



Hashemite Kingdom of Jordan



MINISTRY OF  
WATER AND IRRIGATION



## Ministry of Water and Irrigation/ Water Authority of Jordan

### West Irbid Wastewater Treatment Plant

### Non-Technical Summary

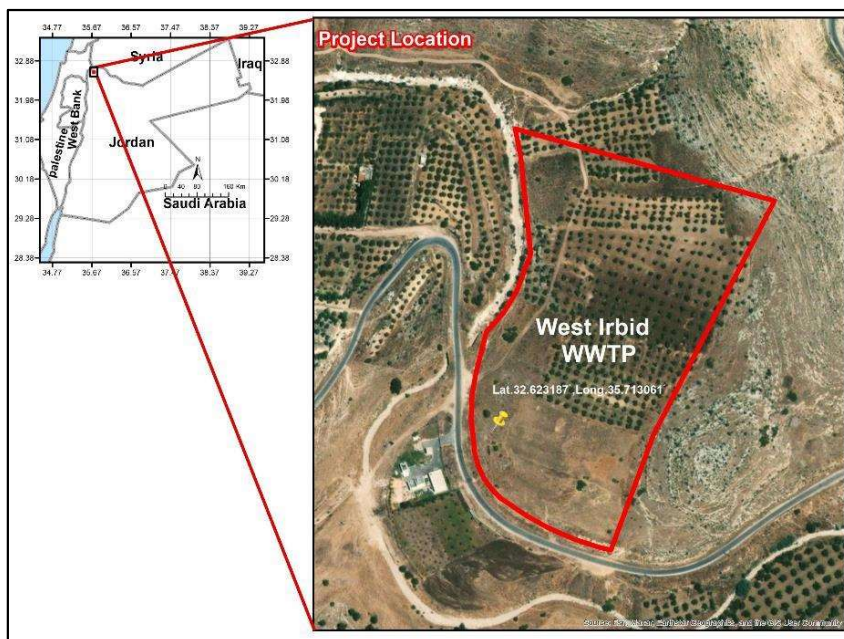
V3.0 | January 2024



## West Irbid Wastewater Treatment Plant Project

### Introduction

The European Bank for Reconstruction and Development (EBRD) is supporting the implementation of a wastewater project in Jordan to improve sanitation in 15 towns in the West Irbid region, through the installation of a wastewater collection network that will replace the current use of septic tanks. As part of the project, a new wastewater treatment plant (West Irbid WWTP) is planned to serve 190,000 capita in 17 towns. The WWTP will be constructed in Khalid Bin Al-Waleed Municipality at Malkah town as shown in the figure.



This new plant would have the capacity to handle all the collected wastewater from the West Irbid wastewater project, eliminating the need to transport it to the existing Wadi Al-Arab WWTP. The total capacity of the WWTP would be 12,000 cubic meter/day. The project also involves building two sewage siphon pipelines (4.7km) and an injection station for the treated wastewater.

EBRD has categorised the project as 'B'. This categorisation requires an Environmental and Social Assessment to ensure that the project complies with local and national regulations and meets EBRD's environmental and social standards. The findings of this assessment are presented in this Non-Technical Summary (NTS). A more comprehensive Environmental and Social Impact Assessment (ESIA) will be also conducted as part of the national environmental approval process.

Various entities are involved in planning and implementing the project, each with specific roles. These include the Water Authority of Jordan (WAJ)/Ministry of Water and Irrigation (Client and owner of the Project), Yarmouk Water Company (YWC) (responsible for project operation and maintenance), EBRD (providing financing), Ministry of Environment (MoEnv) (responsible for environmental approval), and Engicon (the project's designer and environmental and social practitioner).

### Project Description

#### **Siphons**

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OFFICIAL USE

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Two main siphons are planned to carry water from the West Irbid project areas to the West Irbid WWTP. Siphon 1 is about 3.3 km and Siphon 2 approximately 1.4 km reaching the WWTP at the main road, with flows of 300 and 84 liters per second, respectively. To keep the siphons clean, there will be a washout valve at the lowest point connecting the two siphons to each other and automated check valves to control the flow. This way, they can be flushed out when needed to ensure smooth operation.

### West Irbid WWTP

**Location and Capacity:** West Irbid WWTP will be located in Irbid Governorate, about 83 km north of Amman. It is designed to serve approximately 190,000 people living in 17 towns and designed to treat up to 12,000 cubic meters of wastewater daily.

### Treatment Process and Components:

The WWTP will consist of two wastewater identical treatment trains with adequate valves and mechanisms to isolate any treatment train if required and to allow for phased operation. The main components of the wastewater treatment plant are as follows:

- Stone Traps
- Headworks Building that includes:
  - Coarse and fine screens
  - Screening compactor
  - Vortex grit removal chamber
  - Grit classifying and washing compact unit
  - Equalization tanks
- Primary settling tanks
- Main treatment (consisting of an activated sludge process)
- Biological reactor
- Secondary settling tanks
- Tertiary Treatment which includes a chlorine disinfection system
- Onsite irrigation system

Sludge treatment will include, but is not limited to, the following:

- Sludge thickeners
- Sludge holding tanks
- Anaerobic sludge digesters
- Biogas Treatment and Microturbine Combined Heat and Power System (Optional item):
- Screw Press
- Greenhouse Solar Sludge Drying Beds

To prevent unpleasant odors and harmful gases from escaping, all the buildings and structures at the WWTP will have an odour control system that sucks in the air and treats it.

The WWTP must consistently produce effluent water that meets (1) JS (893/2021) for the first three categories and (2) EU Council Directive 91/271/EEC concerning Urban Wastewater Treatment

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Treated wastewater from the WWTP will be injected into an existing pipeline for agricultural use in Al-Aghwar. The WWTP has a wet well and three pumps, in addition to concrete re-sure pond with a minimum of 50 readily available connections for the surrounding farmers to connect to and pump water, with the farmers' own pumps to use the treated water to irrigate the surrounding lands.

### **Project Alternatives**

The project considered two design alternatives to improve wastewater management in West Irbid:

**The original scope:** The original scope required constructing nine pumping stations and expanding the existing Wadi Al Arab WWTP to connect the unserved areas and accommodate the additional flows.

**Design Alternative 1:** This option proposed replacing several pump stations and their associated pipelines with two new WWTPs while retaining one of the nine pumping station. This change was expected to reduce overall construction and operation costs for the pumping stations and would decrease the volume of wastewater sent to the existing Wadi Al-Arab WWTP by 12,165 cubic meters per day, eliminating the need for its future expansion, which would cost more than building the two WWTPs.

**Design Alternative 2:** This alternative proposes constructing a single treatment plant in Malka town with a capacity of 12,000 cubic meters per day (with room for future expansion). All collected wastewater would be directed to this new WWTP, eliminating the need to transport wastewater generated from West Irbid Project to the existing Wadi Al-Arab WWTP, which would no longer need expansion. No pumping stations would be required under this alternative.

The selected alternative for the project is **Design Alternative 2** for the following reasons: (1) Its capital cost is the lowest, (2) Wadi Al Arab expansion is not viable due to its longitudinal layout and there is limited space for expansion. In comparison, the new WWTP locations (Design Alternatives 1 and 2) are better in terms of expandability and (3) Design Alternative 2 WWTP is sited in a good location that is accessible and can receive WW solely by gravity, eliminating the need for pumping stations while the Design Alternative 1 WWTPs will need to construct a new access road and two pumping stations.

### **Alternative Locations:**

Following the selection of Design Alternative 2, two potential sites were considered for the WWTP. The comparison between these two sites is summarized in the table below, with Site 1 chosen as the preferred location.

Item	Site 1	Site 2
Location	Malka Town	Saidour Town
Length of Siphon	1,370 m	4,060 m
Residential Areas	About 2.5 km from the nearest village. One small house exists beside the selected location with no residents.	About 1.5 km away from the nearest village
Water Resources	About 40 m to nearest water well at the opposite side of the main road	About 150 m to the nearest water well
Reuse of the Treated Water	Can be connected to the new reuse pipeline of Wadi Al Arab WWTP	Can be connected to the new reuse pipeline of Wadi Al Arab WWTP



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Item	Site 1	Site 2
Easiness for Operation and Maintenance	Easier for operation and maintenance due to site accessibility	More difficult for operation and maintenance due to site remoteness
Land Acquisition	Land needs to be acquired for the WWTP construction	Land needs to be acquired for some parts of the access road and WWTP.
Land Use of the Surrounding Areas	Planted and bare lands	Mostly planted areas

**No Project Alternative**

The No-project Alternative (no WWTP) requires adding two wastewater pumping station to connect the new sewer networks with the existing Wadi Al-Arab WWTP and the expansion of Wadi Al-Arab WWTP. This alternative has already been assessed and was not found to be feasible or desirable due to various technical and financial reasons.

**Administrative and Legal Framework**

The entities that will be involved during construction and/or operation of the Project were identified along with their relevant mandate. These include the Ministry of Water and Irrigation / WAJ, YWC, MoEnv, Ministry of Agriculture, Ministry of Tourism and Antiquities / Department of Antiquities (DoA), Ministry of Public Works and Housing, Ministry of Planning and International Cooperation, Ministry of Labor, Public Security Directorate and Khaled Bin Alwaleed and West Irbid Municipalities.

The national legal framework for the project includes various laws, regulations and standards that the project shall abide by. The most relevant of those include the Environmental Protection Law No. 6 of 2017, Water Authority Law No. 18 of 1988, Agricultural Law No. 13 of 2015, Antiquities Law No. 23 of 2004, Public Health Law No. 47 of 2008, Labor Law No. 8 of 1996, Social Security Law No. 1 of 2014, Prevention of Human Trafficking Law No.9 of 2009, Traffic Law No. 49 of 2008, Protection of Cultural Heritage and Sites Law No. 5 of 2005, Real Estate Ownership Law No. 13 of 2019,, Solid Waste Management Framework Law No. 16 for 2020. The following regulations, instructions and standards are also applicable:

- Environmental Classification and Licensing Regulations No. 69 for 2020
- Regulation on Protecting the Environment from Pollution in Emergency Situations No. 26 of 2005
- Air Protection Regulation No. 28 of 2005
- Soil Protection Regulation No. 25 of 2005
- Groundwater Control Regulation No. 85 of 2002
- Non-Hazardous Solid Waste Management Regulation No. 44 of 2022
- Hazardous Waste and materials Management Regulation No. 68 of 2020
- Regulation for Obligatory Employment of Jordanian Workforce from Surrounding Communities in Development Projects No. 131 of 2016
- Ministry of Labour Instructions on Safety Measures to Prevent the Spread of Coronavirus at construction sites (07/04/2020)
- Instruction for Site Selection of Development Projects of 2018
- Water - Reclaimed Domestic Wastewater (JS 893/ 2021)
- Sludge - Uses of biosolid and disposal (JS 1145/2016)

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- Ambient Air Quality Standards (JS 1140/2006)
- MoEnv Noise Instructions of 2003

In addition to national legislation, the Project will abide by the Environmental and Social Policy of the European Bank of Reconstruction and Development (EBRD), which is financing the project, in addition to the International Labour Organisation (ILO) core labour standards, international conventions and agreements signed by Jordan and the following EU directives:

- Urban Wastewater Treatment Directive (91/271/EEC and its amendment 98/15/EEC)
- Water Framework Directive (2000/60/EC – as amended)
- Directive on the protection of groundwater against pollution and deterioration (2006/118/EC)
- EU Ambient Air Quality Directive (2008/50/EC – as amended)
- EU Noise Directive (2002/49/EC)
- EU Directive on the protection of the environment, and in particular of the environment and in particular of the soil when sewage sludge used in agriculture (86/278/EEC)

### **Public Consultation and Engagements:**

As part of the national environmental approval process and EBRD requirements, a public consultation was held on October 3, 2023. It aimed to engage various stakeholders, including ministries, NGOs, the local community, and affected landowners. The meeting took place at the Al-Wasateyeh Municipality and online via MS Teams. It lasted over 2 hours and involved 50 participants from 28 agencies. The session allowed for comprehensive discussions about the project, with presentations by the Engicon Technical Team on project details and the ESIA Team on the findings of the assessment. The main concern raised during the session was that some local community members asked about the reasons for selecting the site of the WWTP and a few requested changing it. The Consultant explained the technical, financial and environmental assessment that was undertaken to select the site.

A Stakeholder Engagement Plan (SEP) has been developed for the project outlining the necessary activities that will be conducted throughout the Project's design, pre-construction, construction and operation phases. The plan also included a Grievance Mechanism (GM) for the project. At the end of the ESIA Phase, the ESIA, SEP and GM will be disclosed and made available to the public.

### **Environmental and Social Baseline Conditions**

**Location and Topography:** The project area's elevation is around 144 meters above sea level. The WWTP location is about 2.5 kilometers away from the nearest residential area within Khalid bin Al-Waleed Municipality.

**Geology and Soils:** The study area lies within the Wadi Al-Arab watershed catchment, covering approximately 263.5 square kilometers. Wadi Al-Arab is part of the Ajloun plateau, shaped over geological time. The formations here dip northwestward, exposing older rocks in the southeast and younger ones in the northwest. The primary geological units in the project area (1) Amman Silicified Limestone/Al Hisa Phosphorite, (2) Muwaqqar Chalk Marl, and (3) Umm Rijam Chert Limestone. These formations characterized by calcareous depositions as limestone, dolomite, marl, and chalk of the Upper Cretaceous and the Tertiary interrupted by chert facies and siliclastics. The soil at the site is known as Xerochrept,

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moderately developed soils, mostly red, with clay-rich B-horizon, often rich in primary or secondary calcium carbonate.

**Water Resources:** The aquifer systems in the Project region are Yarmouk and Jordan Side Valley Basins. The vulnerability of groundwater in these basins is considered to be low to very low. In addition, the Project area lies within Jordan Valley surface water basin and North Jordan Valley Side Wadis Basin

**Climate and Metrology:** In Irbid Governorate, the mean daily maximum temperature reaches 32°C during July and August, while the mean daily minimum temperature is 5°C during January and February. The prevailing wind in the area predominantly originates from the west-southwest, i.e. from West Irbid WWTP away from the served communities.

**Air Quality and Noise Level:** The monitoring results from the 2020 ESIA undertaken for wastewater network at the site of the WWTP, which was initially a location proposed for a pump station, show that air quality and noise levels were well below the limits set out in the Jordanian standards for ambient air quality and MoEnv Instructions for Noise Prevention. These results are expected as no source of air emissions and noise pollution were observed in the area.

**Vegetation:** The WWTP site is comprised of barren areas and heavily cultivated lands, such that natural vegetation cover is sparse. The wider area is subject to continuous encroachment for the uses of agriculture, urbanization, and grazing. However, the siphons that will be implemented are located within areas where deciduous oak trees are present. However, the syphon route would avoid all trees. deciduous oak forests but no trees are in locations where they would need to be cut for the project.

**Flora and Avifauna:** The project area is situated within Irano-Turanian region, where this region does not have its own entity since it does not possess specific fauna as other zones in Jordan. None of the species is restricted to this region, and all the species found in the site originally came from the surrounding zones. During a survey undertaken in the 2020 ESIA study, 20 soaring birds were observed in the Project Area while a further 19 soaring bird species were thought to occur in this area. Most of these species have no conservation status. As for the siphons, they are situated within natural wadies characterized by a natural habitat. An ecological survey will be conducted as part of the ESIA study to properly assess this habitat.

**Sensitive Areas:** The closest protected area to the project site is the Yarmouk Forest Reserve, which is about 2.2 km away. The site is located within Wadi Yarmouk Important Bird Area (IBA).

**Priority Biodiversity Features:** Threatened habitats were not identified within the project area and its surroundings. Some fauna and flora species reported from the site have conservation status according to IUCN Red List. In addition to the assessment done in 2020 for the WWTP area, a biodiversity assessment of the area where the siphons are located will be undertaken during the ESIA.

**Critical Habitats:** The project area does not include or is close to areas classified as threatened habitats or unique ecosystems. No endemic or geographically restricted species were recorded in the project area. While the project area is within an IBA, the location itself does not have any significant habitat that is important for birds. No areas associated with key evolutionary processes were identified. Nevertheless, a biodiversity assessment of the siphons site will be undertaken during the ESIA.

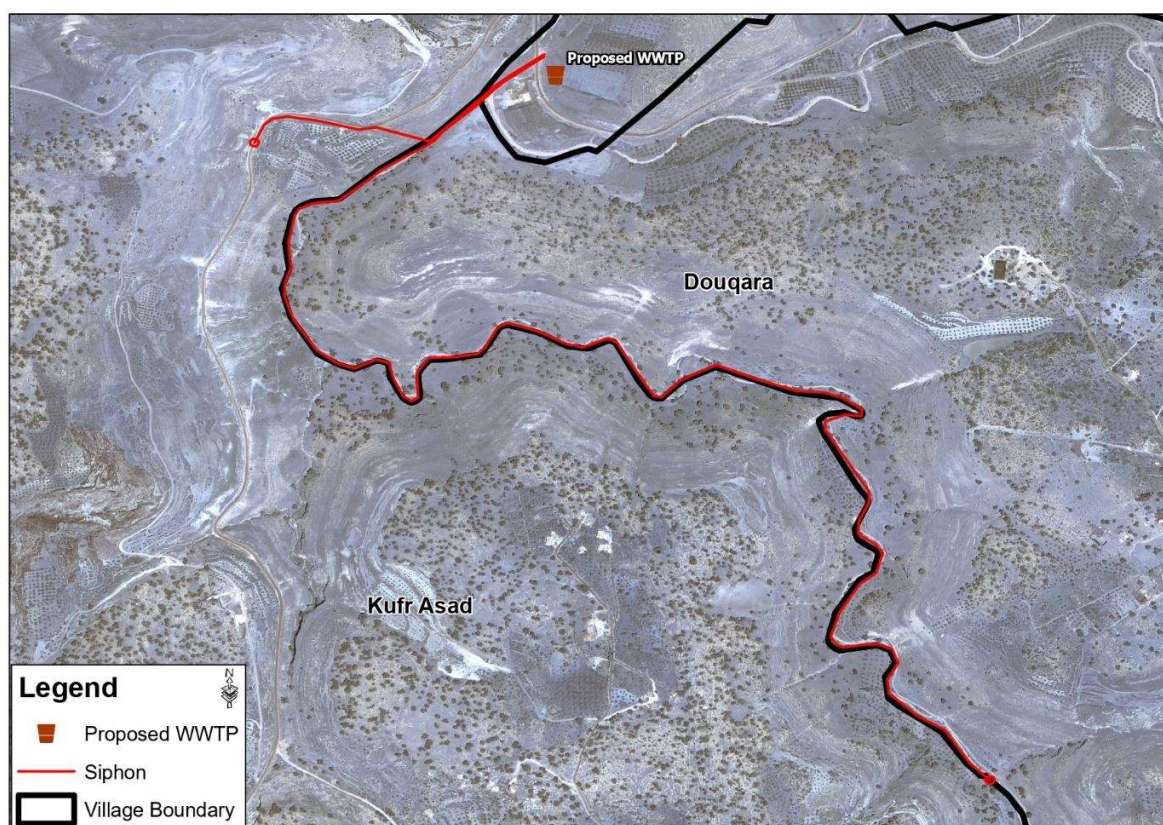
**Land Use:** The WWTP will be located on 3 plots of privately owned lands. The first land (Plot No.32) is barren. The second (Plot No. 33) is planted with onions and olive trees and a newly constructed 2-floor



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house that is currently empty and not connected to any infrastructure services. The third (Plot No. 10) has a total area of around 190 donum. Only part of this land will be acquired, and it is cultivated with olive trees. Across the road from the proposed WWTP site, there is cultivated land (lemon and grapes) and a groundwater well operated by WAJ. The distance between the site and the cultivated land and well is less than 50 m. In addition, a nearby plot is cultivated and has two inhabited houses.

Siphon 1 will be installed in the wadi near the project area. Siphon 2 will be installed in the street and will pass through two land plots already owned by WAJ. The figure below shows the location of the treatment plant and siphons.



**Demographic Conditions:** In 2021, the population of Malkah town, situated near the proposed WWTP site, was 11,706 inhabitants, comprising 5,762 females and 5,944 males residing in 2,437 households.

**Labour and Employment:** In 2018, the unemployment rate in Irbid Governorate for females was 22.2%, while for males, it stood at 13.8%. The overall unemployment rate for the governorate was 15.8%, ranking as the third highest percentage in Jordan. The majority of employed females (41%) are employed in education.

**Water Supply:** Most of the households served by the Project are connected to the piped supply and households use their own storage tanks.

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**Wastewater Management:** The current disposal practice in the towns is primarily based on a system of cesspits or septic tanks that generally serve each property and are usually located within the vicinity of the residences. The tankers dispose of wastewater in North Shouneh WWTP.

**Transportation:** The new WWTP is served by a paved road.

**Cultural Resources:** The project area does not overlap with any of the heritage sites.

**Environmental and Social Impacts and Mitigation****During Construction**

Several impacts on the **Physical Environment** may occur during construction should appropriate mitigation not be implemented.. Impacts that have been assessed as having Moderate to High significance (i.e. require that mitigation measures be implemented in order to eliminate or minimize them) include disturbance of the soil quality and morphology , water (surface and ground) quality degradation, solid waste and wastewater generation and improper disposal, air, odor and noise emissions from generators, machinery, trucks or open burning activities, dust generation from construction and excavation activities and energy consumption from generators and construction vehicles. In addition to adopting best practice mitigation measures, the WWTP Contractor is required to develop and abide by the following throughout the construction period:

- Pollution Prevention Plan
- Waste Management Plan
- Spill Prevention and Management Plan
- Dust Suppression Measures

**Soil compaction and natural drainage** blockage may occur due to construction activities such as the movement of vehicles and workers on the site, and soil erosion, as a result of topsoil layer removal. This can be mitigated by properly scheduling construction activities.

**Water contamination** is a significant concern in the project area. Improper solid waste disposal, inappropriate wastewater discharge, and potential oil or chemical spills could lead to surface water pollution. The project's location in the Jordan Valley makes such pollution possible. The risk of groundwater contamination is considered relatively low due to the protective nature of the aquifer system. This risk can be mitigated by implementing the Waste Management Plan and Spill Prevention and Management Plan.

Construction activities will result in solid waste and wastewater. **Solid waste** includes wood piles, sand, dirt, debris, cement, empty bags, and domestic waste from workers. Improper handling and disposal of this waste could lead to soil and water contamination. Construction activities such as machinery washing, concrete mixing, vehicle maintenance, site excavation, and stormwater runoff could generate wastewater contaminated with oil, grease, and suspended solids, posing a risk of pollution to nearby water bodies and soils if not managed correctly. Preparing a Waste Management Plan, hiring a private contractor for collection of generated wastewater from the site, prohibiting illegal disposal of wastewater and constructing impermeable septic tanks will minimize the significance of this impact.

During the construction phase, there will be **emissions and gases** produced that could affect local air quality. These emissions include exhaust gases from machinery, vehicles, and generators, containing

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various substances. Dust emissions from excavation and heavy machinery movement may also impact air quality. Additionally, there is a risk of odour emissions due to improper waste disposal and wastewater discharge. Implementing the dust suppression measures, Pollution Prevention Plan, and Waste Management Plan will reduce the significance of this impact.

Excavators, generators, concrete mixers, and various machinery and vehicles will produce **noise** during construction. Wildlife in the area, including animals and birds, may be disturbed by increased noise levels, impacting their foraging and breeding patterns. Furthermore, construction workers are at risk of hearing impairment and other health issues due to prolonged exposure to high noise levels. Scheduling noisy operations at the same time and high noise activities are some of the mitigation measures of this impact in addition of providing the workers with ear plugs.

Overconsumption of **water and energy resources** are also likely risks that require the conservation of resources through adopting best practice and raising awareness among staff.

In terms of the **Biological Environment**, clearance of vegetation cover and disturbance of wildlife (especially within the siphon area) are the main expected impacts. Adopting best practice to minimize vegetation removal, prohibiting introduction of non-native vegetation and rehabilitating all project areas to their original condition are required measures.

Positive impacts on the **Socioeconomic Environment** include creation of job opportunities and economic benefits to the local community. Enhancing these impacts requires developing and abiding by the following:

- Labour and Employment Plan
- Transparent recruitment procedure
- Local hiring and skills development strategy

Negative impacts include a short-term increase in the amount of traffic within the project area. Due to the **potential influx of workers** from outside the area, culturally insensitive behavior by workers within residential areas may create conflict with the local community. The contractor shall therefore draft a Code of Conduct for workers and ensure that they abide by it. In addition, a grievance redress mechanism will be developed that will respond to culturally insensitive behaviors and incidents as a matter of priority.

Construction of the WWTP will change the **land use** of the area since activities will take place on privately owned lands and some of these lands are cultivated. Economic impact on landowners from land acquisition will be addressed through a Livelihood Restoration Plan that defines the compensation mechanism for land acquisition and compensation for economic displacement in line with national regulations and EBRD standards.

No excavation or construction activities are anticipated within any **archaeological sites** or sites of cultural heritage importance. However, unknown artifacts of archaeological value may be uncovered during excavation activities. A procedure for these chance finds, in line with national legislation, shall be developed and implemented if such finds are made.

Several **public health and safety** risks may affect the local community. These include high levels of dust and noise from construction activities, which can lead to nuisance and health issues for residents that are in close proximity to the construction sites. In the area where the siphons will be installed along existing



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roads, activities associated with the installations might lead to road closure or narrowing the original width of the road, causing congestions and potential traffic accidents. A Site Security Management Plan and Traffic Management Plan will be prepared by the contractor for protection of public health and

For **occupational health and safety**, workers face potential accidents and injuries during activities like excavation and site preparation, resulting in transportation accidents, falls, electric shocks, and machinery mishandling. Noise exposure may harm workers' hearing, while dust generation can cause respiratory problems if proper protective equipment is not used. Natural environmental challenges like extreme weather conditions and snake bites may also impact worker health. Additionally, there is a risk of disease transmission among workers on-site or at worker camps. A Health and Safety Plan will be prepared to minimize risks for workers. This will include a requirement that workers wear personal protective equipment and a first aid kit should be available on site.

### During Operation

Operation of the WWTP will reduce demand on **water resources** in irrigation by providing treated domestic wastewater in line with national and EU standards, in addition the water table of groundwater is found at depths of 50-150, which is very deep and the aquifer system in the area is considered as protective nature. therefore, any leakage from the facility or raw wastewater leakage that may occur due to a failure of any WWTP components will not affect the groundwater quality. However, the hauling of the sludge to Al-Ekaider landfill, which is not engineered, may pose a risk to groundwater quality.

Potential negative impacts on the **Physical Environment**, the WWTP may be a source of offensive **odours** from the emission of ammonia ( $\text{NH}_3$ ) and hydrogen sulphide ( $\text{H}_2\text{S}$ ), which will mostly impact Project workers, workers at surrounding facilities, and nearby community. Due to the plant's distance from residential areas, nuisance to the public is not expected to be significant. Nevertheless, the operator shall install an odour control system and monitoring scheme within WWTP and give special consideration for complaints related to odors. In general, the project will lead to savings in **GHG emissions**, when compared against current wastewater practices including septic tanks.

The project will slightly contribute to the depletion of non-renewable energy resources such as fuels used for power generation. Mitigation measures include regular maintenance of generators and pumps within the WWTP, using eco-friendly light bulbs in the offices and training the workers on energy consumption reduction practices. However, the WWTP will include a Combined Heat and Power (CHP) system as an optional component to generate energy through sludge digestion.

In terms of the **Biological Environment**, the site will have open wastewater tanks that may attract some faunal species such as mammals and birds. Pathogens and pollutants may also negatively affect mammals and birds. Therefore, the site shall be fenced to prevent waterfowls and/or mammals from landing on wastewater tanks.

In terms of impacts on the **Socioeconomic Environment**, the WWTP will create permanent jobs that will benefit the local community. On the other hand, the operation of the WWTP may lead to a reduction in the value of the surrounding lands. The local community and nearby farmers may be exposed to odor and air emissions. Additionally, workers may encounter unsafe conditions during the operation and maintenance of the WWTP and siphons. Therefore, the operator shall fence the WWTP and plant trees to screen the site, install gas emission monitoring systems and prepare and abide by an Emergency Readiness

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and Response Plan and an Occupational Health and Safety Plan that includes providing all workers with appropriate personal protective equipment.

### **Environmental and Social Management Plan**

Mitigation measures required to be implemented by the project Contractor and Operator in order to eliminate or minimize potential environmental and social impacts associated with the construction and operation of the Project are included in a framework Environmental and Social Management Plan (ESMP). During construction, the contractor will have to prepare a Construction-ESMP (C-ESMP) based on the framework ESMP. The C-ESMP will include several plans and procedures that need to be developed by the Contractor for that purpose and tailored to the work site. The ESMP framework for the construction phase shall be included in the contractor's tender documents to ensure that all requirements have been taken into consideration by them and will be developed and implemented during the construction phase. Similarly, during the operation phase, the operator shall develop an Operation ESMP (O-ESMP) for implementation. In addition to the ESMP, an Environmental and Social Monitoring Program has been developed to ensure that anticipated environmental and social impacts have indeed been reduced to acceptable levels during Project implementation.

In order to manage climate risks on the WWTP and siphons, the Project has incorporated various measures addressing flooding risks, such as design criteria for the stormwater system, and extreme heatwave risks, such as providing air-conditioned areas for workers and other occupational health and safety measures.

### **Community Grievance Mechanism**

Stakeholders may register grievances related to the project verbally or in writing by using WAI's form or by contacting the Contractor's Environmental, Social, Health and Safety (ESHS) Officer, Supervision Consultant's Social Expert, Resident Engineer or Female Liaison Officer or the, or by reporting to their village/town representative or tribal family head/elder.

Contact details for the Supervision Consultant's Social Expert, Resident Engineer, Female Liaison Officer (if needed), Contractor's ESHS Officer and YWC Designated Staff Member will be included in appropriate Project communication materials and disclosed in locations accessible to the local community.

People can also register grievances during construction phase using:

- Ministry of Water and Irrigation Complaints Center: 117116
- WhatsApp application: 0791500696
- Customer services office and over the phone to service centers.
- Complaints received through the governmental platform "Bekhedmetkom" (At your service).
- Complaints received via e-mail.

The Supervision Consultant's Resident Engineer and Female Liaison Officer and the Contractor's ESHS Officer during construction and the YWC Designated Staff Member during operation will explain to the complainant, orally or in writing, the grievance review process, the investigation results, any changes to activities that will be undertaken to address the grievance, and how the issue is being managed to meet appropriate environmental and social management systems.

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After receiving the grievances from the Supervision Consultant, WAJ will (1) add the grievances to their grievance log (noting the relevant project) and (2) classify grievances based on priority (low, medium, high, critical), such that each priority has a timeframe to be handled and resolved. High and critical priority cases need to be handled in 48 hours unless they require investigation, upon which the processing might take up to 15 days. The Supervision Consultant and the operator will be responsible for logging and summarizing the grievances after receiving them.