially because the IHC	***<u>Embedded Measures</u>*** • ***Security Policy and Plan:*** This plan will detail the company's position and measures to address the use of force, training, equipping and monitoring security guards as well as investigating reports of unlawful behaviour and preventing recurrence. • ***Emergency Preparedness and Response Plan (EPRP):*** This plan will cover accidental and emergency situations, including major traffic related incidents, fire, floods and earthquakes, amongst others. It will also detail: • *Planning Coordination:* there will be procedures for informing	• Presence of appropriate policies, plans and procedures. • Consideration of local stakeholder concerns (captured in SEP) in IHC operation. • Records of	Gaziantep IHC Health and Safety Management (TBC)	Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
	will provide services to particularly vulnerable members of society.	the public/local school and emergency response agencies; documenting first aid and medical treatment; taking emergency response actions; reviewing and updating the plans to reflect changes and ensuring that employees are informed of such changes; • *Emergency Equipment:* procedures will be prepared for using, inspecting, testing and maintaining the emergency response equipment; and • *Training:* employees and contractors will be trained in emergency response procedures. The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed.	induction for security personnel. • Records of any incidents. • Number of grievances submitted by local residents.		
Patients' rights	The IHC must sufficiently protect the rights of patients that are treated at the campus in alignment with the "Guiding Principles on Business and Human Rights: Implementing the United Nations 'Protect, Respect and Remedy' Framework". Particular attention must be given to the rights of women and Syrian refugee patients.	***Embedded Measures:*** • ***Patients' Rights Charter:*** The Project will adhere to the Patients' Rights Charter, established in Turkey in 1998. • ***Stakeholder Engagement Plan (SEP):*** This plan will outline measures for engaging positively with users of the IHC (see Volume I, Annex I). It will also include specific measures to improve access to services by Syrian refugees, including information boards in Arabic with information on patient rights and the hotline number of the Danish Refugee Council.	• Presence of appropriate policies, plans and procedures. • Adherence to UN Guiding Principles. • Records of any incidents of breaches and actions taken. • Grievance log data.	Patient rights and safety will be the joint responsibility of the MoH and the SPV.	Operation
Cultural Heritage					
Chance Finds	While impacts to cultural heritage were scoped out during the scoping phase, there is a possibility that important cultural heritage is found during excavation and construction	• ***Chance Finds Procedure:*** The object of this procedure is to identify and protect previously unrecorded cultural heritage sites, objects or features from Project-related damage and provides guidance in the event that important archaeology / cultural heritage or other finds emerge following the removal of vegetation, top soil or ground disturbing construction activities.	• Daily monitoring records. • Monthly reports by EPC contractors.	EPC JV/EPC Subcontractor Construction Site Manager	Construction
Air Quality					
Dust emissions	Emissions of dust will arise from the Project during construction, primarily as a result of earth moving	***Embedded Measures*** • ***Air Quality Management Plan (AQMP):*** This plan will be developed to control construction dust emissions and will include the following measures (as a minimum):	• Presence of appropriate policies, plans and procedures.	EPC JV/EPC Subcontractor Construction Site Manager	Construction

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
	activities, exposure of bare ground, stockpiling of material and the passage of vehicles over open ground.	• Use of surface binding agents on unpaved roads to reduce dust generation. • Enforcement of a speed limit of 32 km/h on unpaved surfaces. • Vehicles shall be compliant with recent emission standards (for example, EURO 3 or USEPA Tier 2) and maintained in reasonable working order. • When not in use, vehicles should be switched off, unless impractical for health and safety reasons. • Vehicles shall be kept clean to avoid tracking dirt around and off the site. • Vehicles transporting friable materials shall be covered. • Where feasible, surface binding agents shall be used on exposed open earthworks. • Exposed ground and earthworks areas shall be covered as much as possible, for example with sheeting or boarding, or the use of chemical binders should be investigated. • Where ground and earthworks are covered or surface binders are used, the smallest possible area for working will be exposed. • Blasting shall be carried out as infrequently as possible. • Use of localised dampening and activity specific dampening shall be used to reduce localised emissions of dust. • Stockpiling of material, for example, rocks, sand and soils shall be minimised. • Stockpiles shall be enclosed or sheeted as much as possible. • Stockpiles shall be located as far away from receptors as possible. • The design of stockpiles shall be optimised to retain a low profile with no sharp changes in shape. • Wind breaks shall be erected around the key construction activities and, if possible, in the vicinity of potentially dusty works and blasting activities. • Meteorological conditions (wind speed, wind direction, temperature and precipitation as a minimum), PM_{10} and ambient dust levels shall be monitored throughout construction.	• PM_{10} monitoring and exceedance of 'action levels' (as established in the construction AQMP). • Number of grievances submitted by local residents.	EPC JV/EPC Subcontractor Health & Safety Manager	
Operational air emissions	Emissions from the operation of the on-site tri-generation	***Embedded Measures:*** A number of alternative design options were considered to help	Air quality monitoring once the Project is	TBC / SPV Management	Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
	and boiler plant have the potential to cause exceedances of the Turkish and EU ambient air quality Limit Values.	mitigate any potential impacts. Three further options were considered and assessed, taking into account the following parameter design changes: • Increased stack heights for both tri-generation plant and boiler plant; • Use of combined stacks for the tri-generation plant and boiler plant; and, • Reduction/improvement in the oxides of nitrogen (NO_x) emission concentration of the tri-generation plant. In order to meet Turkish and EU Limit Values and result in negligible impacts, it is recommended that an alternative design being taken forward for the trigeneration plant and boiler, which comprises a reduction in NO_x emission concentrations from the tri-generation unit (500mg/Nm^3 to 100mg/Nm^3), combined unit flues into single stacks ie one combined tri-generation plant stack and one combined boiler stack, and an increase in the proposed stack heights to 45 m.	operational.	(TBC)	
Noise and Vibration					
Construction activity noise and vibration	Excavation works, blasting, building construction, and Project related traffic will create temporary noise and vibration emissions. Night time noise emissions from the construction activities are expected to generate significant noise impacts to residential receptors.	***Noise and Vibration Management Plan:*** This plan will be developed to control construction noise and vibration emissions and will include the following measures (as a minimum): • Night time works shall manage the number of equipment and avoid use of noisier equipment. • Measurement of noise levels at the closest sensitive receptors in accordance with the Noise and Vibration Management Plan. • Noisy equipment will be orientated to face away from receptors. • Construction contractors will use alternatives to audible reversing alarms, such as visual and/ or broadband noise emitting models or configuring the Project work sites to maximise forward movements of mobile plant. • Alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric-controlled units, will be used, where feasible and reasonable. • Small equipment (e.g. hand tools) will be used in an acoustically treated enclosures, where feasible and reasonable.	• Presence of appropriate policies, plans and procedures. • Noise monitoring (16 Hz -16kHz) programme. • Number of grievances submitted by local residents.	EPC JV/EPC Subcontractor Construction Site Manager	Construction

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
		• Throttle settings will be reduced and equipment and plant turned off, when not being used. • Equipment will be regularly inspected, maintained and operated according to manufacturer recommendations. The condition of mufflers will also be checked. • For machines with fitted enclosures, doors and door seals will be checked. • Onsite chutes and bins will be lined with damping material. • Excavation and other noisy/vibration inducing works closest to sensitive receptors must be scheduled during periods of reduced sensitivity (e.g. during school holidays). • Sound insulation properties of sensitive receptors will be reviewed. • Blasting will be strictly controlled and an advanced warning system used.			
		• Noise barriers or berms and the use of mobile screens will be used. Where noise barriers and/or mobile screens are used, the following general design requirements will be met: • Construction of barriers/walls/berms will be installed on site as early as possible and prior to high noise level generating activities. • Barriers or walls (if used) will be constructed of typical construction hoarding or plywood cladding (e.g. 18 to 25 mm) and at least 2.4 m in height (typically the standard height for construction hoarding). If possible, acoustic absorptive material will be fixed to the inside of the screen (facing the site) to minimise reflected noise. • Barriers/walls/berms will be continuous and extend to the ground (as far as is practicable), have no gaps, cracks or any penetrations.			
Waste Handling					
Construction waste	Wastes generated during construction will include: • Solid construction waste • Accidental spills, contaminated soils and hazardous wastes	• Mitigation measures that are embedded in the Project design to control and manage waste during construction and operation are detailed in *Volume II, Annex E.* • ***Waste Management Plan:*** This plan will detail how all generated wastes will be managed and monitored. The plan will address waste minimisation, segregation, labelling, storage, transportation and recycling/disposal to meet the national regulatory requirements and international standards. Periodic inspections	• Presence of appropriate policies, plans and procedures. • Number of grievances submitted by local residents.	EPC JV/EPC Subcontractor Construction Site Manager	Construction

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
	• Special wastes • Domestic wastewater	will be conducted of the waste recycling/disposal facilities to ensure proper disposal practices are implemented. • ***Hazardous Material Management Plan***: This plan will be developed to ensure proper handling of hazardous materials. Regular periodic integrity testing for hazardous material storage equipment (i.e. underground storage tanks and piping systems) will need to be conducted and appropriate leak detection systems will be in place. • ***Emergency Preparedness and Response Plan (EPRP):*** This plan will cover accidental and emergency situations, including appropriate management of any waste/hazardous material spills. The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed. • ***Construction Management Plan (CMP):*** This plan will detail good practices that will be employed during construction to control the generation and handling of wastes, including measures such as: • Training of construction workers in good site practices and spill response and prevention measures • Fuelling of vehicles/equipment shall only be carried out in designated areas away from surface drainage pathways exiting the site • No hazardous materials will be stored in excavated areas and all handling of hazardous materials will take place under special supervision • All staff and subcontractors will be required to report any incidents and these will be subject to investigation, and remedial and preventive actions will be taken as needed	• Periodic inspections conducted in waste recycling/disposal facilities. • Regular periodic integrity testing for hazardous material storage. • Record keeping about waste generation, storage and transportation to third party waste management facilities.		
Operation waste	Wastes generated during operation will include: • Healthcare/medical wastes • Domestic waste and wastewater • Contaminated waste water • Special wastes	• ***Waste Management Plan:*** This plan will detail how all generated wastes will be managed and monitored. The plan will address waste minimisation, segregation, labelling, storage, transportation and recycling/disposal to meet the national regulatory requirements and international standards. Periodic inspections will be conducted of the waste recycling/disposal facilities to ensure proper disposal practices are implemented. • ***Hazardous Material Management Plan:*** This plan will be developed to ensure proper handling of hazardous materials. Regular periodic integrity testing for hazardous material storage equipment (i.e. underground storage tanks and piping systems)	• Presence of appropriate policies, plans and procedures. • Number of grievances submitted by local residents. • Periodic inspections conducted in waste recycling/disposal	Gaziantep IHC Environment Manager (TBC)	Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
		will need to be conducted and appropriate leak detection systems will be in place. • ***Emergency Preparedness and Response Plan (EPRP):*** This plan will cover accidental and emergency situations, including appropriate management of any waste/hazardous material spills. The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed. • ***Healthcare Waste Management System:*** This system will be established, operated and maintained to manage waste generated during operation of the IHC. The system will be adequate for the scale and type of activities and identified hazards in accordance with the IFC EHS Guidelines for Healthcare Facilities. • Waste management practices given in the IFC EHS Guidelines for Healthcare Facilities will be implemented including guidance on waste segregation and storage.	facilities. • Regular periodic integrity testing for hazardous material storage. • Record keeping about waste generation, storage and transportation to third party waste management facilities.		
Access and Traffic					

Construction traffic	During construction, an average of about 510 vehicles are expected to be on site each day. Accordingly, this will generate additional traffic load on the existing road network near the Project site and increase the potential for traffic accidents to occur, which could lead to injury or fatalities to other road users and pedestrians.	***<u>Embedded Construction Measures:</u>***
		• Mitigation measures embedded in the Project design to manage site access/egress and associated safety risks, include the construction of:
		  • internal temporary access roads
		  • a perimeter road to surround the footprints of the buildings
		  • a dedicated safe area and pathways of a suitable width for personnel circulation
		  • a dedicated car parking area inside the Project site for private cars of authorised personnel
		• Mitigation measures embedded in the Project design to manage site access/egress and associated security risks, include a Compound Access Control Facility.
		
		• ***Construction Traffic Management Plan:*** This plan details measures that will be implemented during the construction phase to manage site access/egress and associated safety risks, including:
		  • traffic signalisation
		  • safety controls in the internal road network
		  • site access controls
		  • personnel working on site outside normal hours
			• Presence of appropriate policies, plans and procedures.
			• Effectiveness of the Access Management Plan will be reviewed as least once a month or more frequently if additional risk areas are encountered. This will be followed by revision of the Access Management Plan and implementation of more appropriate procedures if the original access management practices are not
				EPC JV/EPC Subcontractor Construction Site Manager
				
				EPC JV/EPC Subcontractor Health & Safety Manager
					Construction

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
		• internal traffic management • off-site traffic management • regular training • road maintenance (if any physical damage results from Project activities) • consideration of high sensitive receptors (ie. schools) close to the Project site • The Construction Management Plan will be developed and implemented in coordination with the Transportation Coordination Center of the Gaziantep Metropolitan Municipality.	proven to be effective. • Records of any incidents. • Number of grievances submitted by local residents.		
Operation traffic	During operation of the IHC, an average of about 52,920 two-way vehicle	The Construction Traffic Management Plan also defines the following measures for receptors close to the site: • All the students in TOBB High School will be given traffic safety seminars once a month; • The passage of heavy goods vehicles will be minimized around TOBB High School at the times of the day the students are mainly using the surrounding roads (eg. entrance and exit hours); • There will be signs placeds at every 300 m around the Project site stating the contact details of the site staff for potential grievances; • All the operators of the construction vehicles will be given educational seminars on traffic safety; and • Informative brochures including the contact details of the site staff for potential grievances will be distributed in the residential buildings and to the Headmen of the surrounding Neighborhoods. ***Additional Mitigation Measures:*** • Road maintenance will be undertaken to manage physical damage to roads as a result of the Project. • The SPV will undertake safety awareness campaigns to inform key stakeholders including TOBB High School children and families and local residents about potential traffic impacts and traffic safety through leaflets, public announcements and seminars. ***Embedded Operation Measures:*** • ***Health Campus Internal Traffic Management Plan:*** This plan will detail measures to manage vehicular traffic, emergency conditions, pedestrian traffic entering, exiting and internal traffic. This plan		Gaziantep IHC Safety Management Team (TBC)	Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
	movements are expected to be on site each day. Accordingly, this will generate additional traffic load on the existing road network near the Project site and increase the potential for traffic accidents to occur, which could lead to injury or fatalities to other road users and pedestrians.	will include the measures outlined in the Access Management Plan that are relevant for within the IHC site. ***Additional Mitigation Measures:*** In addition to the measures outlined in the Traffic Management Plan, the following will be implemented: • Ongoing stakeholder engagement will be undertaken to assess how project-related traffic is affecting traffic more broadly within Gaziantep as detailed in the SEP.			
Water Resources					
Suspended sediment in construction site run-off	During construction, activities associated with soil movement during excavations, as well as exposed and stockpiled soil could give rise to suspended sediment in water runoff. Exposed soils that are dampened to reduce dust generation, could also produce surface runoff, as well as water used to wash the wheels of construction vehicles.	***Embedded Measures:*** ***Construction Management Plan (CMP):*** This plan will detail good practices that will be employed during construction to control the generation of site run-off and minimize the risk of water pollution, including measures such as: • Using designated areas for storing materials • Placement of sediment traps • Fuelling of vehicles/equipment shall only be carried out in designated areas away from surface drainage pathways exiting the site • Training of construction workers in good site practices and spill response and prevention measures • Regular inspection of construction activities (either by the SPV or third parties) including water quality testing of surface run-off	• Presence of appropriate policies, plans and procedures. • Regular construction site inspections. • Water quality testing of surface runoff. • Records of any incidents. • Number of grievances submitted by local residents.	EPC JV/EPC Subcontractor Construction Site Manager	Construction

Contamination of surface and groundwater	Poor storage and handling of hazardous materials (fuel oil and/or lubricants) as well as construction materials (liquid cement, lime) may lead to contamination of surface and groundwater. Spills may also occur from the refuelling of equipment onsite during construction	***Embedded Measures***
		• ***Hazardous Material Handling Procedure:*** This will be developed to ensure appropriate handling of hazardous materials and include measures, such as:
		  • No hazardous materials will be stored in excavated areas
		  • All handling of hazardous materials will take place only by authorised staff.
		• Regular periodic integrity testing for hazardous material storage equipment (i.e. underground storage tanks and piping systems) will be conducted and appropriate leak detection systems will be in place.
			• Presence of appropriate policies, plans and procedures.
			• Regular construction site inspections.
			• Water quality testing of surface runoff.
			• Integrity testing for
				EPC JV/EPC Subcontractor Construction Site Manager
				
				Gaziantep IHC Evnrionment Manager (TBC)
					Construction and Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
		• Storm water will be discharged into the municipal storm water collection system during construction and operation. Relevant approvals and permits still need to be obtained from GASKI. • ***Emergency Preparedness and Response Plan (EPRP):*** This plan will cover accidental and emergency situations, including appropriate management of any spills. The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed. ***<u>Additional Mitigation Measures:</u>*** • TheThe SPV will decommission the existing groundwater well inat the Project site, decommissioning of the well by filling the well by silt or soil completely and ***covering*** the top part with a concrete place (cement grout) in accordance with Article 15 of the State Hydraulic Works Technical Regulation on Groundwater (23.06.1972/14224)s	hazardous material storage equipment. • Records of any incidents. • Number of grievances submitted by local residents.		
Geology and Soils					
Soil compaction and contamination	Soil can be compacted through construction practices and can be contaminated by accidental spills of liquid cement (excluding hazardous material spills).	***<u>Embedded Measures</u>*** • Measures to mitigate soil compaction and contamination during construction are embedded in the Project design. Hazardous and non-hazardous materials and waste during construction will be handled according to the Environmental and Social Management System to be prepared by SPV and where needed, further site-specific management plans will be developed (i.e. Hazardous Material Management Plan) [also refer to *Waste Handling Measures*] • ***Emergency Preparedness and Response Plan (EPRP):*** This plan will cover accidental and emergency situations, including appropriate management of any spills. The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed.	• Presence of appropriate policies, plans and procedures. • Construction activities will be regularly inspected on site. • Regular periodic integrity testing for hazardous material storage equipment (i.e. underground storage tanks and piping systems). • Records of any incidents. • Number of grievances submitted by local residents.	EPC JV/EPC Subcontractor Project Manager EPC JV/EPC Subcontractor Health and Safety Manager Gaziantep IHC Safety Manager (TBC)	Construction and Operation

Issue / Risk	Explanation of Issue / Risk	Action / Mitigation Measure	Performance Indicator	Responsibility	Phase / Stage
Biodiversity					
Threatened species check surveys	The potential occurance of the IUCN globally vulnerable species spur-thighed tortoise was reported from the site and any population on site may be lost during construction.	***<u>Additional Measures</u>*** • Undertake check surveys prior to construction activity in areas of suitable habitat for spur-thighed tortoise. • Relocate any indivuals to suitable nearby habitat outside the project boundary.	• Recording of check surveys being undertaken. • Recording of relocation of any indivduals identified.	EPC JV/EPC Subcontractor Health and Safety Manager	Construction
Other					

Emergency Response	Emergency response and preparedness will be required to manage all emergency events and appropriate response in relation to health and safety and environmental safety and management.	***<u>Embedded Measures</u>***
		• ***Emergency Preparedness and Response Plan:*** This will include the following:
		  • Initial response procedure
		  • Rescue or recovery procedure
		  • Evacuation procedure
		  • Emergency coordination and communication
		
		The EPRP will be shared with emergency service providers including police, fire and ambulance services. Local communities will also be briefed.
			• Presence of appropriate policies, plans and procedures.
			• Designated responsibilities for each type of emergency clearly defined.
			• All necessary equipment and tools in place to deal with an emergency response and properly maintained.
				EPC JV/EPC Subcontractor Project Manager
				
				EPC JV/EPC Subcontractor Health and Safety Manager
					Construction and Operation

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