January, 2015

NON-TECHNICAL SUMMARY

475 BED CAPACITY YOZGAT TRAINING AND RESEARCH HOSPITAL

Submitted to:
YZG Sağlık Yatırım A.Ş.

REPORT

Report **Number** 13513130036

Distribution:

1 soft copy YZG Sağlık Yatırım A.Ş.
1 soft copy Golder Associates Turkey Ltd.

Golder Associates

Record of Issue

Company	Client Contact	Version	Date Issued	Method of Delivery
Golder Associates Turkey Ltd.	Caner Şahin Sibel Gülen	Draft Final	November 2014	Electronic mail
Golder Associates Turkey Ltd.	Caner Şahin Sibel Gülen	Draft Final_V02	November 2014	Electronic mail
Golder Associates Turkey Ltd.	Caner Şahin Sibel Gülen	Draft Final_V03	December 2014	Electronic mail

Table of Contents

1.0 INTRODUCTION 1

2.0 THE APPLICANT 1

3.0 THE SITE & SURROUNDINGS 2

4.0 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) PROCESS 4

4.1 Potential Impact Identification 5

4.2 Baseline 5

4.3 Impact Assessment 6

5.0 PROPOSED DEVELOPMENT 7

6.0 CURRENT ENVIRONMENTAL CONDITIONS 7

6.1 Environmental Features 7

6.1.1 Air 7

6.1.2 Water 7

6.1.2.1 Surface Water Hydrology 7

6.1.2.2 Hydrogeology 8

6.1.3 Soil 8

6.1.4 Noise 9

6.2 Social Features 9

6.3 Ecological Features 10

6.4 Geological Baseline 10

6.5 Traffic Condition Baseline 10

6.6 Cultural Heritage Condition Baseline 11

7.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES 11

7.1 Air 11

7.2 Water 12

7.2.1 Surface Water Hydrology 12

7.2.2 Hydrogeology 13

7.3 Soil 14

7.4 Noise 16

7.5 Flora & Fauna 17

7.5.1 Terrestrial Flora 17

7.5.2 Terrestrial Fauna 17
7.6 Traffic 18
7.7 Waste Management 19
7.7.1 Construction Phase 19
7.7.1.1 Excavation Waste 19
7.7.1.2 Domestic Solid Wastes 19
7.7.1.3 Packaging Waste 19
7.7.1.4 Hazardous Wastes 19
7.7.1.5 Waste Batteries and Accumulators 20
7.7.1.6 Medical Wastes 20
7.7.1.7 Waste Oil 20
7.7.1.8 Waste Tire 20
7.7.2 Operational Phase 20
7.7.2.1 Medical Wastes 21
7.7.2.2 Hazardous Wastes 21
7.7.2.3 Radioactive Waste 22
7.7.2.4 Domestic Solid Waste 23
7.7.2.5 Packaging Waste 23
7.7.2.6 Waste Vegetative Oil 24
7.7.2.7 Waste Batteries and Accumulators 24
7.8 Socio – economic 24
7.9 Community Health Safety and Security 24
7.9.1 Major Occupational Health and Safety Risks 26
7.9.1.1 Construction Phase 26
7.9.1.2 Operational Phase 26
8.0 SOCIAL IMPACT 27
9.0 PROJECT ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM 27
9.1 Grievance Mechanism for Project 27
9.2 Health and Safety (HS) Management Plan 28
9.3 Workers Accommodation and Transportation 29
9.4 Human Resources Policies 30
10.0 SUMMARY OF CUMULATIVE IMPACTS 30
11.0 CONCLUSION 30

ABBREVIATIONS

NTS	Non-technical summary
PPP	Public Private Partnership
SHW	State Hydraulic Works(Devlet Su İşleri (DSİ))
SA	Study area
ESIA	Environmental and Social Impact Assessment
MoH	Ministry of Health

1.0 INTRODUCTION

YZG Sağlık Yatırım A.Ş. (YZG) is planning to develop the Yozgat Training and Research Hospital ("Project") in Yozgat province, Turkey. The proposed project will have 475 beds capacity and it will be built on 74.906 m^2 treasury land.

The purpose of the project is to improve the quality of healthcare services and the number of beds by constructing a new healthcare facility in Yozgat. When the project is completed it will provide high quality healthcare services for Yozgat as well as surrounding cities and residency areas.

The Project is evaluated against Project Category B, IFC and EBRD Requirements and an ESIA ("Environmental and Social Impact Assessment") report with the scope that is aligned with the IFC and EBRD expectations for similar projects.

This document presents the Non-Technical Summary (NTS) for the 475 Bed Capacity Yozgat Education and Research Project prepared in line with the findings of the ESIA report.

2.0 THE APPLICANT

The Yozgat Training and Research Hospital project will have a bed capacity of 475 beds. The Project is based on a Public Private Partnership (PPP) scheme. The construction period (investment) is 2 years whereas the operation will be 25 years.

The Hospital will have 128.118,5 m² (excluding commercial areas) total with the 82.600 m² main hospital area, the 41.148 m² car park area and the 4.370 m² technical area and closed commercial areas.

When the Training and Research Hospital starts to operate at full capacity, it will provide healthcare services in modern conditions with 184 specialist physicians, physician associates, practicing physicians and 437 auxiliary staff.

Diagnostic and Treatment Services; Endoscopy unit, radiology department, nuclear medicine, surgery suite, angiography/cardiac emergency service, hemodialysis center, physiotherapy center, sterile processing department, advanced pathology unit, Cancer Early Detection, Screening and Education Center, chemotherapy.

Support Services; Conference Center, Main Entrance hall, café, patient relative waiting-café, archive, central clinical pathology, blood donation center, food service, morgue, pharmacy-inpatient, laundry, employee resting-dining hall, central kitchen, administration functions.

Technical Services; Car park, Technical Departments, Shelter, Workshops, Storages, etc.

A model of the hospital is shown in the below figure.



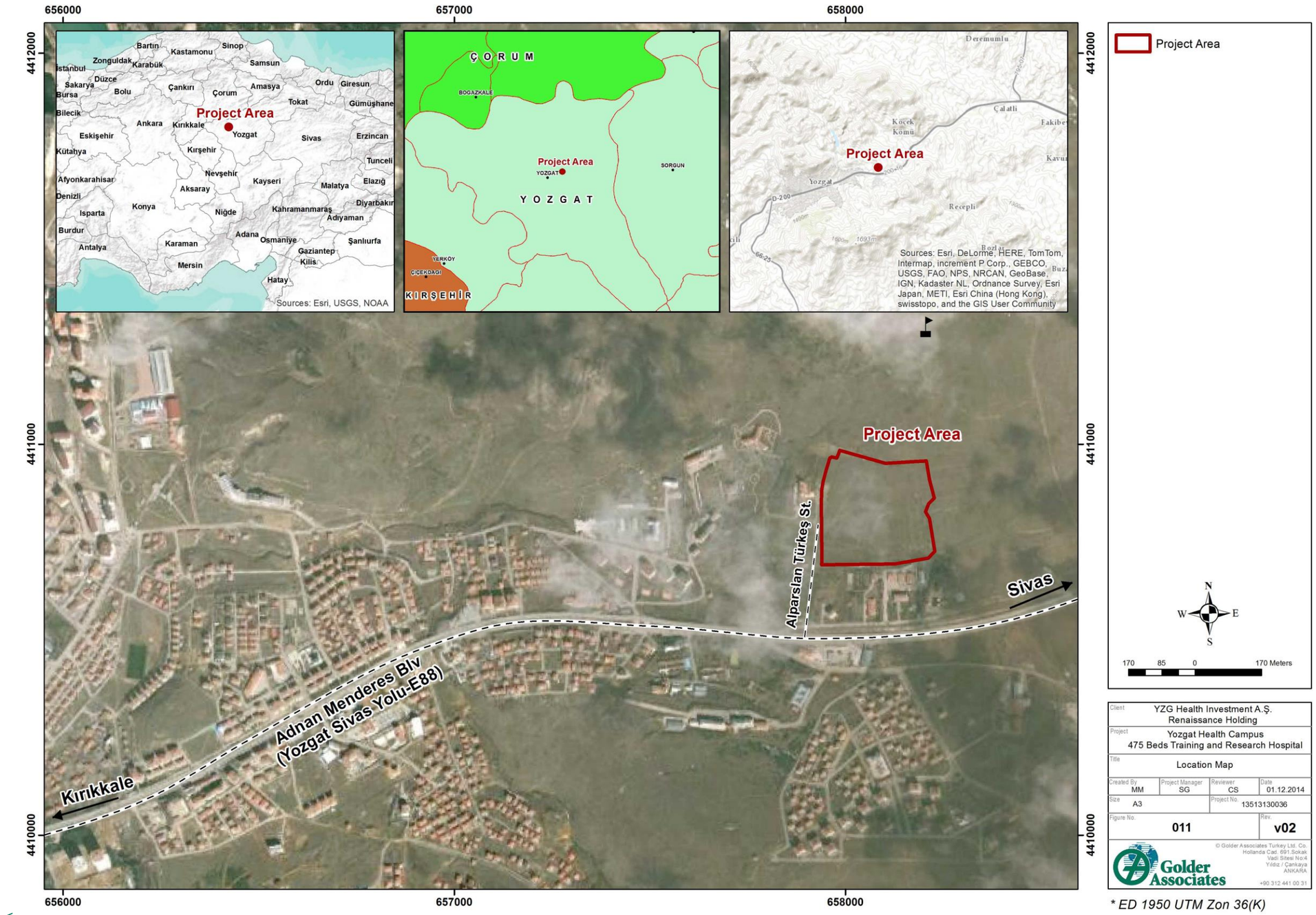
Figure 1: Model View of the Project

3.0 THE SITE & SURROUNDINGS

The project site is mostly surrounded by green fields. The SHW (State Hydraulics Works-DSI) is located south of the Projects Site. The General Directorate of Land Registry and Cadastre is located west of the Project Site.

The access to the Project site is from the Sivas-Yozgat road (E-88) and Alpaslan Türkeş Huzurevi Street.

The Project Site and access to the Project site is shown in below figure.



<

Figure 2: Access to the Project Site

The area of influence of the Training and Research Hospital project is the area in which a direct or indirect impact on the biological, physical and social components might occur as a result of the construction and operation of the Project facilities. A Study Area (SA) is defined for environmental and social component.

The terrestrial SA is defined by a 1.000 m buffer around the project area.

The SA is expected to encompass the area affected by all potential environmental impacts (e.g. noise and air quality impacts), and it is consistent with the methodologies adopted by other studies of similar projects.

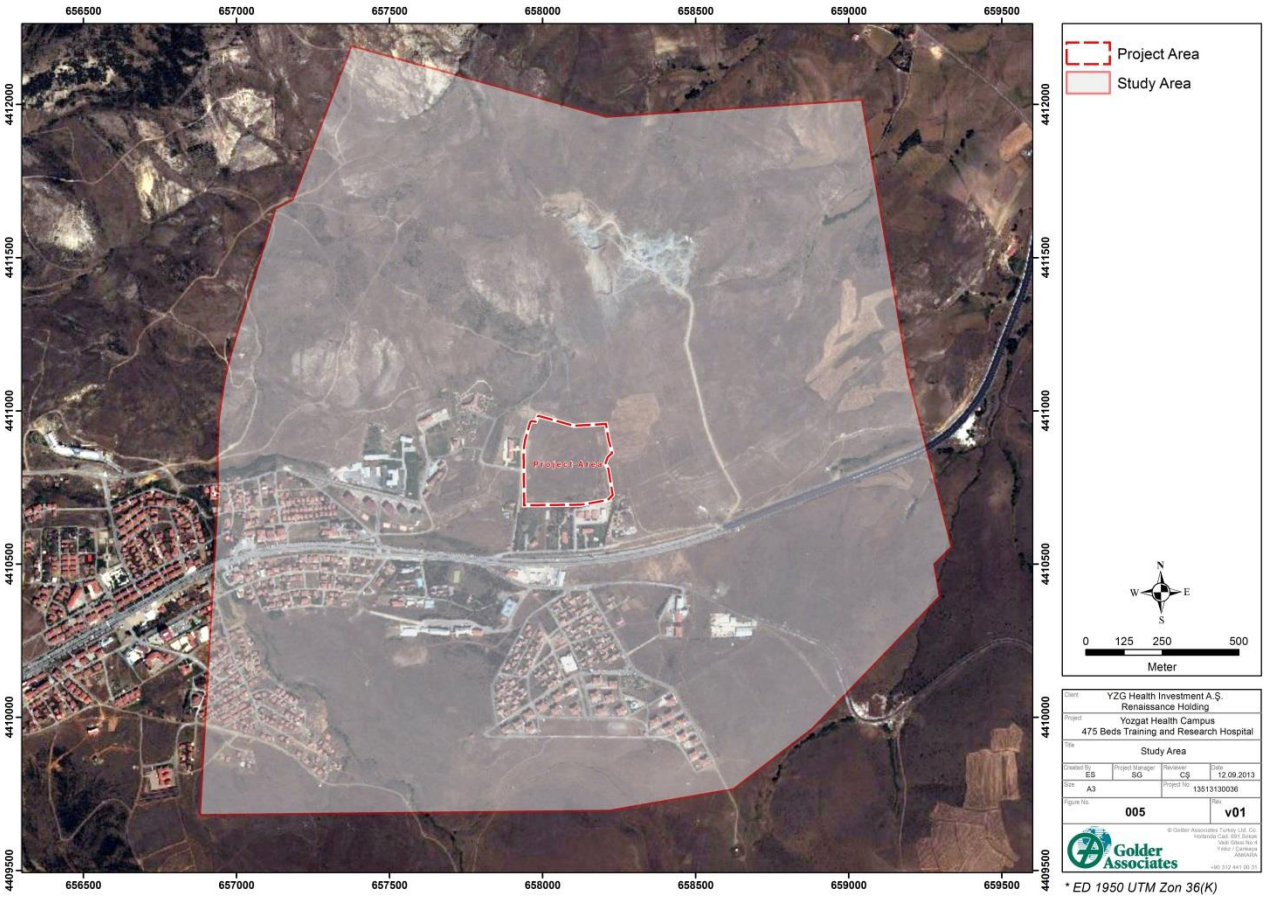


Figure 3: Study Area

The Project specific area is declared as a medical infrastructure area according to the zoning plan of the Municipality. The zoning plan is illustrated in the ESIA report Appendix B.

The Project site was first owned by the Treasury. The site was then allocated to the Ministry of Health in order to provide health care services. According to the Regulation on Construction of Health Facilities on Lease and Build Basis (dated 22.05.2010 and OG no: 27588) the Ministry of Health has assent to use of the specified project area to the private sector to establish health care facility. Therefore there are no project site alternatives to be considered. ,

4.0 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) PROCESS

Golder Associates (“Golder”) was contracted by the Rönesans Holding (“Rönesans”), one of the shareholders of the project company, YZG, in June 2013 to conduct a Bankable Environmental and Social Impact Assessment (“ESIA”) study for the Project, in accordance with the requirements of;

- International Finance Corporation ("IFC") Performance Standards on Environmental and Social Sustainability (2012 version);
- EBRD Environmental and Social Policy, 2008;
- IFC – EHS Guidelines; "Healthcare Facilities";
- EBRD – "Sub-sectorial Environmental and Social Guidelines: Health Services and Clinical Waste Disposal" and Equator Principles.

The Project is evaluated against Project Category B IFC and EBRD Requirements and the scope and content of the ESIA is aligned with the IFC and EBRD expectations for such projects. A bankable ESIA needs to follow both national legislation and international standards.

The ESIA has been prepared in accordance with both the Turkish Regulations and the International Standards as listed above. In compliance with IFC Performance Standard 1 and EBRD Performance Requirements 1, main components of the assessment include:

- the potential environmental and social impacts of the Project throughout the full development cycle – construction, operation, closure;
- a public consultation and disclosure plan to ensure that local communities and other key stakeholders are informed of the Project and have an opportunity to express their opinions concerning the Project;
- proposed mitigation activities to minimize adverse environmental impacts;
- the nature and significance of residual impacts (those adverse impacts that occur after mitigation has been applied) and ongoing monitoring and management plans to address them;
- the nature and significance of cumulative impacts;
- a social management plan to maximize benefits to the local community and promote a sustainable economy.

4.1 Potential Impact Identification

Based on the Project description, activities that could potentially contribute to environmental or social changes during the construction and operation phases are identified and referred to as Project actions.

The environmental, biological and social components are analyzed against the Project actions in order to identify the components potentially impacted (negatively or positively) by the Project actions during the construction and operation phases.

Finally, the impact factors that may interfere positively or negatively, in a direct or indirect way, are identified for each component of the construction and operation phases.

4.2 Baseline

The methodology used for the baseline studies is different for the different components.

The data sources used for the baseline data collection could be divided in two categories:

- literature research: including scientific publications for the characterization of the general regional area and grey literature for studies located inside or in close proximity to the Project area;
- Field work specifically conducted for this ESIA:
    - biological characterization of the project area;
    - baseline site measurements (noise, soil and air quality).

4.3 Impact Assessment

The impact assessment is performed for the main issues for each ESIA component (discipline). The common impact assessment methodology consists of five main steps:

- identification of Project activities that could contribute to environmental or social change;
- evaluation of the potential effects;
- description of mitigations for potential effects;
- analysis and characterization of residual effects; and
- as necessary, identification of monitoring to evaluate and track performance.

The impact assessment methodology includes the following phases:

- definition of the current state or quality of the different environmental and social components potentially impacted based on the results of the baseline studies;
- identification of the impacts potentially affecting the environmental and social components in the different phases of the project (construction and operation);
- definition and assessment of the effects of the planned mitigation measures.

The impact assessment on the single valued environmental and social component interfered in the different project phases is completed through the use of specific environmental impact matrices which compare the component state, expressed in terms of sensitivity, with the relevant impact factors, quantified on the basis of a series of parameters which include:

- duration (short, medium-short, medium, medium-long, long);
- frequency (concentrate, discontinuous, continuous);
- geographic extent (local, regional, beyond regional); and
- intensity (negligible, low, medium, high).

The quantification of the single impacts resulting from each factor acting on the environmental component is obtained assigning to each feature of the impact factor a score increasing in relation to the bigger entity of the impact related to it.

As the features of the impact factors influence, in a different way, the magnitude of the impact, a pondered coefficient is assigned to each of them using a pairwise comparison method.

The impact value results from the multiplication of the number resulting by a formula that connects all the parameters previously described, by the **sensitivity** (S) of the affected component to which a score has been assigned according to the evaluation carried out during the baseline activities.

Moreover the impact is assessed considering its **probability of occurrence**, its **reversibility** and its **potential for mitigation.**

The **probability of occurrence** (P) corresponds to the probability that the potential impact occurs, according to the evaluators experience and/or on the basis of the available bibliography. It is distinguished in low, medium, high and certain.

The **reversibility** (R) indicates the possibility to restore the qualitative state of the component following the modifications occurred because of the human intervention and/or through the component intrinsic resilience. It is distinguished in: short-term reversibility, medium-long term reversibility, irreversible.

The **mitigation** (M) corresponds to the possibility to alleviate the potential negative impact with proper design and/or management practices. The following mitigation classes are considered: high, medium, low, none.

The impact value results from the relation below which connects all the parameters previously described, and considering the **sensitivity** (S) of the affected component to which has been assigned a score according to the calculation procedure described above.

The details on the quantification of impact values can be found in the ESIA report.

5.0 PROPOSED DEVELOPMENT

In parallel with the growing population of the Yozgat province, the need for healthcare service is increasing.

The hospitals in Yozgat are inadequate in terms of both the bed capacity and the quality. There are 766 beds within the 15 hospitals in Yozgat according to the Ministry of Health. Besides, the private hospitals have a capacity of 49 beds. It can be stated that the majority of the healthcare services are provided by the public sector. The bed capacity is quite low compared to EU countries. In order to close this gap, new investments for healthcare facilities should be provided for the Yozgat province.

Moreover, the hospitals in the province are, in general, old. The biggest hospital of Yozgat, owned and managed by the Ministry of Health, is the Yozgat Public Hospital which was built 77 years ago. 62% of the rooms in the hospitals have three and more beds in one room. However, according to recent policies of the Ministry of Health, in patient rooms with more than two beds are currently not allowed.

Additionally, it is not possible to expand the capacity of the hospital buildings since they are located in the city center. The hospitals do not have sufficient car parking areas and green space.

The purpose of this project is to respond to this increasing need for the health care facilities, to improve the quality of the healthcare services and the number of beds by constructing a new healthcare facility in Yozgat.

When the project is completed it will provide high quality healthcare services for Yozgat as well as the surrounding cities and residential areas.

6.0 CURRENT ENVIRONMENTAL CONDITIONS

6.1 Environmental Features

6.1.1 Air

The Study Area for the air quality is defined as the 1 km diameter buffer around the Project site. The existing ambient air quality has been evaluated in the Study Area.

The emission measurement results, the ambient air quality measurements and the quality assessment studies, which were conducted by various parties in the region in the last 2 months, are summarized here for an evaluation of the existing air quality.

As part of the ESIA studies, Golder conducted the field measurements listed below to support the baseline data:

- PM_{10} measurements at three locations,
- Settled dust measurements at three locations.

The ambient air measurements were conducted by Ekotest, an accredited firm, in 2013. The settled dust measurement was conducted between July 17 and September 19, 2013 and PM_{10} measurements were conducted on August 19, 2013.

6.1.2 Water

6.1.2.1 Surface Water Hydrology

The Study Area for the hydrology and surface water quality component covers the Project Area and the immediate surroundings, in order to provide a significant overview of the context.

The hydrological baseline conditions have been assessed by desktop studies and literature data review. The main sources reviewed are listed below:

- Environmental Status Report of Yozgat Province, 2008
- SHW Official Web Site - http://www.dsi.gov.tr/

According to the baseline information, the hydrology component in the Study Area has the following characteristics:

- No rivers or streams are present;
- No water sources used for drinking water and irrigation purposes are present.
- Closest surface water bodies are Kirazlı ponds with a 2km and 3km distance and Cevdet Dündar Pond with a 2.5km distance.

6.1.2.2 Hydrogeology

The Study Area for the groundwater covers the project area and its immediate surroundings, which allows a better definition of the hydrogeological setting.

A hydrogeological overview has been retrieved from the desktop analysis and the geotechnical assessment report.

The geotechnical investigation was conducted by Kilci Mühendislik Müşavirlik Proje İnş. Taah.. San. ve Tic. Ltd. Şti (June 2013). According to the report, a total of 16 borings were drilled for investigation purposes.

According to the geotechnical report, perched groundwater was encountered in the borings drilled down to varying depths from 15 m to 30 m during the geotechnical investigation. It is expected that the regional groundwater level is deeper than 30 m. However, perched groundwater was encountered as the investigations were carried out during the rainy season. It is planned that the entire area would be excavated at varying depths between 5 m to 30 m during the construction.

6.1.3 Soil

According to the land use map presented in Figure 3 of ESIA Report, land use type is classified as “Dry Agricultural”. Soil type presented in the Study area also classified as non-calcareous brown soils in accordance with the soil groups map shown below.

The information regarding soil and land use has been collected through desktop studies and review of available reports.

The soil baseline conditions have been assessed from desktop studies, literature data review and also the baseline studies.

The main sources reviewed are listed below:

- Geotechnical Survey Report (June 2013) by Kilci Mühendislik Müşavirlik Proje İnş. Taah.. San. ve Tic. Ltd. Şti
- Environmental Status Report of Yozgat Province, 2008

No lithological changes or contamination indicators were observed at the Study Area. Hence, in order to evaluate the baseline top soil conditions, 4 soil samples were collected from the topsoil layer (upper 30 cm). The locations were selected to represent the each quadrant of the Study Area.

All 4 soil samples were analyzed for Extractable Metals and 2 soil samples were analyzed also for Total Petroleum Hydrocarbons (TPH) and Total organic halogens (TOX) to evaluate the baseline conditions and any potential pollution.

The soil samples were scanned in-situ using the PID (Photo-Ionization Detector), for indications of Volatile Organic Carbon compounds (VOCs).

6.1.4 Noise

During the baseline studies, the day time, evening time and night time baseline noise measurements were conducted at 3 points at the Project Site on July 11, 2013.

The Project Site is near the SHW and the distance to the closes residential area is 500 m.

The following methodology was applied:

- all measurements are independent from each other and all of them are in the direction of project area.
- all measurements were done according to national standards.
- The standards used are TS 9315 ISO1996-1 Definition of Acoustic-Environmental Noise, Measurement and Assessment Section 1: Standard of Basic Quantities and Assessment Procedures
- The measurements are done at 1/3 octave band. The frequency values between 63 Hz and 8.000 Hz are recorded.

The Project Site is classified as a receptor within the “Noise sensitive areas where education, culture and health facilities and construction camps are densely located” in Turkish limits and within “Industrial; commercial areas” in IFC limits.

The baseline measurements indicated that existing noise levels at the **Project Site** varied between **36 and 55 dBA** that complied with the Turkish and IFC limits of 70 dBA for industrial sites.

6.2 Social Features

The collection of the baseline data was mainly carried out by reviewing available desktop literature. In particular most of the information was found in Turkish Statistical Institute (TurkStat) statistics databases and studies of the local authorities. The information gathered during a field visit conducted by Golder staff in July 2013 has also been used.

The baseline data collected allows to draw the following conclusions regarding the general socio-economic conditions in the SA and the close vicinity.

The economy of Yozgat mostly depends on agriculture. According to the report published by the Yozgat Chamber of Commerce and Industry in 2012,60% of the total area of Yozgat is used for agricultural purposes. Since the agricultural activities are essential for the economy of Yozgat, they also help the development of industry and business sectors.

Yozgat is one of the priority development cities in Turkey. Hence, the government specifically invests in the various industrial sectors in the province. These are food, textile, clothing, furniture, medical supplies, paper industry, machinery industry, crystal glass mosaic, agricultural tools, cosmetics, machinery, automobile equipment, packaging and construction.

There are 7 small industrial zones in the Yozgat province and one of them is in the central distinct. 312 workplaces were established at the central distinct of the province. Brick production, fodder production, flour and bran production, bread production, meat and milk production, home textiles, furniture production, manufacture of plastic and manufacture of central heating boilers are the main industries in the center of the province.

The expropriation of Yozgat the industrial zone was started in 1994 and completed in 1995. At the same time, the project of the industrial zone is completed and 110 industrial parcels were planned inside the zone. The

industrial zone was located in 1,500,000 m^2 area. Infrastructure of the industrial zone was completed in 1997 and afterwards the zone was started to be operated.[1]

6.3 Ecological Features

A literature research was undertaken to document the habitat types and species that are expected to be present, in the study area. The scientific literature was considered in order to give an overview of the vegetation existing in the area.

The field studies were undertaken in August 2013 by Prof. Dr. Hayri Duman from Biology Department of Gazi University Faculty of Science. During the site visit, photographs of the ecological were taken and documented. The field surveys were undertaken in the second half of the year, which was suitable to identify plant species. Therefore, the findings of the terrestrial flora surveys depend on on-site observations made at the Study Area and samples that were collected and taken to the herbarium to be identified.

The steppe vegetation of the Central Anatolia, especially the areas encompassed by the provinces of Yozgat, Ankara, Nevşehir and Kayseri have remarkable floristic characteristics. Consequently, a number of studies have been conducted on flora and vegetation in the areas where the natural characteristics have been preserved. However, since the Project Site has lost its natural flora and vegetation characteristics, it does not stand out as a good representation of the steppe habitat with interesting features.

Based on the field studies and literature review to determine species inhabiting in the Study Area and its surroundings, a total of 22 terrestrial vertebrate species have been identified. The species identified within the Project Site, were also searched for within surrounding areas, and these areas were also evaluated considering the potential impacts of the Project on the fauna species.

6.4 Geological Baseline

Based on analysis of the Project, impacts on the geology in all phases will be limited to impacts on the soil and groundwater which are discussed in the following sections.

According to the Geotechnical report “Considering the dominant soil unit, ground of the area consists of alteration of claystone-sandstone and andesite-basalt rock which have bearing capacity, settlement and no liquefaction risk in the event of earthquake”. According to the Earthquake Research Department, the SA is classified as third degree earthquake zone.

The most important geo-hazard expected during the all phases, would be an earthquake. The facility (buildings) would be designed according to criteria presented in the geotechnical report.

Project design and engineering should cautiously comply with the provisions of the "Regulation on the Structures to be Constructed in Disaster Areas and the Regulation on the Buildings to be Constructed on Earthquake Zones" (14.07.2007 O.G. No: 26582).

6.5 Traffic Condition Baseline

The public roads that will be used for the transportation to the Project Area during the construction and operation phase are:

1. D200 Sivas – Yozgat Highway
2. Alpaslan Türkeş Huzurevi Street

Distance from Project site to the dumping site is 2,4 km. Dumping site is on Recepli Village road. The letter for permission from the Municipality for dumping was taken by the Client.

The literature (Turkish Highway Directorate) data reviewed for the recorded vehicle movements at these roads.

[1] **Source:** Governorship of Yozgat, 2012

Existing traffic load at D200 road and Alpaslan Türkes Huzurevi Street are shown in Section 5.5.2.1 of ESIA Report.

6.6 Cultural Heritage Condition Baseline

A literature investigation was performed for the archaeological and cultural resources in the vicinity of the Project Site.

As part of the social site investigations, no know archaeological site has been identified in the SA.

7.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

7.1 Air

The existing ambient air quality has been evaluated around the Project Site.

Within the ESIA studies, the field measurements were done listed below to support the baseline data:

- PM_{10} measurements at three locations,
- Settled dust measurements at three locations.

PM_{10} and settled dust values are in compliance with the limit values.

Exhaust Gases

The calculated emission values of the vehicles will stay under the limit values of Turkish Industrial Air Pollution Control Regulation.

Road Traffic

Another potential source of emissions consists of the exhaust gas generated by the vehicles that transport materials for construction works to the Project Area.

The trucks carrying materials to the dumping site during the construction will increase the traffic load within the study area.

Considering the routes and the types of road to be used the major concerns would be;

- Increased traffic load in the Yozgat town center, especially for the transportation on the Alpaslan Türkeş Huzurevi Street.
- Disturbance in Yukarınohutlu town community in terms of air emissions and traffic safety.

Dust Emissions

The dust emissions due to the construction works was simulated by AERMOD (American Meteorological Society/Environmental Protection Agency Regulatory Model) model.

As a result of the AERMOD modelling results, all emission values (PM_{10} and settled dust) to be released due to the operations to be performed during the excavation works are below the limit values specified in (Annex-2 Table 2.1) the Regulation on the Control of Industrial Air Pollution.

In addition to this, all measures specified in the Annex 1 of the Regulation on the Control of Industrial Air Pollution shall be taken in order minimize the dust emission within the scope of the project.

Considering the baseline conditions in the study area, the impact of pollutants and dust emissions on the atmosphere is expected to be negligible during the construction phase.

During the operation, the generation of emissions is only expected from the natural gas used for heating and the exhaust gas emissions from the vehicles operating under the scope of the Project.

Considering the baseline conditions in the SA, the impact of the pollutant and dust emissions in the atmosphere is expected to be negligible during the operational phase.

Mitigation

The mitigation techniques for the reduction and control of dust and exhaust emissions from construction activities will include:

- The construction sites, and transportation routes will be sprinkled with water twice daily during the hot-dry seasons;
- The trucks transporting fugitive materials such as soil, sand, etc. will be covered to prevent dispersion during transportation;
- Periodic maintenance will be provided for construction machinery and equipment to control the exhaust emissions;
- The construction equipment that are in proper condition will be used;
- The traffic to and from the Project Site will be scheduled to avoid peak hours on local roads;
- The site speed limits, vehicle inspection requirements, operating rules and procedures (e.g. prohibiting operation of forklifts with forks in down position), and control of traffic patterns or direction will be established;
- The vehicles will be maintained in good condition to ensure they are no louder than other, similar vehicles on the roadways.

Regarding the Project area, during the operational stage the only emission source is the exhaust gas from the vehicles in the traffic and emissions from natural gas during operating phase under the scope of the project.

The following mitigations measures will be in place to minimize the impacts of the increased traffic on the community and environment:

- The traffic will be reduced through community areas wherever possible.
- The fuel system of the vehicles shall be monitored continuously and compliance with the provision of the Regulation on the Control of Exhaust Gas Emission published on 04.04.2009 in Official Gazette No. 27190 will be ensured. Besides, during the operation phase, the emissions related to the heating would be monitored periodically and it would comply with the provision of the Regulations on Air Pollution Control. Therefore, it is not anticipated that the emissions due to the project will affect the air quality in a negative way.
- The fuel system of the vehicles shall be monitored continuously and compliance with the provision of the Regulation on the Control of Exhaust Gas Emission published on 04.04.2009 in Official Gazette No. 27190 will be ensured.

All measures given in the Regulations on the Control of Industrial Air Pollution, published on 03.07.2009 in Official Gazette No.27277, shall be implemented in order to minimize dust emission during the construction period.

7.2 Water

7.2.1 Surface Water Hydrology

The impacts during the construction phases on the surface water component are related to the following impact factors:

- The hydrological changes based on the increase of the water demand
- The changes in the surface run-off patterns in relation to the wastewater discharges

The impact factors that could potentially affect the surface water component during the operational phase are:

- The hydrological changes based on the increase of the water demand,
- The changes in the surface run-off patterns in relation to the wastewater discharges,
-
- the changes on the surface characteristics,
- The potential leaks from the medical wastes into water bodies.

Mitigation

- The rain water interceptor sewers and the grids placed within the scope of the construction practices
- The inspection and cleaning of the grids on a periodical basis in order to prevent possible blockages during the operation phase.
- The water resource management plan directed at optimizing the use of water and in minimizing the environmental impact of water use on the natural environment during operation.
- The waste management plan prepared for the project during construction
- The monitoring actions to verify compliance of the wastewater quality and discharges with the regulatory requirements during the construction and operation.

The production of medical wastes will be a significant result of the operation of the facility. The dedical wastes will create significant environmental risks in terms of water pollution if not handled in line with the industry practices and regulatory requirements. There will be a waste management plan where the details of the waste collection, segregation and disposal will be detailed. The minimum requirements of the waste management plan are detailed in the Waste Management Plan which is the Appendix A of ESIA Report.

7.2.2 Hydrogeology

During the construction phase, the impacts on the hydrogeology of the Site could be due to civil construction and to excavation operations for the buildings. The contact with groundwater is not expected where the groundwater level is estimated to be below 30 m from the ground level according to the geotechnical report. It is planned that the entire area would be excavated with varying depths between 5 m to 30 m during the construction.

Regarding the water supply, no groundwater would be abstracted from wells during the operational phase. The potential impacts are estimated to be on the municipal water resources due to the increased demand.

The impacts on construction phases on the groundwater component are related to the following impact factors:

- groundwater pollution;
- hydrogeological changes based on the increase of water demand.

The impact factors that could potentially affect the groundwater component during the operational phase are:

- hydrogeological changes based on the increase of water demand;
- groundwater pollution.

Mitigation

The mitigations should be applied by using best practices during the construction activities, to reduce accidental pollutant emission into groundwater.

The groundwater pollution is also related to the soil quality assessment; in case of contamination, soil storage will follow standards and the best practice and will be located in areas with low soil and groundwater vulnerability.

In case of interaction, groundwater should be extracted from the working area; the treatment, storage and disposal should be done according to the regulatory requirements after the necessary analyses have been conducted.

During the construction, the measures to mitigate the possible contamination of groundwater through the operation of the vehicles and construction equipment should be taken. The measures will include:

- Routine maintenance of the vehicles and equipment to prevent oil leaks
- Proper storage of the chemicals
- Clean-up of spills as they may occur.

During the construction phase, the domestic wastewater would be collected in impermeable septic holes and disposed according to Water Pollution Control Regulation (WPCR, Issued on 31.12.2004 in the Official Gazette No: 25687) Article 32 and other relevant regulations. The measures will include;

- Domestic wastewater would be collected in leak-proof septic holes
- The septic holes would be emptied periodically by a vacuum truck
- Disposed of to the wastewater sewage system.

A water resource management plan, including provisions for the surface water and wastewater in order to optimize the water needs and minimize the environmental impact would be considered for the operation phase.

7.3 Soil

There were no lithological changes or indication of contamination at the site, observed during the Site visit. In order to describe baseline soil conditions, 4 soil samples were collected from the topsoil layer (upper 30 cm) to represent the study area.

All 4 soil samples were analyzed for Extractable Metals and 2 soil samples were analyzed for also Total Petroleum Hydrocarbons (TPH) and Total organic halogens (TOX) to determine baseline conditions and also pollution.

During the construction phase, the impact factors that could potentially affect soil and land use are:

- soil removal;
- soil contamination;
- dust emissions in top soil (road traffic and facilities construction);
- occupation of land.

Impact factors that could potentially affect soil and land use components during the operational phase are:

- soil contamination;
- occupation of land;
- increase of artificial surface

Mitigation

If soil contamination is suspected during the construction related excavation, a detailed Phase I Environmental Site Assessment (ESA) per ASTM standards should be conducted in order to determine if there are any contaminant sources present within the site or in the near vicinity and also to identify recognized environmental conditions “REC”s. The ASTM Standard defines RECs as “the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous

substances or petroleum products even under conditions in compliance with laws. After the Phase I ESA, based on the results, a Phase II Environmental Site Assessment would be conducted This assessment would be based on the relevant ASTM standart but also would take the “Regulation on Soil Pollution Control and Point Source Contaminated Sites “(originally published in the Official Gazette number 27605, dated 8 June 2010; and amended on 11 July 2013 in the Official Gazette number 28704 stating that the binding articles provisionally would be effective as of 08 June 2015) into consideration.

In case that the results of survey show the compliance with site-specific soil quality limits set by the regulation, materials coming from leveling activities could be excavated, transported, and used in the construction of embankments and/or backfill, after an assessment of physical properties.

If the soil is contaminated, it is recommended to work with the local regulatory agencies in compliance with the regulation to identify further investigation, treatment or disposaloptions. The general mitigation measures for avoiding soil contamination to the extent possible are:

- avoid or minimize temporary stockpiling of contaminated soils or hazardous material;
- if temporary stockpiling is necessary:
  - isolate the stockpile with impermeable liner or tarps;
  - install a berm around the stockpile to prevent runoff from leaving the area;
  - do not stockpile in or near storm drains or watercourses.

In order to reduce loss of top soil due to project actions in the construction phase, the following mitigations could be applied:

- removed topsoil could be stored in an appropriate area in the Project Site, to be used for landscaping after the construction (As required by the Regulation on Excavation, Construction and Demolition Wastes issued on March 03, 2004 at Official Gazette no.25406);
- to avoid loss by surface runoff, stored soil will be covered by tarpaulins or gravel; the ground will be covered by impermeable material and the slope of the soils will not be over 5%;
- temporary cross ditches will be constructed to redirect surface runoff;

Mitigation related to store practice and reuse of soil are not applicable in case of evidence of soil contamination.

Although the connection road from the Project Site exists and paved; it is assumed that during the construction phase the road could be partially unpaved. Concerning potential emission of dust and pollution in top soil, during the construction phase, mitigations measures could consist in the following:

- Vehicle restrictions to limit the speed, weight, or number of vehicles;
- Surface improvement, such as paving or adding gravel to the surface;
- Surface treatment, such as watering or chemical treatment.

During the construction phase, the measures to mitigate the possible contamination of soil due to the operation of the vehicles and construction equipment should be taken. The measures will include

- Routine maintenance of the vehicles and equipment to prevent oil leaks
- Proper storage of the chemicals
- Clean-up of spills as they may occur.

During the operational phase, the presence of new structures and the related increase in the artificial surface cannot be mitigated, although compensatory instruments should be contemplated during the following steps of consultation with authorities.

7.4 Noise

The Project Site is classified as a receptor within “Noise sensitive areas where education, culture and health facilities and construction camp are densely located” in Turkish limits and within “Industrial; commercial areas” in IFC limits.

The noise to be generated during the construction stage of the Project is local and temporary and it will finish at the end of construction. The noise to be generated during the Project operation may be expected to be caused by the emergency generators, helicopter movement and ambulance movement.

The effect of vibration is not expected to go beyond the construction site considering the machinery and equipment to be used in construction.

The Impact factors that could possibly affect this component during the construction and the operational phase are:

- emission of noise

Accordingly, all noise levels generated at the Project Site during the construction were calculated by the assumption of the worst case, in which all machines are operated simultaneously in the same place.

Considering the component medium sensitivity, the emission of noise and vibrations during the construction phase is expected to have a negligible effect on the component.

The noise to be generated during the Project operation is expected to be caused by the emergency generators, helicopters and ambulances.

Accordingly, the level of the noise generated by the operation of the Project should not exceed the regulatory limit of 70 dBA. During the public participation and disclosure meeting, there were no complaints raised on the possible helicopter sound. The other way round, lots of participants stated that there should be helicopter services during the operation phase.

Considering the component medium sensitivity, the emission of noise and vibrations during the operational phase is expected to have a negligible effect on the component.

Mitigation

During the construction stage, provisions of the “Regulation on Assessment and Management of Environmental Noise” and “Regulations on Work Health and Safety" will be followed with the purpose of protecting health of employees with respect to noise. Accordingly:

- appropriate personal protective equipment and materials such as helmet, ear protector or ear plug will be provided to protect workers from noise.
- There would not be any construction activities during the night time.

The following control measures recommended by international standards will be applied where possible:

- selection of equipment with lower sound power levels;
- installing silencers for fans;
- installing suitable mufflers on engine exhausts and compressor components;
- installing acoustic enclosures for equipment casing radiating noise;
- installing vibration isolation for mechanical equipment;
- limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas;
- reducing project traffic routing through community areas wherever possible; and

- developing a mechanism to record and respond to complaints.

In addition, regular maintenance will be made for the construction equipment to ensure decreasing the possible high noise levels generated by the equipment.

During the construction stage, the provisions of the Regulation on Assessment and Management of Ambient Noise and Regulations on Work Health and Safety will be followed in order to protect employees from any potential impacts due to noise. Accordingly, the appropriate personal protective materials such as helmet, ear protector or ear plug will be given to protect workers from the noise. In addition, maintenance of the equipment will be made regularly to ensure high noise levels are minimized.

7.5 Flora & Fauna

7.5.1 Terrestrial Flora

Some portion of the area vegetation will be cleared for the construction of the facilities. The presence of the facilities will then cause a loss of potential habitat during the operation. Moreover, the dust and air pollution could impact the terrestrial flora during the Project phases. Therefore, the following impact factors have been identified.

The impact factors that could possibly affect the presence of terrestrial flora species during the construction phase are:

- vegetation clearing and disturbance of terrestrial top soil;
- pollutant and dust emission into the atmosphere.

The impact factors that could possibly affect the presence of terrestrial flora species during the operational phase are:

- occupation of land;
- pollutant and dust emission into the atmosphere.

Mitigation

The mitigation measures here listed will be effective both for the construction and the operational phase:

- Study areas will be clearly defined before vegetation clearance where construction activities will be taking place and permanent structures will be built.
- Topsoil will be removed and stored before construction activities start. Upon completion of the construction activities, topsoil will be used to cover the landscape areas and natural plant species will grow again in the area.
- Vegetation clearance will take place gradually, so fauna elements will be allowed to leave the construction sites.

During vegetation clearance, equipment will be selected so as not to harm plant roots.

7.5.2 Terrestrial Fauna

Portions of the area vegetation will be cleared for the construction of the facilities and the enlargement of the road, vegetated area will be replaced by infrastructure, causing a loss of habitat for terrestrial fauna. Moreover, dust and air pollution, together with noise emission, could impact the terrestrial fauna during the Project phases. Therefore, the following impact factors have been identified.

The impact factors that could possibly affect the presence of terrestrial fauna species during the construction phase are:

- vegetation clearing and disturbance of terrestrial top soil;
- pollutant and dust emission in the atmosphere;
- emission of noise and vibrations.

The impact factors that could possibly affect the presence of terrestrial fauna species during the operational phase are:

- occupation of land;
- emission of noise and vibrations.

Mitigation

Potential impacts of construction on terrestrial fauna can be listed as the following:

- Habitat loss at the project site,
- Animals leaving the site due to dust and noise emissions during stripping of topsoil and excavation activities,
- Mortality of those species that have limited mobility during stripping of topsoil and excavation activities.

As the findings of the fauna studies indicate, the project site does not bear any important habitats significant for rare, endemic or threatened fauna species.

Presence of alternative areas within the vicinity of the project site for fauna species, amphibian, reptile, bird and mammal species' being mostly highly mobile, and the limited number of fauna species inhabiting the project site, has been evaluated as factors that would lower the impacts of the project to a great extent.

The project site is not located on a bird migration route and the birds found within the project site are widespread species that inhabit the entire region and most of Turkey.

Animals at the project site are likely to leave the area due to anthropogenic impacts. In order to minimize impacts on especially ground-dwelling and burrowing species, during the first year of construction, related activities should be carried out gradually over the breeding period of these species (April, May and June). This would allow these species to have enough time and energy to leave the site avoiding any project-related mortality.

Species of limited mobility, such as the Testudo graeca (Spur-thighed tortoise) should be collected before the onset of construction activities and transferred to similar alternative habitats to avoid any mortality. Besides, if individuals of these species are come across during different phases of the project, they should also be transferred to alternative areas. The site personnel should be informed of these species and how they should be acting on the matter.

The presence of these species at the alternative terrestrial ecosystems outside project site was evaluated as an indication that the impact on these species due to the project would not be significant.

7.6 Traffic

The mitigation measures for the minimisation of the public safety impact of the traffic increase during the construction will be:

- Emphasizing safety aspects among project drivers; specifically ensure drivers respect speed limits through built areas and urban centres
- Adopting best transport safety practices with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public Rights-of-way, site speed limits, vehicle inspection requirements, operating rules and procedures (e.g. prohibiting operation of forklifts with forks in down position), and control of traffic patterns or direction will be established
- Speed control devices on trucks, and remote monitoring of driver actions will be considered

- Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present. Collaborating with local communities on education about traffic and pedestrian safety
- Traffic control and appropriate signs will be used to highlight warnings and to improve safety especially at intersections and junctions and to indicate any type of diversion or traffic changes related to Project activities.
- Project will adopt best transport safety practices with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public
- Traffic will be reduced routing through community areas wherever possible
- Traffic will be scheduled for daylight hours, where possible to minimize night disturbance and increase road safety
- Vehicles will be maintained in good condition to ensure they are no louder than other, similar vehicles on the roadways
- The effect of traffic load caused by the Project will be minimum to the current traffic condition.

7.7 Waste Management

7.7.1 Construction Phase

7.7.1.1 Excavation Waste

The top soil would be stored separately from the excavation materials and after the construction work is completed, it would be used in the land clearance and rehabilitation works.

The letter from the Municipality related to the dumping site is referred in the Appendix C of ESIA Report.

7.7.1.2 Domestic Solid Wastes

Domestic solid waste from the workers would be collected in closed containers located at various points of the construction site area. These solid wastes would be collected in containers and at certain intervals would be transported to the solid waste collection system belonging to the Yozgat Municipality to be disposed.

The domestic solid waste produced under the project would be disposed of according to the "Regulation for the Control of Solid Waste".

7.7.1.3 Packaging Waste

There would be packaging waste from the packaging materials used in the transport of equipment, from the packaging of the materials used and from the personnel in construction phase of the project.

The packing paper, plastic and glass bottles i.e. packaging wastes will be collected separate from other wastes without considering material used and the source of the material and should be sent to licensed recycling facilities according to the Regulation on Control of Packaging Waste.

The collection of these packaging materials within the construction site sites and their disposal would be done in compliance with the provisions of the "Regulation on Control of Packaging Waste".

7.7.1.4 Hazardous Wastes

The quantity of the hazardous wastes would be dependent of the activities in the construction site sites and it is not possible to give exact information on the amount of the waste at this stage.

According to the provisions in the Regulation on Control of Hazardous Wastes, the hazardous wastes would be stored temporarily within the construction site separate from other wastes in a closed environment, stored in durable, leak-proof, safe containers at international standards placed on a concrete area away from the buildings of the construction site preventing any chemical reaction. After that, these wastes would be sent via

licensed transportation vehicles to hazardous waste disposal companies licensed by the Ministry of Environment and Urbanization.

All the measures shall be taken for the health and safety of the employees responsible for the collection, transportation and temporary storage of the waste within the facility.

In order to prevent pollution that may occur as a result of accidental spill or by deliberate actions, depending on the type of the waste, location of the incident would be brought to its original condition by latest within a month from the time of the incident.

Moreover, when waste are spilled by accident or deliberately and in other similar cases, office of the governor shall be informed and a report detailing the accident date, accident location, type and quantity of the waste, cause of the accident, the waste disposal action and rehabilitation of the accident location shall be submitted to the office of the governor.

7.7.1.5 Waste Batteries and Accumulators

The maintenance process of the vehicles to be used in construction period of the project would be done in authorized services.

However, in cases where the maintenance process of the vehicles used in the project are carried out within the construction site area, possible waste accumulators and batteries that come out during construction activities would be stored in closed containers with a leak-proof floor according to the Regulation on Control of Waste Batteries and Accumulators.

Batteries shall be delivered to the collection points established by Yozgat Municipality or by the companies distributing or selling batteries and waste accumulators shall be delivered to the temporary storage areas established by the companies distributing or selling accumulator products and maintenance companies.

7.7.1.6 Medical Wastes

All medical wastes created in the infirmary units of the construction site during the construction period of the project shall be disposed of according to the provisions of Regulation on Control of Medical Wastes.

7.7.1.7 Waste Oil

The maintenance process of the vehicles to be used in construction period of the project would be done in authorized services. The oil collected would be given to a licensed waste oil recovery company according to the Regulation on Control of Waste Oil.

Additionally, waste vegetative oil would occur in the cafeterias of the construction site within the scope of the project. These wastes would be collected separate from other wastes and would be disposed according to the provisions given in the Regulation on Control of Waste Vegetative Oil.

7.7.1.8 Waste Tire

During construction phase of the project, the maintenance activities of the vehicles and construction machines would be done in authorized services. If there is a need to change the tires of these vehicles and machines in the construction site area, the end of life tires that come out would be sent to tire distribution companies or to the authorized transporters.

All provisions in the Regulation on the Control of End of Life Tires would be respected.

7.7.2 Operational Phase

Between 75% and 90% of the waste produced by hospitals is similar to domestic waste and usually called “non-hazardous” or “general health-care waste”. It comes mostly from the administrative, kitchen and housekeeping functions at health-care facilities and may also include packaging waste and waste generated

during maintenance of health-care buildings. The remaining 10–25% of health-care waste is regarded as "hazardous" and may pose a variety of environmental and health risks. [2]

A classification of hazardous health-care waste and examples of the wastes from different sources are detailed in Waste Management Plan (WMP) of ESIA Report which is also referred in an Appendix A of ESIA Report.

All types of wastes should be collected and disposed separately from each other in accordance with the Turkish Legislation. Therefore, a waste management system would be developed in the hospital and a waste management team would be identified. Main principles of the waste management system from creation to transportation of the wastes are listed below:

- Health-care waste would be generated in a medical area and should be segregated into different fractions in accordance with its type, based on their potential hazard and disposal route, by the person who produces each waste item;
- Separate containers should be available in each medical area for each segregated waste fraction; waste containers when filled should be labelled to help managers control waste production;
- Closed local storage would be installed and hazardous and non-hazardous wastes would not be mixed during collection, transport or storage;
- Staff would be educated to understand the risks and safety procedures for the wastes they are handling.

7.7.2.1 Medical Wastes

Medical wastes are the most important type of wastes which will be generated during the operation of the project. Medical wastes are classified into three main groups according to the Regulation for Medical Waste Control:

- Infectious waste
- Sharps
- Pathologic waste

The main strategy of waste management of medical wastes is to separate all medical wastes from other hazardous wastes (such as chemical wastes or radioactive wastes) and non-hazardous general waste. However, to provide a minimum level of safety to staff and patients, each type of medical wastes would be collected separately. The waste management methods used for each type of medical waste in operation phase of the project is detailed in the Waste Management Plan of the project.

A detailed Waste Management Plan will be prepared in the operation phase of the project, which specifies separate collection and storage, equipment and vehicles used in waste storage and transportation activities, waste types and quantities, frequency of collection, temporary storage systems, cleaning and disinfection of collecting equipment, measures and actions during accidents, responsible staff etc., according to the Regulation on Control of Medical Wastes.

7.7.2.2 Hazardous Wastes

The hazardous wastes that would possibly be generated during the operation of the hospital project are the pharmaceutical wastes (expired medicals), cytotoxic wastes, chemical wastes (laboratory reagents, film developer, expired disinfectants, solvents etc.), contaminated packages and other wastes (air filters, cartridge/toner), insulating materials etc.).

According to the provisions in the Regulation on Control of Hazardous, the hazardous wastes would be stored temporarily within the construction site separate from other wastes in a closed environment preventing any

[2] WHO, Safe Management of Wastes from Health-Care Activities, 2014

chemical reaction. After that, these wastes would be sent via licensed transportation vehicles to hazardous waste disposal companies licensed by the Ministry of Environment and Urbanization.

During the storage of hazardous wastes during operation of the hospital, following provisions indicated in Regulation on Control of Hazardous Wastes will be respected:

- The waste would be temporarily stored in durable, leak-proof, safe containers at international standards in waste storage area placed on a concrete area away from the buildings, there will be hazardous waste labels on the containers, the quantity and the stored date would be indicated on the container, if the containers are damaged, the waste would be transferred to other containers having the same specifications, containers would always be kept closed, and they would be stored so that the waste does not chemically react.
- All the measures shall be taken for the health and safety of the employees responsible for the collection, transportation and temporary storage of the waste within the facility.
- In order to prevent pollution that happens as a result of accidental spill or by deliberate actions, depending on the type of the waste, location of the incident would be brought to its original condition by latest within a month from the time of the incident and all the expenses for this shall be borne.
- Also, when waste are spilled by accident or deliberately and in other similar cases, office of the governor shall be informed and a report detailing the accident date, accident location, type and quantity of the waste, cause of the accident, the waste disposal action and rehabilitation of the accident location shall be submitted to the office of the governor.

7.7.2.3 Radioactive Waste[3]

The radioactive wastes that may be generated during the operation of the hospital project are unused liquids from radiotherapy or laboratory research, contaminated glassware, packages or absorbent paper, urine and excreta from patients treated or tested with unsealed radionuclides, sealed sources etc.

The radionuclides used in health care are in either unsealed (or open) sources or sealed sources. Unsealed sources are usually liquids that are applied directly, while sealed sources are radioactive substances contained in parts of equipment or encapsulated in unbreakable or impervious objects, such as pins, “seeds” or needles.

The radioactive health-care waste often contains radionuclides with short half-lives (i.e. half of the radionuclide content decays in hours or a few days); consequently, the waste loses its radioactivity relatively quickly. However, certain specialized therapeutic procedures use radionuclides with longer half-lives; these are usually in the form of small objects placed on or in the body and may be reused on other patients after sterilization. Waste in the form of sealed sources may have a relatively high radioactivity, but is only generated in low volumes from larger medical and research laboratories. The sealed sources are generally returned to the supplier and should not enter the waste stream.

The waste generated by health-care and research activities involving radionuclides and related equipment maintenance and storage can be classified as follows:

- Sealed sources;
- Spent radionuclide generators;
- Low-level solid waste (e.g. absorbent paper, swabs, glassware, syringes, vials);
- Residues from shipments of radioactive material and unwanted solutions of radionuclides intended for diagnostic or therapeutic use;
- Liquid immiscible with water, such as liquid scintillation counting;

[3] WHO, Safe Management of Wastes from Health-Care Activities, 2014

- Residues used in radioimmunoassay, and contaminated pump oil;
- Waste from spills and from decontamination of radioactive spills;
- Excreta from patients treated or tested with unsealed radionuclides;
- Low-level liquid waste (e.g. from washing apparatus);
- Gases and exhausts from stores and fume cupboards.

The waste management system of the hospital will include details about radioactive wastes. First step of the radioactive waste management would be minimizing volume and activity of the wastes. Hence, all possible measures would be taken to reduce radioactive waste volume and activity.

Physical, biological, chemical specifications of the wastes would be determined in order to find proper waste management steps. Radioactive wastes are classified according to radioactivity level and half-life of radioisotopes as very short life, very low level, low level, medium level and high level in accordance with the Regulation on Management of Radioactive Wastes published by Turkish Atomic Energy Authorization.

The radioactive waste would be stored in containers that prevent dispersion of radiation, and stored behind lead shielding. Waste that is to be stored during radioactive decay would be labelled with the type of radionuclide, date, period of time before full decay and details of required storage conditions.

The decay storage time for radioactive waste differs from other waste storage, because the main target will be to store the waste until the radioactivity is substantially reduced and the waste can be safely disposed of as normal waste. A minimum storage time of 10 half-life times for radioisotopes in wastes with a half-life of less than 90 days is a common practice. Infectious radioactive waste should be decontaminated before disposal. Sharp objects such as needles, Pasteur pipettes and broken glass should be placed into a sharps container. Liquids associated with solid materials, such as assay tube contents, should be decanted or removed by decay time. All radioactive labelling should be removed on any items to be disposed of.

The storage places would be equipped with sufficient shielding material, either in the walls or as movable shielding screens. The storage would be clearly marked with “RADIOACTIVE WASTE”, and the international hazard label would be placed on the door. The waste storage area would be constructed in a manner that renders it flame-proof and should have such surfaces on floors, benches and walls that allow proper decontamination. An air-extraction system and radioactive monitoring system would be put in place. According to the Regulation on Management of Radioactive Wastes, if maximum doses of critical groups in operation conditions exceed 10 µSv per year, environmental monitoring program should be implemented.

The transportation of the radioactive wastes from waste storage area to disposal site and disposal would be conducted by firms authorized by Turkish Atomic Energy Authorization. The regulation on Secure Transfer of Radioactive Materials and the Regulation on Management of Radioactive Wastes would be implemented during transportation and disposal.

7.7.2.4 Domestic Solid Waste

The domestic solid waste would be collected in closed containers located at various points inside and outside of the hospital. These solid wastes would be collected in containers and at certain intervals would be transported to the solid waste collection system owned by the Yozgat Municipality and would be disposed of.

The domestic solid waste produced under the project would be disposed of according to the "Regulation for the Control of Solid Waste".

7.7.2.5 Packaging Waste

There would be packaging waste from the packaging of the materials used and from the personnel in the hospital project.

The packing paper, plastic and glass bottles i.e. packaging wastes will be collected separate from other wastes without considering material used and the source of the material and should be sent to licensed recycling facilities according to the Regulation on Control of Packaging Waste.

The collection of these packaging materials within the construction site sites and their disposal would be done in compliance with the provisions of the "Regulation on Control of Packaging Waste".

The maintenance process of the vehicles to be used in construction period of the project would be done in authorized services. If any waste oil is produced in the construction site area, the waste oil shall be collected in a closed temporary waste storage area with leak-proof floor and covered with a shelter. The oil collected would be given to a licensed waste oil recovery company according to the Regulation on Control of Waste Oil.

7.7.2.6 Waste Vegetative Oil

The waste vegetative oil would be generated during cooking activities in the hospital. These wastes would be collected separate from other wastes and would be disposed according to the provisions given in the Regulation on Control of Waste Vegetative Oil. The vegetative waste oil shall be collected in a closed temporary waste storage area with leak-proof floor and covered with a shelter. The oil collected would be given to a licensed waste oil recovery company according to the Regulation on Control of Waste Vegetative Oil.

After the delivering of the waste oils to licensed companies, Waste Oil Declaration Form in Appendix-2 of the Regulation on Control of Waste Oil would be filled and sent to the Provincial Directorate of Environment and Urbanization until the end of February of the following year.

7.7.2.7 Waste Batteries and Accumulators

The waste batteries which come out in the hospital would be stored in closed containers with a leak-proof floor according to the Regulation on Control of Waste Batteries and Accumulators and batteries shall be delivered to the collection points established by the Yozgat Municipality or by the companies distributing or selling batteries and waste accumulators shall be delivered to the temporary storage areas established by the companies distributing or selling accumulator products and maintenance companies.

Within the scope of the project, provisions of the Regulation on Control of Waste Batteries and Accumulators and amendments of this regulation shall be complied with.

7.8 Socio – economic

Possible impacts at a social level could be due to the need of a workforce which could lead to immigration of workers, with consequences on the housing market, on infrastructures and on the employment conditions in the area. Moreover a large construction site may create work opportunities that will be satisfied with local work force. However the project will also bring benefits to the local economy, in terms of occupation and demand of goods and services partly procured locally. It is recommended that communication with local communities is as open and clear as possible; to ensure that the general public is well informed about the planned activities and those possible situations of conflict and tension are addressed promptly.

A public consultation meeting, details of which are presented in the Stakeholder Engagement Plan, was held on the 17th of September 2013. No grievances or negative concerns by the attendees were brought to the attention of the project management during the meeting.

7.9 Community Health Safety and Security

With regards to the ecological and human health risk component, impacts during the construction and operation phase have been assessed jointly. The main potential consequences on human and ecological health risks during the construction and operation phases consist in the following:

- surface water pollution;
- discharge of organic and inorganic substances in the sea.
- pollutant and dust emission in the atmosphere
- increased traffic load.

All wastewater generated by the Project during construction and operations will be collected and then treated before release.

The modelling studies performed to evaluate the impacts on the air quality resulting from various project activities are presented and discussed in the air quality section. The residual impacts and mitigation measures are also presented in Air Quality Section of ESIA Report

Referring to the air modelling study performed in air quality section the impact on the ecological health from the air emissions of the project will be negligible.

Referring to the existing traffic load and the estimated increase in traffic load the impact on the public safety will be minimum with the mitigation measures.

Mitigation

All mitigations inherent within the Project design to minimize emissions of airborne pollutants will contribute to protection of human health offsite.

The mitigation measures for the minimisation of the public safety impact of the traffic increase during construction will be:

- Emphasizing safety aspects among project drivers; specifically ensure drivers respect speed limits through built areas and urban centres
- Adopting best transport safety practices with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public Rights-of-way, site speed limits, vehicle inspection requirements, operating rules and procedures (e.g. prohibiting operation of forklifts with forks in down position), and control of traffic patterns or direction will be established
- Speed control devices on trucks, and remote monitoring of driver actions will be considered
- Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present. Collaborating with local communities on education about traffic and pedestrian safety
- Traffic control and appropriate signs will be used to highlight warnings and to improve safety especially at intersections and junctions and to indicate any type of diversion or traffic changes related to Project activities.
- Project will adopt best transport safety practices with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public
- Traffic will be reduced routing through community areas wherever possible
- Traffic will be scheduled for daylight hours, where possible to minimize night disturbance and increase road safety
- Vehicles will be maintained in good condition to ensure they are no louder than other, similar vehicles on the roadways

Risk Assessment

The Turkish Labor Law No. 4857 aims to regulate the working conditions and work-related rights and obligations of employers and employees working within the confines of an employment contract. The law stipulates the legal rights of employees. In addition, Labor Law No. 4857, OHS Law - No: 6331 (Official Gazette Number 28339, Date: 30.06.2012) stipulates health and safety conditions within workplaces in detail. In compliance with the local requirements, a site-specific Risk Assessment Report and Emergency Response Plans must be prepared and implemented.

As a minimum, risk assessment procedures should be in place to manage the hazards and the associated risks during the construction and operation of the hospital. The risk assessment procedures must refer to the

minimum requirements set in the chapter 2 of ESIA Report for the occupational health and safety of the workers.

7.9.1 Major Occupational Health and Safety Risks

7.9.1.1 Construction Phase

The assessment process has to particularly address the following major OHS hazards typical for the construction activities (IFC EHS Guidelines):

- **Over-exertion**, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, lifting and manual handling;
- **Slips and Falls** on the same elevation associated with poor housekeeping, such as excessive waste debris, loose construction materials, liquid spills, and uncontrolled use of electrical cords and ropes on the ground
- **Work in Heights**, falls from elevation associated with working with ladders, scaffolding, and partially built or demolished structures
- **Struck by Objects** related to the potential fall of materials or tools, as well as ejection of solid particles from abrasive or other types of power tools which can result in injury to the head, eyes, and extremities
- **Exposure to dust** generated by various sources (traffic, tools, machinery)
- **Confined Spaces and Excavations** such as silos, vats, hoppers, utility vaults, tanks, sewers, pipes, and access shafts. Ditches and trenches
- **Moving Machinery** - Vehicle traffic and use of lifting equipment in the movement of machinery and materials on a construction site may pose temporary hazards, such as physical contact, spills, dust, emissions, and noise;
- **Exposure to chemicals, hazardous or flammable materials, and wastes** in a combination of liquid, solid, or gaseous forms.

In addition to above mentioned typical OHS hazards, the major OHS risks of the project during construction will be induced by the hazardous characteristics of the construction works including but not limited to;

- Trenching and Excavation
- Hot Work including welding operations
- Cutting and griding
- Use of electricity
- Use of hand tools
- Working with display screen equipment

The project will ensure, through management plans and the subcontractor management that the requirements, set out in the legislation listed in chapter 2 of ESIA Report are in place during construction activities to control the construction OHS risks.

7.9.1.2 Operational Phase

The operation of a hospital will include very specific OHS hazards because of the specific characteristics of the activities performed by the hospital personnel. The major OHS risks of the operation of the hospital include, but not limited to the following:

- Chemical agents
- Biological agents

- Ergonomics
- Use of radiation devices
- Work equipment
- Fatigue
- Use of electricity
- Slips and Falls

The project will ensure, through management plans and operational procedures, that the requirements set in the legislation listed in chapter 2 of ESIA Report, are in place during operational activities to control OHS risks.

8.0 SOCIAL IMPACT

Possible impacts at a social level could be due to the need of a workforce which could lead to immigration of workers, with consequences on the housing market, on infrastructures and on the employment conditions in the area. Moreover a large construction site may create work opportunities that will be satisfied with local work force. However the project will also bring benefits to the local economy, in terms of occupation and demand of goods and services partly procured locally. It is recommended that communication with local communities is as open and clear as possible, to ensure that the general public is well informed about the planned activities and that possible situations of conflict and tension are addressed promptly.

A public consultation meeting details of which are presented in the Stakeholder Engagement Plan, was held on the 17th of September. No grievances or negative concerns by the attendees were brought to the attention of the project management during the meeting.

9.0 PROJECT ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

An Environmental and Social Management System ("ESMS") has been prepared for the 475-Bed Yozgat Training and Research Hospital Project.

The ESMS provides and suggests mitigation measures, definition of the roles and responsibilities of stakeholders and monitoring of the project operations in relation to the findings of the assessment of environmental and social impacts of the activities undertaken during the project. The following are the specific objectives for preparation of ESMS:

- To comply with International Finance Corporation ("IFC") Performance Standards and European Bank for Reconstruction and Development ("EBRD") Performance Requirements as well as the National Environmental Laws and Regulations,
- To address the negative environmental and social impacts arising from the construction activities.
- To address the hospital wastes arising from the project operations and ensure its safe disposal as regards to local and international environmental standards.

  In addition to the definition of the mitigation measures to minimize the environmental and social impacts of the project the ESMS will also include:

- Training and Employment
- Procurement of Goods and Services
- Organisational Requirements and definition of responsibilities

9.1 Grievance Mechanism for Project

The purpose of a grievance mechanism is to demonstrate responsiveness to stakeholder needs. A clear and widely publicised grievance mechanism improves stakeholder management by ensuring the grievances are

documented in writing and clearly understood. All stakeholders are encouraged to submit written grievances and should be reassured that written submissions will not be used in any way to intimidate those submitting the complaints.

Key elements of a grievance mechanism include:

- Clear instructions on how grievances are submitted and handled after submission, including a minimum period that a stakeholder must wait to receive a reply; and
- Alternatives for submitting a grievance in person to a staff member if a stakeholder is not able to or comfortable submitting a grievance in writing.

The Client is responsible for coordination of stakeholder engagement activities and the management of the grievance procedure. Client does not have the authority to resolve grievances, but rather works with a team of managers to collect accurate information about a given issue, to share it with appropriate senior management, and to communicate the resolution back to the person submitting the grievance.

The Grievance Mechanism is a management procedure through which communities and individuals affected by Client' activities can formally communicate their concerns, complaints and grievances to the company and facilitate resolutions that are mutually acceptable by the parties, within a reasonable timeframe. The grievance mechanism is a management tool designed to help address stakeholder concerns and facilitate a trustworthy and constructive relationship.

A Grievance Mechanism is followed up by Client to manage the community concerns through active and transparent engagement with stakeholders. As part of this mechanism, a direct line (+90 3124413141/1300) was set up and a Complaint Register Form ("CRF") (an example register form is presented SEP document)) will be prepared for the complaints.

Throughout the project life, Client will maintain communication channels with relevant stakeholders as identified. Any additional stakeholders identified during the life of the Project will also be added to the stakeholder list and communication with them will be initiated. In case of significant changes or updates regarding the project, environmental and social issues will continue to be addressed and reported to the stakeholders.

The Stakeholder Engagement Plan will be updated periodically and upon major project changes. Updates will provide brief summaries of issues, concerns and questions raised during the previous year, as well as information on any changes between planned activities and the activities and events actually held.

Results of grievances will be summarised on an annual basis to demonstrate the types of issues managed in the process, as well as the number of grievances received, closed and number remaining open. Results will also include the number of grievances that were not solved through internal procedures and that may have included third party or legal resolution.

9.2 Health and Safety (HS) Management Plan

The HS Plan defines the minimum requirements for executing the works in line with all applicable occupational Health and Safety requirements during the Site construction and operation activities.

The overall objectives in implementing the HS Management System are to:

- Require personal responsibility and accountability for HS management.
- Incorporate the relevant HS regulations and good industry practices into work processes for office, engineering, and project/site (field) activities.
- Provide effective training, efficient communication, and continuous performance review within the HS Management System.
- Establish and monitor HS performance targets for all workplaces, by the using appropriate tools such as audits, inspections, risk assessment, Job Hazard Analyses (JHAs).

The minimum topics that HS Plan must include, but not limited to, given in the below sections;

- **HS Organization;** Described Environmental, Health, Safety and Social responsibilities.
- **HS Monitoring;** Including details of self-monitoring and subcontractor monitoring activities.
- **Communications;** Including detail of communication protocols of HSE Instructions with the employees.
- **Hazard and Risk Identification;** Detailed in Section 10.1 of ESIA Report
- **HS Work Procedures**; Produced Health and Safety Procedures for each task to address as a minimum the hazards identified for the works to be performed and the risks associated with each of task.
- **Employee Well-fare;** Welfare, health and safety aspects related to the accommodation of workers in the accommodation camps.
- **Training;** Identification of the training requirements and minimum training needs including initial orientation training.
- **Audits and Inspections;** Including identification of the planned audit and inspection methodology.
- **Contractor Selection;** Identification of the Project contractors' selection requirements including the HSE performance criteria.
- **Accident and Incident Management;** Identification of the accident and incident reporting methodology.
- **Emergency Response;** Described emergency response preparedness requirements.

Health and Safety Procedures should be produced for each HS critical task to address as a minimum the hazards identified for the works to be performed. The risks associated with each of task should be addressed through the means of a work procedure.

A minimum list of HS procedure and work instruction to be prepared and related regulation is provided in Section 10.4.1 of ESIA Report.

The assessment process has to particularly address the following major Environmental hazards typical for the construction activities (IFC EHS Guidelines):

9.3 Workers Accommodation and Transportation

The main principles to be followed for the provision of accommodation for the workforce will be:

- The workers temporary accommodation during construction will be clean, safe and, at a minimum, meet the basic needs of workers.
- The provision of accommodation shall meet the requirements of Turkish traffic labour, social security and occupational health and safety laws and good international industry practice[4].
- With the provision of accommodation; workers' freedom of movement to and from the accommodation shall not be unreasonably restricted.
- There will be adequate amounts of space for each worker;
- There will be provision of sanitary, laundry and cooking facilities and potable water;
- The location of accommodation in relation to the workplace will not pose any health, fire safety or other hazards or disturbances to the workforce and to the local facilities;

[4] IFC/EBRD | Guidance on Workers' Accommodation , 2009

- There will be first aid and medical facilities; and heating and ventilation in the accommodation facilities arranged for the workforce.
- The grievance mechanism for the workers will allow reporting any complaints regarding the accommodation to the project management
- A minimum degree of privacy both between individual persons within the accommodation
- Employer will arrange the transportation between the projects are and the provided accommodation
- Employer will ensure that the transportation means provided for the workforce will not pose any health and safety risk to the employers and the means will be in compliance with the Turkish labour, social security and occupational health and safety laws

9.4 Human Resources Policies

The minimum requirements of the human resources policies that will be developed and implemented by relevant parties during the execution of the project are:

- Employment (including employment of minors) in compliance with Turkish labour, social security and occupational health and safety laws
- The human resources policies and procedures and all relevant documentation developed and produced by the employers will be understandable to workers, and in the main language- Turkish spoken by the workforce. The employers will use appropriate means for communication to make sure that this information is accessible by the workforce
- The employers will document and communicate to all workers their rights under national labour and employment law and any applicable collective agreements,
- Human resources management systems developed by the employers will respect the rights of workers to privacy and data protection.
- Human resources management systems developed by the employers will comply with relevant requirements on non-discrimination related to employment.

10.0 SUMMARY OF CUMULATIVE IMPACTS

Cumulative impact assessment (“CIA”) is limited to residual effects (post mitigation) resulting from past, present or reasonably foreseeable human activities or actions which occur within the area where a linkage between the residual effects resulting from the activities related to the Project and the residual effects of other actions occurs.

The impact assessment methodology take the residual impacts from the past and present activities as these impacts will be directly contributing to the existing baseline conditions.

The foreseeable impacts will be from the future project activities.

State Hydraulic Works (DSİ) has started to construct a water storage tank in a 100 m^2 area approximately with 20 m x 30 m dimensions whose distance is 200 m from the Project site.

No overlaps between the constructions schedules of the storage tank project and Yozgat Training and Research Hospital Project are expected. Therefore there will no major cumulative effects to be expected during construction.

11.0 CONCLUSION

The ESIA studies have provided valuable data and information, useful to assess the sensitivity of each component and the impact of the Project.

Physical and biological components potentially impacted by the Project have been analysed through a semi-quantitative impact assessment method; social components have been analysed through a qualitative impact assessment method.

Some potential impacts identified before the mitigation can be significantly reduced applying appropriate measures described in the document and synthetized in the commitment register. After mitigations all of the residual potential impacts are negligible or low.

With reference to physical components, no major concerns have been identified. With reference to soil, a characterization is necessary before the start of the levelling activities; with reference to air quality, the contribution due to the traffic increase is limited.

With regards to the biological component, no critical species and critical habitats are present in the study area. Fauna and flora species that are found in the area are already impacted by anthropogenic factors.

Possible impacts at a social level could be due to the need of a workforce which could lead to immigration of workers, with consequences on the housing market, on infrastructures and on the employment conditions in the area. Moreover a large construction site may create work opportunities that will be satisfied with local work force.

There will be need for the accommodation for the workforce where the local and international legal requirements and industry best practices will be taken into consideration for the provision of the accommodation facilities to the workforce.

The project will also bring benefits to the local economy, in terms of occupation and demand of goods and services partly procured locally. It is recommended that communication with local communities is as open and clear as possible; to ensure that the general public is well informed about the planned activities and that possible situations of conflict and tension are addressed promptly.

Public participation meeting was held at venue that belongs to the Yozgat Municipality on 17.09.2013. This place was easily accessible by the local people and communities. Announcements were made for the meeting in the areas, which were most likely to be affected by the Project and public notices with agenda, date, and time of the meeting was announced.

The number of the participation to the meeting was sufficient (26 people; 5 representatives from local media, 2 from local municipality, 15 from local public, 2 from project employees and 2 from ESIA consultants). In general, local stakeholders are aware of public benefit of the project and significant contribution to national economy.

Due to the type of facility, the Project will have consequences on the visual aesthetic component which cannot be easily mitigated; however the general context already present reduced overall impact.

Report Signature Page

GOLDER ASSOCIATES (TURKEY) LTD. ŞTI



Caner Şahin	Sibel Gulen
Environmental Engineer	Project Manager

CS/SG

Registered in Turkey Registration No. 53/3069

Vat No. 396 056 79 79
Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation.

\\ank1-s-main02\projects\2013\rönesans_2013\13513130036_rönesans_yozgat_esia\06_reports\06_02_draft_reports\final_draft\22012015_mete_mail\golder_13513130036_yozgat_nts_final_draft-20141208_v04.docx

As a global, employee-owned organisation with over 50 years of experience, Golder Associates is driven by our purpose to engineer earth's development while preserving earth's integrity. We deliver solutions that help our clients achieve their sustainable development goals by providing a wide range of independent consulting, design and construction services in our specialist areas of earth, environment and energy.

For more information, visit golder.com

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

solutions@golder.com
www.golder.com

Golder Associates (Turkey) Ltd. ŞTI
Hollanda Cad. 691. Sok. Vadi Sitesi No:4
Yıldız 06550 Ankara
Turkey
T: +90 312 4410031

Golder Associates